
Uganda Sustainable
USTOP
Trauma Orthopaedic Program
Trip Report
February 2012

Contents

Background

The Uganda Sustainable Trauma Orthopaedic Program (USTOP) began in 2007 when Dr. Peter O'Brien, Dr. Piotr Blachut and Dr. Trevor Stone travelled to Uganda with Dr. Shafique Pirani to meet with members of the Department of Orthopaedics at Makerere University. Dr. Pirani had been working to improve Uganda's capacity to treat clubfoot for the past decade. During that time, he became aware of the overwhelming volume of orthopaedic trauma burdening the Uganda health care system.

With a seed grant from the Canadian Institutes for Health Research, the first USTOP team travelled to Uganda in April 2009. The group consisted of orthopaedic surgeons, anesthesiologists, nurses and a physiatrist. Since, that initial trip USTOP continues to expand its interdisciplinary partnerships to include plastic surgery, sterilization technicians and physiotherapy.

Team

Dr. Ghassan Alami, Orthopaedic Surgeon
Dr. John Blachut, Anesthesiologist
Ms. Regina Colistro, Physiotherapist
Ms. Vickie Grandinetti, Nurse
Ms. Alicia Green, Nurse
Dr. Balvindar Kaur, Anesthesiologist

Dr. Lise Leveille, Orthopaedic Resident
Dr. Peter O'Brien, Orthopaedic Surgeon
Mr. Nathan O'Hara, Coordinator
Ms. Naomi Roddick, Nurse
Dr. Andrea Simmonds, Orthopaedic Resident
Ms. Samantha Shone, SPD Technician

Teaching

Teaching | Bioskills Workshop

Number of Participants:

Surgeons	4
MMed - Orthopaedics	24
MMed - Surgery	17
Nurses	16
Theatre Assistants	6
Orthopaedic Officer/Technicians	8
Total	**75**

Program:

Saturday, February 18

Lecture – "History of Fracture Care and the AO Principles"
Case Presentation – ankle fracture
Lecture - Fracture classification
Lecture - Bone Healing

Sunday, February 19

Lecture - Fracture Reduction
Lecture – The Spectrum of Stability
Lecture – Screw design and function
Position screw, lag screw technique,
Lag screw by design practical exercise
Lecture Plate Design and Function
Lag screw with neutralization plate
Compression plating
Buttress plating
Lecture - Ankle fracture
Practical exercise - ankle fracture
Lecture - Tension Band Principles
Tension band wiring - Olecranon fracture

Saturday, February 25

Lecture - Principles of External Fixation
External Fixation – uniplanar, multiplanar
Lecture - Pelvic Fractures &
Demonstration External Fixation – Pelvis
Practical exercise
IM nailing – Femur
IM nailing – Tibia
Lecture – Diaphyseal fractures of the tibia and fibula
Practical exercise – DHS proximal femur
Lecture - Nonunion
Practical exercise
Cannulated screws – proximal femur
DCS distal femur
Lecture "Violation of the Principles – How Not to do AO"

Teaching | Bioskills Workshop

Evaluation from Partcipants: on a scale of 1(low) to 5 (high)

1. The communication of the goals and requirements of the course. **4.7**
2. The quality of lectures in terms of organization and clarity. **4.7**
3. The organization and legibility of visual presentation (blackboard/overhead/computer-aided, etc.). . **4.6**
4. The quality of the instructor's oral presentation. **4.5**
5. The instructor's response to the questions posed in the class. **4.6**
6. The instructor's availability for individual consultation during workshop. **4.6**

1. The workshop material covered topics that are relevant to my practice. **4.6**
2. The videos were an important to understanding the topics. **4.8**
3. I am satisfied with my level on interaction with the instruments/course materials. **4.4**
4. The workshop has provided me with applicable skills. **4.7**

5. The most important topics that I learned from this workshop was...
   External Fixation; Tibial Nailing; Management of Ankle Fractures; How to prepare the necessary instruments
6. One topic that I wish was included in this workshop is…..
   SIGN Nailing, Hip Arthroplasty, Acetabulum Fractures; Humerus Fracture Fixation; Important Anatomical Structures to be Cautious of Illizarov Fixation; Bone Grafting; How to Develop Research Projects; Tendon Repairs, the Role of the Nurse in the OR

1. Your level of enthusiasm for taking this course at the time of initial registration. **4.4**
2. Your level of enthusiasm for this course now. **4.7**

Teaching | Orthopaedics

Morning Teaching Sessions

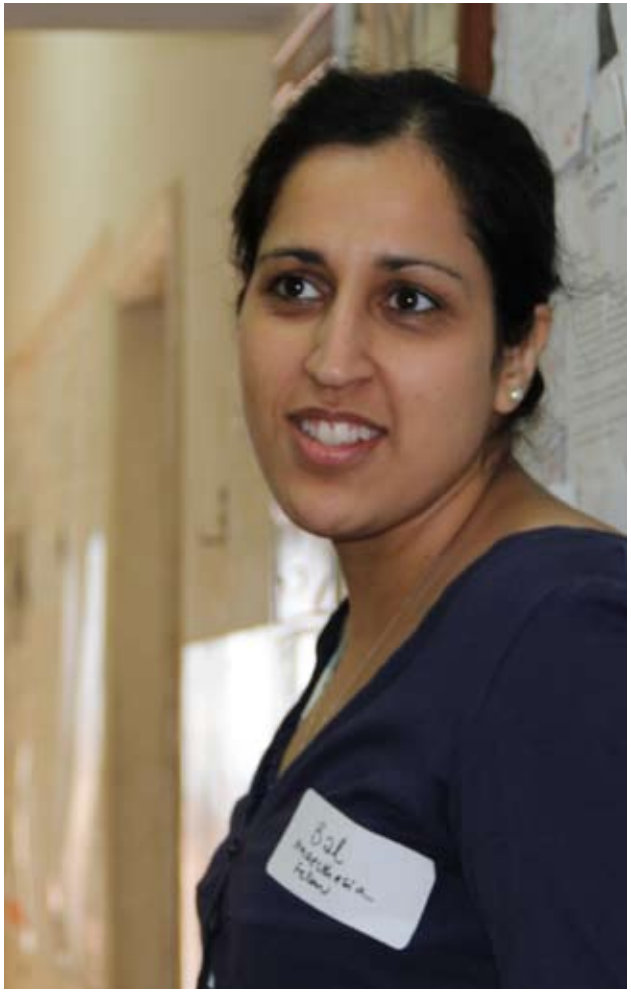
Total of 7 sessions in the 2 weeks

Topics covered:

- Compartment syndrome
- Pelvic fractures - acute and definitive management
- Humeral fractures
- Proximal femur fractures
- Preparing a Powerpoint presentation
- Planning a research project
- Avoiding complications

Attendance varied between 1 and 10 residents.

Teaching | Anesthesia



Resident teaching: Held weekly (Thursdays) from 800 to 1330

Attendance:

- Nearly 100% of the 1 st and 2 nd year residents, who also ran the session via a nominated chairperson. 3 rd years were often concentrating on their research projects so did not usually attend sessions.
- Most staff anesthesiologists were present throughout the session to provide feedback and clarify learning points in presentations

Notes

My presence was to provide some clinical relevance to the topics presented, as well as provide further reading and reference material based on latest evidence and guidelines. The residents seemed eager to learn, and were well versed with the use of power point presentations. There was still a lack of clinical relevance in many topics, although feedback to the presenters often opened a forum to discuss relevant clinical cases pertaining to the subject. The residents demonstrated sound clinical experience based on discussions and my emphasis was placed on teaching them how to structure their approach in practice and when answering clinical scenarios for exams. This followed on by a presentation I held on the last day at Mulago where I went through two case based discussions to highlight the latest **Advanced Trauma Life Support** (ATLS) and **Advanced Cardiac Life Support (ACLS) Guidelines**, and give an overview of ultrasound guided blocks in the upper limb. Nearly 95% of the anesthesia residents attended the presentation.

Dr Balvindar Kaur, MBBS, FANZCA,
Anesthesia Fellow , VGH, Vancouver

Teaching | Nursing

Nurse-specific focus at Feb. 19 Workshop:

- Identify the instruments and load the drill bits properly
- Identify the difference between a cortical and cancellous screw (partially threaded short or long thread and fully threaded; how to measure the screw length correctly; and how to load a washer onto the screw
- Recognize the sequence of what was required for insertion of a lag screw (large and small fragment) and screw fixation with a plate for a midshaft tibial fracture, tibial plateau, distal radius, and tension band wiring of an olecranon

Ward 7 Teaching:

- Case organization and expedition of the slate
- Communication with the surgeon prior to the case
- Decontamination and sterilization issues
- Aseptic principles
- Demostration of closed gloving technique
- The importance of attending to the patient during induction and extubation of general anesthesia.

Textbooks/ Materials Provided

- ORNAC Standards and Guidelines
- Alexander's Care of the Patient in Surgery (13th ed.)
- Perioperative orthopedic text
- Review of the Bioskills workshop information (also left in **Casualty Theatre**)
- Summary of aseptic principles.

Casualty Teaching:

Due to the heavy workload, finding time to provide teaching sessions was difficult. Some success was obtained with individual teaching pertaining to sterile technique, for example.

Teaching | Physiotherapy

Formal Teaching Sessions

- Spinal Cord Injuries, respiratory care, skin care and rehab
  Attended by: spine nursing staff

- A two hour lecture encompassing post op orthopedic trauma physiotherapy care, and spinal cord injuries. The lecture included demonstration of neck braces, abdominal binders, and a practical spinal cord muscle test assessment for classification of injuries.
  Attended by: 2nd and 3rd year Physiotherapy Students at the School of Physiotherapy

- A continuing education session relating to orthopedic trauma physiotherapy, and spinal cord injuries, which included respiratory, neck braces, and a practical session on turning patients with neck fractures.
  Attended by: Physiotherapists of Mulago Hospital

Informal Teaching:

Provided to the nursing staff, patient families, and rehab staff who were working with the patients on the spine unit

Materials Provided

- Philadelphia neck collars
- Abdominal binders
- Other supplies for use on the Spine Unit.
- Assisted the Occupational therapist/orthopedic workshop in arranging to have physiotherapy equipment (balance/ strengthening blocks) and sliding board made in the workshop for present and future use by the spinal cord patients

Clinical Activity | Casualty & Ward 7

A wide variety of acute and subacute cases were performed conjointly with the Mulago residents, nurses, and anesthetic assistants; and that emphasis was placed during this visit on the functioning of Casualty theatre as well as the knowledge and skills of the residents amd staff in that context.

Recommendations | Casualty

Procurement of more resources (instruments, implants) is clearly essential for improving the efficiency of Casualty. However, with the same resources currently available, the case rate can be increased by at least 50% if the system is made more efficient, through addressing the following matters

Autoclave

• Immediate repair and ongoing maintenance of current autoclave – the importance of this needs no elaboration! (We highly recommend procurement of newer and larger one.)

Instrument Maintainence

• Continuous maintenance (sharpening, tightening, oiling, etc.) of current instruments, which makes surgeon's interventions faster and less hazardous, and which eliminates need to fetch and contaminate multiple instrument sets due to multiple defective instruments
• Streamlining transfer of instrument sets between different theatres
• Dedication to Casualty of sets that are used most frequently in Casualty
    * Casualty is only department operating around the clock and treating urgent and critical cases, so its maintenance and procurement requests should be expedited and given top priority by Hospital administration

Instrument Preparation

• List of contents of each instrument set posted on wall of sterile area
• Pre-sterilized instrument sets that are complete (as per list of contents)
    * must eliminate need to open and check contentsof prepared sets
    * must minimize addition of individual instruments
• Clearer definition of roles in process of instrument preparation: residents write clearly what is needed, nurses set up trolleys
    * eliminating role confusion and overlap facilitates accountability (and correction) when instruments are not prepared properly and on time
• Preparation of all needed instruments at once prior to start of case (including closure sutures, dressings, etc.) to minimize wait times, surprise shortages, and room-to-room circulation
• Introduction of basic inventory/restocking system, at least in form of list on wall of "implants to be restocked"

Case-List Logistics

• Case list submitted early: preliminary list made on ward on previous day, modifications by on-duty team made only if necessitated by medical urgency of new cases, preferably without changing first case of preliminary list

• As few changes as possible in order of cases, to help nurses prepare needed sets ahead of time and prevent surprise shortages
• Case list includes clear indication of basic instrument sets needed as well as any special instrument/anesthetic requirements (including diathermy and tourniquet)
• Instruments (+/- implants) for first case prepared night before or early morning, ready by 9 AM
• First patient made ready at door of theatre at 9 AM (with prior verification of all necessary labs, preparation) for anesthesia interview and preparation

Case Turnover

• Early notification by surgeon in charge when time is right for calling down next patient on list and preparing instrument trolley for next case
• Only starting case when at least one nurse is present in operating room

Surgeon Supervisor and Education

• Presence of consultant surgeon – or at least senior resident – teaching juniors how to operate properly and efficiently, thus accelerating procedure and avoiding errors (which themselves have often necessitated return of same patient to theatre, with attendant waste of theatre and ward-admission time, not to mention consequences on patient's outcome)
* Presence of consultant surgeon, at least on occasion, would also give him first-hand awareness of dire situation (in terms of efficiency and sterility) and would probably cause all team members, including nursing and anesthesia, to work more efficiently.

Recommendations | Physiotherapy

1. **Include physiotherapy in the team approach to trauma.** Continue a physiotherapy presence with the USTOP program, with a view to modeling the team approach to trauma treatment, providing specific physiotherapy support on the orthopedic /trauma, and spine wards, and helping to assist in elevating the level of physiotherapy care in the acute setting. Continued communication with Dr. Beyeza is essential.

2. **Ensure physiotherapists and physiotherapy students are included in educational opportunities.** On going communication with the Head of the School of Physiotherapy and the Principal physiotherapist of Mulago Hospital, to address ongoing educational opportunities as part of USTOP. As well, we recommend that the physiotherapists working in the areas of orthopedic trauma and spine be invited to the workshops being presented by USTOP. The physiotherapists could also be included in access to any online educational materials USTOP provides.

3. **Support of the Orthopedic and Physiotherapy Departments in any requests for increased rehab staff.** The physiotherapy care witnessed was appropriate and good, however, in the two weeks in the hospital, there were numerous postoperative orthopedic trauma patients who had need of, but were not seen by a physiotherapist. It is simply not possible for 2 therapists, who also cover other areas in the hospital, to see that many patients.

4. **Support physiotherapy expertise in Spinal Cord Injury Rehabilitation.** We recommend that a physiotherapist who expresses interest in developing expertise in the area of spinal cord injuries, be allowed to continue on the unit, rather that rotating off after one year. This will enhance the expertise of the team as a whole.

5. **Strengthen partnerships with the Spinal Injuries Association of Uganda.** Continued rehabilitation support to the Spine Team, as rehabilitation initiatives are developing. The staff will require education and training to optimize the level of rehab in a rehab unit setting, and ultimately to maximize the discharge home follow up through vocational and community rehab, especially to those who live far from Kampala. We recommend communication with and support of the Spinal Injuries Association of Uganda, as it is that organization the is doing much of the follow up on the community, and presently giving much of the rehabilitation guidance to patients in the community, despite the fact that they are not medically trained therapists Their expertise lies in the fact that their staff have survived a spinal cord injury, and are living full and independent lives.

Recommendations | Sterile Technique

Improvements in Ward 7:

- Sterilizing rack was made by the engineering department to improve the steam sterilizer cycle and ensure complete sterilization of the instrumentation.
- Staff of Ward 7 learned the ideal method for loading a steam autoclave to avoid wet loads.
- Instrument stringers were made and implemented into the sets to ensure complete sterilization and to better organize the contents of the sets.
- Staff learned wrapping methods for packing and correct materials to use.
- Reprocessing manual was created to support best practices and education of reprocessing medical devices based on the needs and materials available to Ward 7.
- Educational posters were created to support reprocessing processes in the department.

Areas of improvement:

- A reliable, functioning sterilizer for Casualty ward.
- Complete disassembly of specialty instruments (ex. Drill guides, depth gauges)
- Consistency in completionof instrument sets.
- Complete PPE for protection of staff.

Wish list supplies for next trip:

- Protective eye wear for decontamination (to protect against splashes)
- Reusable cautery pencils (valley labs) and cautery tips. Disposables are currently used and are soaked in HLD (not sterile) and will melt if sterilized.
- Autoclave tape and dispenser
- Reusable waterrepellant wrappers
- Smedburg (hand) drills
- Electric power equipment and power console that is converted to 240V

  This would probably be donated by Conmed. Reason being that Ward 7 cannot charge reliably charge the batteries. They are unable to sterilize the batteries (often gas sterilized) and the batteries have a very short shelf life.

Thank you

Thank you to the many people and organizations who make these trips possible.

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UBC Development Office
Zimmer Canada

Additionally, USTOP would like to thank Dr. Beyeza and the entire Mulago Hospital and Makerere University staff for another successful trip and a special thank you to Monica Kabagambe for tireless coordination.

UGANDA SUSTAINABLE

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TRAUMA ORTHOPAEDIC PROGRAM

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