

Breakout Sessions

David A. Spiegel MD

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Breakout Session IA

Essential Surgical Skills for Upper Extremity Fractures

Compiled by: Kaye Wilkins

Facilitator: Kaye Wilkins

Rapporteur: Ajibade Omololu

Participants: Drs. Al-Kharusi, Arora, Babhulkar, Banskota, Gosselin, Howard, Mkandawire, Toma, Vera, Vukasinovic, Zhen-Sheng.

Where Are We?

There are currently no universally accepted standards for managing upper extremity fractures and what skills are needed. This breakout group met to determine what essential surgical skills would be needed to provide the minimum initial care to individuals with serious injuries to the upper extremity to decrease the late onset morbidity and mortality.

Where Are We Going?

We divided the necessary skills divided into four main categories:

- 1) **The initial evaluation.** The initial treating individual needs to be trained to:

- a) Differentiate an acute fracture from an acute musculoskeletal infection.
 - b) Recognize an open fracture.
 - c) Evaluate the neurovascular function of an injured upper extremity.
 - d) If radiographic studies are available, this initial treating individual should be able to differentiate intraarticular from extraarticular fractures.
- 2) **Treatment.** The initial treating individual should be trained to:
 - a) Clean and débride an open fracture.
 - b) Realign common fractures and dislocations.
 - c) Be acquainted with the commonly accepted immobilization techniques.
 - d) Perform an emergency fasciotomy.
 - e) Perform an open amputation on the unsalvageable injured upper extremity.
 - 3) **Provide basic pain management.** The initial treating individual should be trained to administer basic pain relieving medications.
 - 4) **Education.** There needs to be a program to train those individuals without a medical background who might be involved in the initial management of the injured individual before any skilled medical individual arrives. This would include the administration of first aid and, in many cases, transportation to the nearest medical facility. Such individuals could include truck drivers or taxicab drivers.

D. A. Spiegel (✉)
Division of Orthopaedic Surgery, Children's Hospital of Philadelphia, 2nd Floor Wood Building, 34th Street and Civic Center Boulevard, Philadelphia, PA 19104, USA
e-mail: spiegel@d@email.chop.edu

How Do We Get There?

We believe a starting place is to propose the prerequisites for treatment of these upper extremity injuries. These can

be modified and proposed to those developing local, regional, and national health policies in individual countries and perhaps through WHO.

Breakout Session IB

Essential Care for Lower Extremity Fractures

Compiled by: Mark Vrahas

Facilitator: Mark Vrahas

Rapporteur: Bruce Browner

Participants: Drs. Baldan, Bunn, Coughlin, da Silva, Dormans, Fisher, Hamdan, Naddumba, Tuan.

Where Are We?

The purpose of this session was to define the essential resources necessary to care for lower extremity trauma at a district general hospital or its equivalent. Although it would be valuable to have an orthopaedic surgeon care for these injuries, it is clear that that this is an unrealistic expectation and will likely remain so for the foreseeable future. These clinics are most often staffed by general medical officers with only basic orthopaedic and surgical training along with nurses or medical assistants. This is, in fact, the reality in most low- and middle-income countries. Consequently, our efforts were directed at defining essential skills and knowledge base and how to educate these, and on defining essential resources.

Where Are We Going?

A system for *prehospital care* is essential for the proper lower extremity trauma management. Many areas lack even a rudimentary system. This can and should be provided as part of their basic education, and updated through a system of continuing medical education. Participants suggested that the general medical officers (GMOs) make this a priority, and that they will need to teach chosen providers in their community basic first aid and provide regular feedback. The GMOs should look towards existing service organizations, such as police or fire departments, or other organizations (religious, civic, other) to develop these services. However, the GMOs will need to be provided strategies for doing this. Ideally, standard courses could be developed at medical schools to provide template for the GMOs to teach this material.

After prehospital services and transport to a health facility, patients require adequate *hospital-based services*. The essential personnel at a district hospital are the GMO

and a nurse or medical assistant. Given the multiple responsibilities of a GMO, it is not realistic that the GMO will see all patients presenting to the clinic. Given this reality, the nurse should be able to recognize life- and limb-threatening conditions and to provide the initial management of these conditions while waiting for the GMO to arrive. The GMO should be able to recognize and manage priorities in the injured patient according to the standard ABC protocol: (1) Recognize and manage priorities (ABCs), (2) stabilize airway, (3) ensure breathing, (4) control bleeding (pressure dressings), (5) recognize open fractures and open joints, (6) align and splint limbs, (7) recognize vascular injury, and (8) recognize compartment syndrome. The standard educational schemes for nurses and medical assistants should include components to ensure these competencies. The GMO should provide continuing medical education and feedback to the nurses and medical assistants working at the clinic. Again, it is essential that the training schemes for GMOs not only teach these competencies, but also teach strategies for educating and providing CME to nurses and medical assistants. There should also be a system for providing continuing medical education to the GMO. The regional hospitals should take on the task of providing this education.

Systems for *communication* should be developed that more effectively connect the GMOs to the regional hospital. Several participants felt that the general lack of connection between providers at the district hospitals and the regional hospitals causes several problems. Often GMOs at district hospitals feel like second-class providers. They have nowhere to turn to ask for support or education, and do not get feedback on cases they refer. Better connections would not only improve educational opportunities but would also improve professional satisfaction for providers at the district hospitals.

In addition, the district hospital clinics should have *access to basic laboratory services* including blood counts, urine analysis, and basic microbiology. Blood transfusion protocols should be in place.

The district hospital *surgical theater* requires trained anesthesia personal and a GMO. The GMO should have the following basic surgical competencies along with the equipment to perform these tasks: management of bleeding, fasciotomy for compartment syndrome, soft tissue wound débridement and wound management, open fracture débridement and wound management, external fixator application, reduction of dislocated joints, definitive management of closed fractures, use of skeletal traction, casting techniques, and techniques for regional anesthesia. Educational components to ensure the above competencies should be included in the normal training scheme. The regional hospitals should provide the GMOs with

continuing medical education including regular updates. Again, it is essential that the regional hospitals develop communication links to the district hospitals. This ensures a professional link as well as regular feedback for quality improvement.

Most participants felt that the importance of *community rehabilitation* is an essential and often overlooked component of patient care. Community providers can recognize problems where early intervention at the district hospital can prevent major complications. To do this the GMO should provide training to existing community providers and other community organizations. Again, strategies for doing this should be included in the general training scheme for GMOs.

How Do We Get There?

Recognizing that resources are always limited to some extent, we decided to provide some priority to our plan. Moreover, we ranked interventions based on those that might provide the greatest improvement for the lowest cost.

- **Create culture of respect for GMOs and other providers at DH**

There was a general feeling that greater professional satisfaction would go a long way to helping GMOs provide more effective care and would remove the stigma preventing young talented doctors from choosing these positions. Physician leaders working at regional hospitals could help towards this end in several ways:

- Advocate for appropriate salaries
- Provide professional links to regional hospitals
- Communication and CME
- Organize prehospital care
- Teach GMO organizational skills
- Identify and organize potential providers

- **Improve the closed management of fractures through better education of the GMOs**

It was also felt that GMOs do not receive adequate training in the closed management of fractures. Given that fractures are common, basic courses in appropriate closed fracture management would be another inexpensive way to greatly improve care.

- **Improve community rehabilitation**

Teaching the GMOs how to organize systems of community rehabilitation and encouraging them to do it would help improve patient outcomes and links with each community. Community-based rehabilitation has been effectively implemented in many countries, and has been one focus of the Department of Violence and Injury Prevention at WHO.

Breakout IC

Elements of a Successful Curriculum for “Essential” Care for Fractures

Compiled by: Richard Fisher

Facilitator: S.M. Awais

Rapporteur: Richard Fisher

Participants: Drs. Brand, Joshipura, Mahaisavariya, Oloruntoba, Quansah, Shyamprasad, Singh, Spiegel, Waddell, Zhen-Sheng.

Where Are We?

Musculoskeletal topics including basic fracture care have not received adequate coverage in the medical education programs in low-income countries. Strengthening the delivery of basic fracture care at the district hospital level is essential if we are to decrease morbidity from traumatic musculoskeletal injuries.

Where Are We Going?

After much discussion the committee first developed a grid (Table 1) which could be used conceptually to understand and explain the scope of the curriculum, define the audience, and serve as a basis for a preliminary needs assessment. A method to conduct a needs assessment was not discussed in depth. It was felt that both **Knowledge**

Table 1. Preliminary needs assessment in curriculum development

Setting	Who	Kn	A	Sk
Injury scene	Citizens/police/etc.			
Primary health post or district hospital	Paramedical/EMT			
	Nurse			
	Doctor			
	GMO			
Central hospital/teaching hospital	General			
	Surgeon			
	Paramedic			
	Nurse			
	Doctor			
Rehabilitation team	General			
	Surgeon			
	Orthopaedist			
	Nurse/Aid			
	Physical Therapist			
	Doctor			

Kn = knowledge; A = attitude; Sk = skills.

(Kn) and **Skills** (Sk) are important, and there was some discussion about including **Attitude** (A) in the matrix. It is felt that attitude, behavior, and ethical concerns should be addressed when possible.

The curriculum is aimed at providing training to all caregivers and venues involved in the providing of care to an acutely injured patient, including paramedics, nurses, and general medical doctors in the hospitals, official or unofficial citizens at the scene of the injury and during transport to a healthcare facility, and those responsible for rehabilitation team. *Specific Objectives* will be developed for each injury pattern, including the following: (1) Basic Principles (mechanism of injury, fracture and soft tissue healing, biomechanics of fracture reduction and treatment), (2) Diagnostic Techniques (H&P, xray, laboratory), (3) Treatment Skills (setting-specific depending on the expertise and facilities available), (4) Pain Control (anesthesia and analgesia), (5) Common Associated Injuries, and (6) Rehabilitation (in hospital and postdischarge).

In considering the **method of delivery**, the curriculum should specify the most effective teaching methods for the audience and the subject. These might include: PBL, small group sessions, team-based learning, motor skills labs, lecture, and others.

Assessment tools should be developed along with the learning objectives and could include attendance only, pre- and posttests, change of practice audits, or followup questionnaires. In addition, some type of certification should be offered. This could be a certification of attendance or certification of competence in performing a specific function or procedure. It is best if issued by a recognized institution, professional organization, or official agency.

How Do We Get There?

Such a curriculum might be developed and integrated into medical education programs, as well as training programs for nurses, paraprofessionals, and others. This material may build upon the WHO basic teaching materials (Integrated Management of Emergency and Essential Surgical Care), and courses could be given in conjunction with WHO workshops. The materials could be integrated into other local training initiatives as well.

Breakout IIA

Systems for Prehospital Care

Compiled by: Manjul Joshipura

Facilitator: Manjul Joshipura

Rapporteur: Ed Naddumba

Participants: Drs. Browner, Awais, Babhulkar, Britto da Silva, Fisher, Hamdan, Mahaisavariya, Quansah, Tuan, Waddell, Vrahas.

Where Are We?

Developing countries face many challenges in trying to provide their populations with medical care. Small national budgets, conflicting priorities, and rampant corruption lead to limited per-capita expenditure for health services. Human resources are drained when physicians, nurses, and technical personnel move from rural to urban areas within their countries and leave their native lands for jobs in other countries seeking a better living for themselves and their families. Under these circumstances it is easy to understand why formal emergency medical services such as those available in wealthy countries are not present in developing countries. In many developing countries, the majority of injuries occur in rural settings where there are no organized emergency medical services or ambulances. In addition to road traffic crashes, which are a major problem, falls, agricultural accidents, and war wounds, including gunshots and land mines, are frequent mechanisms of injury. The members of the family or co-workers are usually the first people to reach the injured victims. Traditional bonesetters or village headmen often provide initial aid. Carrying them on litters or animal carts, family members often transport the trauma victims to district health centers or hospital for emergency care. Commercial truck drivers who pass the scene of roadside accidents are often drafted to bring the injured to hospitals. In some instances, the police will be second responders and will help with first aid and transport. In urban settings, police and hospitals are usually in closer proximity to the location of injuries, but EMS is also absent and transport can be hampered by dense and chaotic road traffic.

Where Are We Going?

The discussion group acknowledged the limited per-capita health expenditures by governments of developing countries, but agreed that uniform efforts should be made to develop systems that would enhance the prehospital care of all injured victims. Providing people in all countries with some basic level of emergency care, a vision of equity can best be achieved by involving each category of individual who typically interacts with the injured victims in each setting.

Participants from many areas of the world reported that people in their countries could gain uniform access to emergency care by dialing a three-digit number on the

telephone. The numbers were different but the concept was the same. It was agreed that an international equity of care goal should be expansion of this type of dedicated telephone number for access to emergency care. The representatives from Africa noted that many rural areas do not have phone lines, but the availability of cell phone service is now widespread and many types of communication, including those regarding medical care, are conducted via cell phones.

How Do We Get There?

The discussion focused on ways to improve the skills, resources, and organization of each group of people that handles the injured person prior to their arrival at the medical aid station or hospital. Many similarities were recognized as the participants discussed the challenges of improving prehospital care in their developing countries.

The first group involves the **lay public**, who are often the first to minister to the injured, and include family, friends, co-workers, village elders, and bystanders. All agreed that education in first aid would be universally beneficial. In Nepal, the orthopaedists have advanced a proposal for a national program to make their people an "enlightened citizenry regarding first aid." Emphasizing principles that were endorsed by representatives from all countries, they stressed the importance of gaining support from national leaders, national and local celebrities, and the media. All agreed that first aid education could best be introduced by relying upon the existing local leadership for active support.

The International Federation of Red Cross and Red Crescent (IFRC) organizations play an important leadership role in promulgating first aid education throughout the world. They have mature teaching materials that have been translated into many different languages. In conjunction with the education programs that could be delivered utilizing PowerPoint lectures and videotapes, the group considered basic supplies that should be widely distributed. Simple first aid kits such as those advocated by the IFRC which contain gauze dressings, triangular cloth sling/bandages, elastic bandages, and antiseptic could be produced and distributed at relatively low cost. Inexpensive cardboard splints could also be distributed to offer safe initial immobilization of limbs. Short and long plywood back boards useful for immobilization of the spine and safe transport could be stored centrally by the headmen of villages.

In remote areas, especially in African countries, absence of electric power generation limits the ability to use computer-based education and videotapes. Gasoline-powered generators are heavy, easily stolen, and diverted to other

uses not supporting the educational mission. They require a supply of fuel, spare parts, and repair expertise that is difficult to sustain. An inexpensive alternative is the human-powered electricity generator that has been designed to work by peddling a bicycle (<http://www.los-gatos.ca.us/davidbu/pedgen.html>). All agreed that education on injury prevention should accompany the teaching on first aid. The interest generated by political, press, and celebrity support generated for first aid injury treatment education could be used to increase interest in prevention as well.

In many parts of the world, **traditional bonesetters** provide emergency care to victims of various kinds of accidents. They often use strips of bamboo or other kinds of wood to splint extremity fractures. The wrappings are fashioned from rope or even more crude plant fibers. Their skills are passed down from father to son, but the lack of formal accreditation does not prevent many people in diverse cultures from seeking their care. Superstitions and strong belief systems give them a loyal following. As they have no radiographic guidance available, they must perform realignments based on traction and touch. While these maneuvers frequently result in realignments similar to those achieved by emergency medical personnel in developed countries, they are often not ideal for definitive care. The rope and plant-fiber wrappings are not elastic enough to allow for expansion with swelling, so they may be complicated by vascular insufficiency and compartment syndrome. Many participants at the meeting from different parts of the world have seen cases of gangrene or compartment syndrome from splints improperly applied by traditional bonesetters.

The allopathic medical community must make a rapprochement with traditional bonesetters. Acknowledging that they are a prominent and widespread group of injury care providers would be a first step in addressing the problem with improper splinting. Opening a respectful interface would permit delivery of education on the ill-effects of improper splinting. The education could be done using the same methods described above for the education of citizenry, but using programming specifically designed for the bonesetters. If this were associated with the distribution of inexpensive elastic bandages that could be used by the traditional bonesetters as alternate wrappings many vascular problems could be avoided. There is even a possibility that broader first aid training would enhance their value as first responders and enable them to play a very important role in delivery of initial injury care.

Commercial truck drivers who pass the scene of roadside accidents are often drafted to bring the injured to hospitals. They have no more knowledge of first aid than the average citizen and usually no emotional connection to the injured victim. As they frequently play this informal medical transport role and, in the absence of ambulance

services, often present the best means of reaching medical care, it makes sense to embrace them as an essential part of the prehospital system.

Unlike the police that are a public entity, the truck drivers are usually private employees, so different methods would have to be used to enlist their participation in a first aid program. The owners of the trucking companies would have to be engaged. Training in first aid could be tied to licensure to drive. Education methods used for the groups above could be adapted for the truck drivers. Special education would be needed on safe techniques of immobilizing, moving, securing, and transporting trauma victims. Truckers could be provided with special first aid kits, cardboard splints for limbs, and back boards for securing victims for transport.

In many developing countries that do not have organized EMS, phone calls placed by citizens to alert authorities about major traumatic injuries are handled by the **police**. They are often the first responders to an accident scene. The meeting participants noted that the police in these areas often have limited knowledge of first aid or emergency medical care.

A standardized first aid course devised by the IFRC could be presented to the police in developing countries. Success in such an educational endeavor would require the full cooperation of national, provincial, and local authorities that supervise the police in each country. The education curriculum could be standardized, but the approach to teaching would have to be adjusted to fit the local culture and organizational structure. Different disciplinary and reward mechanisms would be necessary to enable adoption of necessary first aid and emergency care by police. If the police interest in this new responsibility can be stimulated and recognized, they can play an important part in delivering emergency care in developing countries.

How Do We Get There?

Establishment of these services should be a long-term goal that would be associated with higher levels of economic and social development in the developing countries. To achieve equity for all people to have access to basic emergency care, strategies that empower, educate, equip, encourage, and recognize first aid efforts would be the best strategy under the current circumstances.

National leaders in developing countries will have to recognize the scope of the injury problem and develop political will to find and implement solutions. In addition to cost-effective prevention initiatives, leaders must also support treatment programs. Prehospital care is an essential component of the treatment scheme. This necessity is now recognized by the United Nations and the World Health

Organization in their efforts to deal with the global problem of injuries.

Orthopaedic surgeons, other physicians, and health professionals from all countries are needed to work together to assist with programs that can help developing countries establish emergency medical care for their populations. The discussion group participants agreed that supporting the recently established WHO program *Global Initiative for Emergency and Essential Surgical Care* would be a good way to proceed.

Breakout Session IIC

Working with Health Planners, Administrators, Government Officials, and Others

Compiled by: Girish Singh

Facilitator: Girish Singh

Rapporteur: Bade Omololu

Participants: Drs. Britto da Silva, Hamdan, Joshipura, Mahaisavariya, Naddumba, Singh, Spiegel, Vera, Vukasinovic

Where Are We?

Injuries, generally, and musculoskeletal injuries, specifically, have been neglected in LMICs. In addition to underfunding of injury research, there has been minimal effort to strengthen the delivery of curative services for the injured. We need to raise the profile of the burden of musculoskeletal injuries, especially with regard to the long-term disability associated with many injuries of the spine and extremities. Solving the problem will rely upon better efforts at prevention and strengthening the delivery of basic emergency services; both of these will require considerable funding for both research and for implementing programs designed to improve treatment, especially in the more rural areas.

Where Are We Going?

Any practical solution to the many problems associated with trauma in the developing world must be implemented at the level of the health system, and will require working with national and regional governmental health planners, administrators, various government officials, and other nongovernmental organizers. Many of these individuals will have limited time and/or understanding even when a change is important and possible, so it is crucial to first identify the barriers. The indication that we have reached a barrier is when something important and doable is pending because someone does not understand or needs to

understand. A host of individuals must be made aware of the burden of injuries, and then recognize that efforts at prevention and treatment can reduce the burden.

How Do We Get There?

A generic approach is recommended by the group to overcome these barriers. One must identify the individuals to approach, prepare what must be said and how to say it, and then remind these individuals at regular intervals. The individuals that must be approached may include politicians, officials, courts or legislatures, lobbyists, professional organizations, doctors, and health service providers. Often the press or celebrities may be used to mobilize public opinion. It is best to approach these individuals through personal contacts.

The message to be delivered must be specific to the individual, but must include the following: (1) large benefits at low cost, (2) brief, clear, yet comprehensive arguments, and (3) a subtle way to show that the individual being approached will benefit.

The message is best delivered when the messenger effectively identifies themselves as a knowledgeable representative of a respectable organization that is working selflessly for the benefit of patients. Connections to (and support of) major international organizations, such as the World Health Organization and the International Committee of the Red Cross (ICRC) are helpful. Meetings are best held in neutral, congenial locations. The message must be delivered simply and politely, using data and press reports. The message must state (1) the problem, (2) the solution, and (3) the costs. The key elements must be in writing. The message must ensure that the decision makers can be credited and how the decision maker will benefit.

Finally, it is important to realize that few decisions are made over short periods of time, so patience is crucial. The message must be delivered repeatedly in a respectful way.

Breakout Session IIIA

Access to Educational Materials

Compiled by: Andrew Howard

Facilitator: Andrew Howard

Rapporteur: Ma Zhen-Sheng

Participants: Drs. Brand, Browner, Babhulkar, Hamdan, Vrahas, Musafir, Wilkins, Baldan, Dormans, Quansah

Where Are We?

For low- and middle-income countries it was acknowledged that access to all forms of educational materials is

still impeded, and improving access is the most important task. Specific materials needed include textbooks, journals, value-added review products, and videos. Modes of delivery include paper, CD-ROM, and online (via computer or increasingly via cellular phones or other devices).

The consensus was that a *textbook* remains the gold standard for initial education and for reference in practice for the orthopaedic surgeon, general practitioner, or orthopaedic medical officer. *Journals* were seen as much less important for initial education, and of varying importance for continuing education, updating, and accessing information for clinical practice. There is data to suggest that information from local or regional journals in LMICs is more likely to change practice, so access to such materials must be supported. However, it is recognized that journals are essential for both education and research, without which the field will not progress. Value-added review journals (eg, “yellow journal” of the American Academy of Orthopaedic Surgeons) represent a concentrated source of valuable reading for residents in training and orthopaedic specialists in practice. Particularly in China, an entirely different set of textbooks and journals are used. The group is sensitive to the issue of providing books in languages appropriate for the end user, whether these are translations of English texts or whether they are independently written products. However, our expertise is largely limited to resources available in English.

Where Are We Going?

A discussion of how one might improve access to educational materials must consider forms of materials, modes of delivery, and the role of the Internet.

In considering modes of delivery, the paper *textbook* is the gold standard, and is preferred as a primary reference. CD-ROMs are widely usable and easier to distribute, but are less practical than paper books. CDs may play a role for provision of secondary-type texts. Online texts are an appealing alternative but, due to bandwidth restrictions or lack of access, they are not yet a practical alternative as the primary clinical source. However, an Internet repository of standard textbooks (see list) is an achievable goal for the group. Individual initiatives to ship new or old books are to be commended if they meet local needs, but will not be pursued by the group.

Journals have become an online resource for many users and the advantage of online access is that huge numbers of well-indexed journals can be searched for precise and specific information. Shipping old journals on paper was seen as more limited in value than delivering them by CD or Internet. HINARI and the Ptolemy project provide free online access to journals for low-income

countries. *Review journals* can be helpful, and provision should be Internet-based as with regular journals. Useful information may also be transferred by *videos*, which can be provided on CD or DVD, or Internet-based as bandwidth restrictions ease. Videos will become more valuable as adjuncts to atlases of surgery.

The **Internet** is used for four different purposes: (1) rapid reference, (2) a large-volume library, (3) asynchronous communication, and (4) synchronous communication. A paper text is still better for rapid reference in most LIC/MIC settings. The Internet has value as a journal library because the space and indexing available cannot be matched in paper libraries. Asynchronous communication includes bulletin board, forum, wiki, and other similar formats. Orthochina.com is a very successful Web forum for continuing education and debate. A new wiki—Orthopaedia—is being hosted by The Association of Bone and Joint Surgeons (ABJS) and could potentially be used to distribute information relevant to LIC/MIC settings. The Vindico/Stryker Orthopaedics hyperguide is a password-protected educational resource which could be used to improve access. The concept of posting relevant textbooks for which copyright could be obtained was discussed. The HELP website (www.global-help.org) provides a host of resources which may be downloaded at no cost.

How Do We Get There?

Improve the accessibility of textbooks by posting digital copies of relevant books on websites such as the ABJS Orthopaedia. Sponsorship (corporate or other) should be sought to cover the costs of scanning books, obtaining copyright, etc. Representatives from the publishing industry might consider allowing the last edition of selected textbooks to be placed online, free of charge. Educational initiatives such as Global-HELP, which provide free educational materials, should be supported. This effort also requires “academic detailing” or promotion of the project in low-income countries, for which honoraria could be provided to low-income country surgeons upon completion of substantive and measured writing, editing, or training tasks.

Appendix I (to Breakout IIIA)

Partial List of Textbooks Mentioned as Useful:

WHO Surgery at the District Hospital
 Primary Surgery by Maurice King
 ICRC War Surgery Book
 Red Cross First Aid Manual
 ATLS Manual

Charnley Closed Treatment of Common Fractures
 Anthony de Palma Closed Fracture Treatment
 Henry's Extensile Exposure
 Practical Guide to Care of the Injured—Peter London
 Rockwood and Green Fractures in Adults
 Browner and Jupiter Skeletal Trauma
 Rockwood and Wilkins Fractures in Children
 Rang Children's Fractures
 AAOS Manual on Traction for Fracture Treatment
 GIESSC WHO curriculum (not really a textbook)

Breakout IIIB

Training Programs for Orthopaedic Surgery

Compiled by: Wahid Al-Kharusi

Facilitator: Wahid Al-Kharusi

Rapporteur: David Oloruntoba

Participants: Drs. Banskota, Britto da Silva, Naddumba, Mahaisavariya, Waddell, Zhen-Sheng, Singh, Tuan, Coughlin

Where Are We?

This group discussed relevant modifications or additions to the training programs for orthopaedic surgeons in LMICs, relevant to the local conditions, which will also facilitate the training of nonorthopaedists (medical doctors, para-professionals). A review of training programs in several of the LMICs is as follows:

- Africa: Basic surgical training (2–3 years) followed by orthopaedics (2 years).
- India: 1 year of general surgery followed by orthopaedics (3–4 years).
- Brazil: 3 to 4 years of orthopaedics.
- Middle East: Basic surgery (1 year) followed by orthopaedics (3 years).

All regions have postgraduate colleges that certify, examine, and award fellowships.

Where Are We Going?

The group felt that selected changes within the existing curricula should strengthen the training of orthopaedic surgeons in the LMICs.

1. All training should be locally based. Training in economically developed countries such as the United States or the European nations is less relevant because of differences in local pathology and in the

capacity to provide selected services (particularly those requiring more expensive technologies).

2. Training must be practical and focused on the local pathology.
3. A period of rural postings should be part of the training.
4. Educators from the various LMICs should work towards standardization of course content.
5. Emphasis on training by apprenticeship.
6. Internationalizing of qualifications or obtaining an international qualification could be through the SICOT exams.
7. LMIC training programs are sometimes deficient in analytic and research skills. This can be solved through local or international partnerships, including fellowships, elective postings, and requiring trainees to publish academic papers during their training.
8. Add the following course modules:
 - Management
 - Leadership
 - Advocacy
 - Teaching methodology
 - E-learning—There must be training on how to access and use e-learning tools.
 - CME—The idea of continuing skills and knowledge development should be inculcated during training.
9. Recertification—This is a contentious topic and should be left to individual countries to decide on its necessity and mode of administration.
10. Public/private partnerships should be developed and encouraged by involving private practitioners in imparting scarce skills.

How Do We Get There?

This will require action at the individual, institutional, and national levels. Key stakeholders include academic clinicians, professional societies (local, regional, international), and national licensing bodies. Changes at the institutional level may be followed by changes at the national level.

Breakout IVA

Research Agenda

Compiled by: Wahid Al-Kharusi

Facilitator: Bruce Browner

Rapporteur: Wahid Al-Kharusi

Participants: Drs. Arora, Awais, Dormans, Howard, Omololu, Quansah, Spiegel, Tuan

Where Are We?

There has been a paucity of research concerning the prevention and treatment of musculoskeletal injuries in low- and middle-income countries, perhaps due to lack of awareness that such injuries constitute a major public health concern (disability). Injury research has been underfunded, as have educational programs and training programs focusing on injuries. While a significant percentage of trauma patients do not reach a medical facility in the initial period (may go untreated or are treated by traditional practitioners), some present in a delayed fashion due to long distances to the treatment facilities. There is lack of political will to move injury prevention programs forward, and to deal with the deficiencies in facilities or in trained manpower in low- and middle-income countries, especially at the dispensary level. The lack of understanding what needs to be measured and the lack of expertise on how to conduct research is a major obstacle to determining the needs for proper trauma care.

Where Are We Going?

It was agreed that musculoskeletal trauma is an important problem that needs to be sponsored and promoted. In this session, the group formulated a work plan for a research agenda appropriate to the situation at the district hospital level.

We need *more accurate information* on the local, regional, national, and global burden of musculoskeletal disease. The burden of musculoskeletal diseases has been poorly quantified for a variety of reasons, such as the cost of conducting population-based surveys and deficiencies in existing data sets. Epidemiological studies are needed to determine the etiology and patterns of injury, and to quantify death and disability associated with musculoskeletal injuries. We also need to determine the most appropriate measurement indicators.

Many topics of interest for the research agenda were suggested. We need to better understand the burden of musculoskeletal injuries, in terms of morbidity, mortality, and disability. This will best be accomplished through community-based surveys, as hospital-based surveys likely underestimate the injuries since so many patients do not reach a treatment facility. A greater understanding of the capacity to deliver musculoskeletal trauma care, in terms of infrastructure, physical resources, and human resources, will be very important. We need to gain a better understanding of current educational efforts directed towards musculoskeletal injuries. A community-based study on perception of traditional practitioners, such as bonesetters, will help to understand self-referral patterns. A greater knowledge of the economic impact in both treated and

untreated patients would be desirable, as well as studies to evaluate the cost-effectiveness of programs designed for both the prevention and treatment of musculoskeletal injuries. We also suggest a study to outline current deficiencies in the provision of care, from the prehospital level through discharge from the inpatient ward, including the availability of rehabilitation and social reintegration.

For *advocacy*, we need to work with the decision makers and those capable of funding programs. We need to know both the burden and the cost-effectiveness of proposed treatment methods in order to convince government officials and others to invest in the prevention and treatment of musculoskeletal injuries. Changes must occur at the policy-level as well. We need to review and learn from others who were successful in advocating for their causes, eg, programs in AIDS, TB, and malaria.

How Do We Get There?

The group strongly advocated that, for research programs to commence and become a reality, healthcare providers who are asked to conduct this research must be trained on how to do so. The role of and collaboration with nongovernmental organizations, international orthopaedic societies, and both private and corporate partners was superficially discussed. It was agreed that their support, partnership, and sponsorship of these research protocols is mandatory and the only way forward.

Breakout IVB

Collaboration on Educational Programs

Facilitator: Richard Coughlin, MD

Rapporteur: Ashok Banskota, MD

Participants: Drs. Babhulkar, Bunn, Fisher, Mkandawire, Oloruntoba, Toma, Waddell, Wilkins, Zhen-Sheng

Where Are We?

A lack of training and education, along with a host of other variables, contributes to deficiencies in the delivery of care to patients with musculoskeletal injuries in low- and middle-income countries. Mechanisms through which information is transferred vary within and between countries, and educational efforts are often not organized in a systematic fashion.

Where Are We Going?

In order to begin to have any meaningful impact on the burden of musculoskeletal trauma and its sequelae,

musculoskeletal health workers must play the activist role to identify deficiencies in knowledge in the particular region seeking help. The needs assessment must be evaluated in both rural and urban settings, as each area poses unique barriers and challenges. Despite “urbanization with globalization” and its concomitant health demands, most low- and middle-income populations are predominantly rural where healthcare delivery is scarce. Both academic and nonacademic institutions (ministries of health) must provide accurate data, evidence of need, and human resource capacity required to begin prioritization of interventions and evaluation of effectiveness of healthcare.

Who are the stakeholders, and who should take responsibility? Alongside of the academic institutions and ministries of health, responsible players include professional societies, enlightened individual activists, civil society groups, and community-based organizations. Obviously, global stakeholders such as WHO, international societies (AAOS and SICOT), and NGOs (Red Cross/Red Crescent, HVO, VSO) can provide educational programming, expertise, and leadership in partnering with the national and/or regional professional societies.

The responsibility for this collaboration effort rests largely with organized local and regional bodies, professional organizations, institutions and universities in the recipient region. The helping partners also have their side of the responsibility to keep. Appropriate content of the collaborative effort must address local needs. Bilateral participation must be an integral part of the exercise. The venue for the program is the recipient country. Exceptions include exchange fellowships. Fellowships can be developed at the regional as well as national and international levels.

Education through the electronic media (Internet) must be promoted, as it can reduce costs and will be of greater importance in the future. It is necessary to develop long-term sustainable relationships at all levels. “Twinning” of institutions has provided a successful model with their synergies of teaching, training, and researching and should be expanded in the future to the benefit of both parties.

How Do We Get There?

The immediate action plan was to identify centers of excellence in the participating regions of the middle- and lower-income countries where resources and expertise can be concentrated, and outreach and regional educational programs be directed. Efforts from the stakeholders noted previously will be essential if we are to develop, promote, and implement educational courses to strengthen the delivery of care to those with musculoskeletal injuries in low- and middle-income countries.