Brief report of the Joint MoH/WHO Workshop on Delivery of Essential Surgical Services at the District Hospitals in Nepal

January 20, 2008
Shankar Hotel, Lazimpat, Kathmandu

Participants:
Dr. Mahesh Maskey, Dr. VR Dali, Dr. GP Ojha, Dr. CP Maskey, Dr. Sarosh Dhital, Dr. Kan Tun, Dr. Shrikrishna Giri, Dr. David Spiegel, Dr. Sandesh Maskey, Dr. LB Thapa, Dr. Ashok Banskota, Dr. Prakash Ghimire, Dr. DS Bam, Sudha Sharma, Mr. Deb Pandey, Mr. Roshan Shrestha, Dr. PR Adhikari, Dr. GB Gurung, Dr Chhabilal Thapa, Dr. B. Koirala, Mr. Mira Bharal, Dr. Ram Shrestha, Dr. Ram Rimal, Dr. Amir Shrestha, Dr. MSB Gennch, Dr. Sharad Onta.

1. Pre-workshop planning meeting
January 4-6, 2008

Pre-workshop meetings were held at the Nepal Health Research Council, Ministry of Health with representatives of the MoH and key health providers. Participants: Drs. M. Maskey, C. Maskey, S. Dhital, R. Gongal, S. Onta, and D. Spiegel.

2. Opening Session
January 20, 2008

2.1) Welcome Speech by Dr. Saroj Dhital

2.2) Inaugural Speech by Dr. VR Dali

Dr. Dali presented participants with an overview of the development of surgery in the government system of Nepal, beginning in the early 1960’s. At that time, there were only three to four surgeons in the country, and now there are more than 200 surgeons. In addressing what can be done at the present time, it was acknowledged that we do need to keep abreast of technical advances in surgery, but to “think globally, act locally”. With respect to the development of essential surgery, the first step will be to gain the confidence of the people. We need to change the traditional mind set which views an “operation” as a dangerous procedure for individuals who are close to death. The program should be reproducible. There are several specific contributions that the National Academy of Medical Sciences can make, including modification of existing curricula, and posting surgical residents in district hospitals for three to six month rotations. From the human resource standpoint, this would promote
resident education, and would also enhance the delivery of service at the district level. District level exposure would significantly strengthen the clinical experience of surgical residents, and would also expose them to the challenges of treating surgical diseases in a resource constrained environment. There is also a significant need for anesthesia services and nursing services, which will need to be addressed as a component of the overall program. Dr. Dali also acknowledged the recent interest from The World Health Organization in promoting a curative model to compliment the traditional preventive model.

3. Guest Lecture: “WHO Perspective on the Delivery of Essential Surgical Services at the District Hospital.” Dr. David Spiegel

Dr. Spiegel acknowledged the intense efforts and dedication of Drs. Meena Cherian and Luc Noel of the World Health Organization (WHO), who have worked tirelessly to raise the profile of Emergency and Essential Surgery at the district hospital level in low and middle income countries.

The presentation included three components: (1) the need for essential services, (2) the interaction between surgery and public health, and (3) a description of The WHO Emergency and Essential Surgical Care (EESC) project.

The burden of surgical disease has increased steadily, in parallel with an epidemiologic transition in which communicable and vaccine preventable diseases have been decreasing, and noncommunicable diseases and injury have been increasing. Injury represents twelve percent of the global burden of disease (2002 GBD data). With respect to injury, road traffic crashes have achieved the widest recognition, with more than one million deaths per year and twenty to fifty million people injured. A host of other conditions treatable by safe and timely surgery may also be identified.

A lack of access to emergency and essential surgery at the district level in low and middle income countries results in delayed presentation, and “neglected” injuries or diseases. The treatment of these neglected conditions is more complex, more costly, and much less likely to achieve the desired outcome. This point was illustrated by an audit of surgical admissions to The Hospital and Rehabilitation Centre for Disabled Children (HRDC) in Bonepa, where a total of nearly eight thousand surgical cases were reviewed from 1996 to 2006. Overall, one-third of cases were to treat clubfoot, and one-third for the sequelae of injuries including trauma and burns. More than fifty percent of patients presented with neglected problems. Ten percent of cases over these years presented with a chronic infection. Numerous examples were cited. In addition to a lack of access to emergency and essential surgical procedures, the sequelae of inappropriate treatment were also noted. In particular, Volkmann’s ischemic contracture (compartment syndrome) complicating splinting of fractures by either traditional healers or other practitioners. This complication results in a limb with severely impaired function, and in the worst cases may necessitate amputation. The sequelae of burns were also discussed, and burns are noted to be the most frequent indication for an amputation at HRDC over the past twenty years. The
The conclusion of this local audit is that a disability in children can be decreased or eliminated by 40-50% if services are improved at the district level facilities.

The second component of the presentation involved a role of basic surgery as a public health intervention. Traditionally, surgery was viewed as being at the end of the spectrum of the curative medical model. Surgery was felt to be too expensive, requiring high levels of human and technological resources, and benefiting only a small fraction of the population. However, data from the second edition of the *Disease Control Priorities in Developing Countries*, suggest that "surgical services may have a cost effective role in population based health care". One of the messages from the second edition of the disease control priorities text is that a basic surgical service, including the treatment of injury, obstetric services, and some elective procedures, can be cost-effective. It has been estimated that basic surgical service will cost 70-210 USD per DALY averted, which compares favorably with many primary health interventions. All of this information suggests that consideration should be given to the integration of basic surgical services within primary health packages. Barriers to the provision of emergency and essential surgical services were then discussed, including a lack of infrastructure and or physical resources, as well as inadequacies in the health workforce ("brain drain", urban vs. rural distribution, and lack of training or educational materials). Essential technologies may be defined as "low cost, high yield, target major health problems, and can realistically be made available to every person in the world".

The final component of the presentation described the WHO Emergency and Essential Surgical Care Project. The Clinical Procedures (CPR) unit was formed within the department of Essential Health Technologies in May 2004, and was "responsible for insuring efficacy, safety and equity in the provision of clinical procedures in surgery, anesthesitics, obstetrics and orthopedics, particularly at the district hospital level". The focus is at the country level, and the target audience includes non-specialist doctors, nurses, technicians, and paramedics. This is an integrated and collaborative approach towards meeting the millennium development goals. The EESC project encourages links between tertiary level facilities and primary facilities, as well as stimulating a collaboration between a variety of stake holders to improve emergency and essential surgical care, including national health authorities/Ministries of Health (MoH), WHO (HQ, Region, WR), and both international and local partners. EESC is truly a horizontal program, which cuts across a host of vertical initiatives including trauma, safe pregnancy, buruli ulcer, male circumcision for HIV, infectious diseases, childhood diseases, and others. EESC strategies include policies, standards/best practice protocols, teaching tools, advocacy, and regional/country activities. The WHO Integrated Management of Emergency and Essential Surgical Care (IMEESC) toolkit has been prepared by EESC and is based on the WHO *Surgical Care at the District Hospital* (SCDH) manual.

*Surgical Care at the District Hospital* provides standards for primary health facilities and training curriculum for medical and nursing school and training programs. These teaching materials form a flexible template which can be built upon. Materials from the WHO IMEESC tool have been adapted to local needs,
and translated into Mongolian and Korean. The teaching materials are usually introduced through a “training the trainers” workshop in collaboration with the MoH, local, and international partners. The teaching materials have been integrated into country level activities in a variety of ways, such as incorporation into the medical school and nursing school curricula and training programs/continuing medical education. The WHO IMEESC toolkit is a diverse teaching tool, incorporating a variety of elements. With respect to policies, this includes standards, needs assessment, anesthesia infrastructure and supplies, and emergency equipment. With respect to quality and safety, include topics in sterilization, waste disposal, HIV prevention, antibiotic prophylaxis, hand washing and skin preparation, inventory of equipment, as well as monitoring and evaluation. In addition, best practice protocols for anesthesia and surgery are included as well as information on patient consent and records, burns, trauma, emergency obstetrics, disaster management, postoperative management, and pain relief. In a joint effort with local Ministries of Health, the IMEESC toolkit has been introduced in more than twenty-two countries. Numerous partnerships have been forged. It has also been suggested that the IMEESC teaching materials may be useful in training staff for a basic surgery at the district level in Nepal.

Finally, the Global Initiative for Emergency and Essential Surgical Care (GIEESC) was introduced as a coordinated effort to promote and enhance the delivery of essential surgery worldwide. Components include advocacy, research, training, and the development and dissemination of appropriate technologies.

4. Keynote Speeches

4.1 “Essential Surgical Services” Dr. CP Maskey

Nepal has made great strides in health care delivery. The recent JAR annual review suggests that significant improvements have been made in population control, that both maternal and child mortality had decreased, and that the immunization rate was 85% percent. Challenges for the future include improving nutrition and curative care. A lack of adequate surgical services results in unacceptable mortality and many fatal diseases can be managed by the trained medical graduate with anesthetic services. The topography is a great challenge to delivering surgical care. The goal is that “every human being has the fundamental right to survival and health as enshrined in the interim constitution; it is guaranteed free access to healthcare”. As such, the delivery of emergency and essential surgical treatment must be improved. A variety of surgical conditions are amenable to simple treatment, including appendicitis, hernia, peptic ulcer or typhoid perforation, hydrocele, urinary retention, testicular torsion, foreign bodies, as well as a host of traumatic orthopaedic conditions. Preliminary resuscitation following trauma must be strengthened, and referral mechanisms established. Both vasectomy and mini laparotomy are important with respect to family planning. One major challenge has been the provision of
adequate human resources. Suggestions to improve this situation include the training of medical graduates for 6-12 months in a variety of essential surgical procedures. These candidates may then be posted at the district hospital for a period of 2 years, and may then be considered for advance surgical training “in country”. In parallel with this effort, medical doctors may be trained in anesthesia. This training period can last from six to twelve months, and will focus on regional techniques and spinal anesthesia with less emphasis on general anesthesia. Following two years of service at the district level, each of these individuals may be candidates for formal training in anesthesia. It is recognized that level of material resources will be required, and the details must be worked out. Financial resources will also be essential, and it is suggested that this approach be implemented in several districts at first, prior to wider dissemination.

4.2 “Essential Orthopaedic and Trauma Services” Dr. Shirikrishna Giri

There are significant differences in the delivery of essential orthopaedics and traumatology between different district hospitals. In considering infrastructure, most district hospitals have no equipment for resuscitation, x-ray, laboratory studies, or blood transfusion. An orthopaedic surgeon is not available. At present, the district hospital system is not prepared for traumatic injuries such as road traffic crashes. The most common problem seen at the district level includes fractures and dislocations. The necessary skill set for a provider at the district level includes splinting, various forms of traction, closed reduction, debridement and antibiotics for open fractures, irrigation and debridement for infection such as osteomyelitis or septic arthritis, traction and bracing for spinal injuries, the appropriate diagnosis and referral for congenital anomalies, as well as the identification of complications and indications for referral of traumatic injuries.

4.3 “Role of Civil Society in Developing Surgical Services through “SCALPEL” Dr. Saroj Dhital

This presentation involved the history of the “SCALPEL” project, and the lessons learned. The project was initiated in the early 1990’s, and the goal was to strengthen the delivery of basic surgical services by voluntary service. Both training and service were accomplished at district level facilities, and the efforts of both Dr. Shankar Rai and Steven Bezruschka were noted. Initially, districts were selected based upon a lack of access to motorized transport. Eleven workshops were held, in collaboration with the MoH local doctors, and local government officials. Volunteers assisted the local providers in surgical procedures, and at night didactic sessions were held. The focus was on traumatic injuries, caesarean section, and appendicitis. The textbook “Primary Surgery” by Maurice King was utilized. Despite early positive results, expansion of this project was limited due to civil unrest. In addition to the burden of surgical conditions, Dr. Dhital suggested that we need to address the burden of diseases relating to
physical labor and poverty, and to consider other important issues such as the psychosocial effect of these diseases on families and communities.

5. Round table Discussions

5.1 Dr. Kan Tun, WHO Representative (WR) for Nepal

Dr. Kan Tun, WHO Representative for Nepal delivered comments on the Key Note Speeches. Dr. Kan Tun expressed his interest in the experiences from the field, and the knowledge gained from these experiences. While recognizing that surgical care is important, the challenge lies in the delivery. In addition to the patient, both the family and the community suffer due to surgical diseases. A lack of adequate surgical care may undermine the trust of the population in the healthcare system. The healthcare system in Nepal is evolving, and surgical care must be stratified within this system. “Essential” surgery must be defined by identifying competencies and skills required, as well as the appropriate manpower, equipment, and resources to deliver these essential services. Continuity of care must be provided, and a proper referral system must be established. Retention of healthcare providers is an important component of this effort. He called attention to the booklet “Health At Last”, which includes important district level data for review.

5.2 Dr. GP Ojha, Director General of Health Services (DGHS)

Dr. GP Ojha submitted his comments on the Key Note Speeches. He stressed the importance of primary healthcare and the importance of surgical services as they relate to the millennium development goals, especially maternal and child health. He cited differences between districts with respect to the delivery of health services, and the importance of service mapping to identify gaps in service, and to determine which districts required strengthening of services. In general, the human resources available for each district hospital will include one doctor, two anesthesia assistants, and two staff nurses. We need to delineate which equipment and accessories are available to deliver essential surgical services, and monitoring must be performed at both the peripheral and the central levels.

5.3 Round table on Access to safe essential surgical and anesthesia care in Nepal

- Lack of access to safe and timely surgery is recognized as a chronic problem within the health system.
- The importance of partnership between stakeholders was stressed, and the suggestion made to utilize the sixteen medical colleges to partner with one or more district hospitals.
- The partnerships should involve exchange of students, trainees, as well as specialists to strengthen the delivery of surgical services.
• A telecommunications link between the district hospitals and other health facilities would be essential.
• A working formula should be developed by stakeholders, including services to be provided, and the necessary ingredients to provide those services.
• The proposal on the working formula should be clear at the policy level.
• A popular concept has been that those doctors who are not qualified to practice in the city become rural doctors.
• There is a need to establish who is accountable for services provided at the district level, to provide adequate quality control, and also to protect those services from medical-legal implications.
• A model must also be developed for the delivery of anesthetic services, and relying on a nurse anesthetist alone may be insufficient.
• It is suggested that a medical doctor must take a responsibility for the provision of anesthesia, and the job description and training required must be determined.

6. Group Discussions

6.1 Group 1. Essential Surgery: General Surgery and Ob/Gyn
Facilitator: Dr. CP Maskey
Participants: Drs. Sarosh Dhital, Mahesh Maskey, Ahir Shrestha, Ram Shrestha, PR Adhikari, GB Gurung

The group provided a list of “essential” surgical procedures for general surgery and obstetrics/gynecology, including the following:

• Wound care
• Irrigation and Debridement
• Amputation
• Excision/Biopsy of cyst, mass, or lymph node
• Laparotomy
• Mini-laparotomy
• Hernia
• Hydrocoele
• Hemorrhoidectomy/Banding
• Chest tube insertion
• Suprapubic catheter insertion
• Tracheostomy
• Circumcision
• Vasectomy, tubal ligation
• Foreign body removal (eye, throat)
• Eyelid repair
• Bartholin’s Cyst or abscess
• Cervical/endometrial biopsy
• Dilation and Curettage
• CAC/PAC
• Vaginal delivery, forceps delivery, episiotomy, repair of tears
• Ectopic pregnancy
• Caesarian section
They also suggested the infrastructure and physical resources which should be available. In addition to the operating theatre, there should be a labor room and a maternity ward. A lab service should be available for blood tests, urine tests, and blood transfusion. Plain radiographs and ultrasound must also be available. Electricity (with generator backup) is essential, as well as communication links including telephone, internet, and ideally telemedicine. Waste disposal is also required. A formal referral system should be developed.

With respect to human resources, it is suggested that four medical doctors be present at each district hospital. At least one of these should have surgical training. At least one of these should be a general practitioner, a general surgeon or an obstetrician/gynecologist. At least one practitioner should have three months of anesthesia training. Operating theater assistance, as well as nurses, and staff for cleaning/sterilization, must be available.

Finally, the group suggested changes in policies for these health workers. They should have the opportunity to be nominated for additional training after their period of service at the district hospital. There must be incentives, opportunities for promotion, and medicolegal protection.

6.2 Group 2. Essential Surgery: Orthopedics and Traumatology
Facilitator: Dr. David Spiegel
Participants: Drs. Shrikrishna Giri, Ashok Banskota, Sandosh Maskey, GB Gurung

The group discussed the importance of providing a safe environment for surgery. With respect to the patient, it will be important to provide adequate informed consent, as well as protocols for providing identification of the surgical site. With respect to the doctor, in addition to adequate training, maintaining universal precautions and providing medicolegal protection will be essential.

Equipment must be easy to maintain. Minimum requirements for the operating theater include appropriate space, separate rooms for non-infected and infected cases, as well as reliable lighting and sterilization of equipment. With respect to lighting, natural lighting would be ideal, and if possible electric lighting with a generator backup would be desirable. With respect to sterilization, an autoclave would be required, and further discussion is suggested regarding the role for antiseptics.

The group outlined the basic orthopedic and plastic surgical equipment required. The list includes equipment required for the full complement of techniques for skeletal traction. A hand drill will be essential, and participants agreed that we should not rely upon power equipment. A set for a simple external fixation should be provided, as well as a knife for skin grafting. A portable x-ray machine would be essential, and if possible, a C-arm for fluoroscopy would be desirable.

The capacity to deliver safe anesthesia is also essential. Essential pharmacologic agents include analgesics, antibiotics (penicillin, flagyl, gentamicin, and a first generation cephalosporin, others is possible). While spinal and regional techniques would be essential, the capacity to deliver general anesthesia would be desirable (device for mechanical ventilation, laryngeal mask). Suggested monitoring equipment includes two pulse oximeter devices, as
well as a blood pressure cuff. Additional items would include an ambu bag, as well as an oxygen concentrator.

Essential orthopedic and plastic surgical procedures would include those required for the closed treatment for fractures and dislocations, including not only an apparatus for traction, but also the equipment required to maintain patients in traction such as an overhead trapeze. Procedures for the management of open fractures and lacerations would be important, as well as irrigation and debridement for osteomyelitis or septic arthritis. Skills for repeated aspirations, for example the hip joint, would be required as well. Basic skin grafting techniques, as well as primary burn treatment, would also be essential. The application of simple external fixator, as well as amputations, should also be performed at the district level facility. Participants stressed the importance of rehabilitation following injury or surgery, including both functional splinting and physiotherapy.

The group then outlined important issues related to the provision and maintenance of human resources. It is recognized that a medically trained general practitioner will be provided in the services and the importance of supervision and on the job training was stressed; partnership with the medical colleges could achieve this goal. Retention of healthcare providers at the district level is essential. Adequate precautions must be in place to prevent disease transmission to health care workers, and legislation must be provided to protect the practitioner. Incentives to work at the district level might include the opportunity to advance the practitioners education, financial incentives, and official recognition for time served at the district level facility.

6.3 Summary of Discussions of Group Recommendations

It was again noted that the various district level facilities in Nepal are at different stages of development, and we should seek to define those centers that have demonstrated excellence. Studying the positive features of these centers will enable us to strengthen the delivery of services at centers at a lower stage of development. With respect to manpower, while sufficient surgeons have been trained, the difficulty lies in posting them at the district level facilities. Anesthetic support has been difficult to achieve as well. A model must be developed for the delivery of emergency and essential surgical services, and once developed we should consider a pilot study in selected districts. The groups discussed whether to develop a new model, versus building upon the existing system. Retention of healthcare providers will be crucial, especially in the remote areas. Incentives need to be provided. The community must be empowered to play an active role in the development of the district surgical service.

8. Summary/Action Items:

8.1 Where are we?

- There is a problem involving lack of access to timely and safe surgical care at the district level facilities in Nepal, and that strengthening the
delivery of emergency and essential surgical and anesthetic services should reduce both death and disability.

- There is considerable variability between the level of surgical services provided at the district hospitals in Nepal.
- Topography is a major barrier to the delivery of services especially in the more remote regions.
- Other challenges to overcome include a lack of infrastructure, physical resources, and human resources for health.
- With respect to human resources, while there may be a sufficient number of trained medical doctors (even surgeons), the distribution between urban and rural environments is unequal. In addition, “brain drain” remains a challenge.

8.2 Where are we going?

- Our goals must be formally defined. We must develop a concept of the ideal district hospital for Nepal, either de novo, or based upon “model” district hospitals in the country.
- A situational analysis should be performed, recognizing the variability between district hospitals. This analysis will help us to define the “core capacities” in terms of infrastructure, physical resources and equipment, and human resources, required to deliver safe and timely emergency and essential surgery at the district hospital.
- We need to address key issues such as the training and retention of general practitioners at the district level. Retention of providers may be enhanced by incentives (financial or continuing medical education), career advancement opportunities, and policy changes including medical-legal protection.
- Collaboration between educational institutions and district hospitals is suggested to strengthen the delivery of services, and interaction between the health system and the community is also desirable to strengthen the health system.

8.3 How do we get there?

- A situational analysis should be performed. A pilot study in 10-15 districts, using the WHO surgical tool modified for Nepal, will provide a quick assessment of the capacity to deliver surgery at these facilities. This will provide data for discussion and planning, and ultimately a more in-depth situation analysis will be performed at all of the district hospitals.
- A larger workshop, in collaboration with the Ministry of Health, the World Health Organization, and other key stakeholders, will be held in the late spring or summer. The goal of this workshop will be as follows: 1. to discuss the results of situation analysis, 2. to define the components of the ideal at district hospital surgical service in Nepal, and 3. to introduce the WHO teaching materials by completing a “training of the trainers”
workshop utilizing the Integrated Management of Emergency and Essential Surgical Care Toolkit (IMEESC) supplemented by Surgical Care at the District Hospital.

- Develop and implement a “road map” for the delivery of emergency and essential surgery at the district hospitals in Nepal.

9. Concluding remarks by Dr. Mahesh Maskey

Dr. Maskey suggested that mapping of the strengths and weaknesses in the delivery of surgical services at district level facilities would be desirable. A pilot study was suggested to achieve this goal. A small workshop should be considered for nurses and midlevel providers. After completion of a pilot study in selected district hospitals, stakeholders can identify characteristics of the “model” district hospital in Nepal. This might be followed by a larger workshop in coordination with the WHO. Acknowledgements were made to the Ministry of Health, World Health Organization, and all participating institutions.