Program Requirements for Orthopaedic Trauma Surgery Fellowship

I. Introduction

a. Orthopaedic trauma is a subspecialty of orthopaedic surgery that includes the in-depth study and treatment of musculoskeletal injuries in the multiply injured patient. Management of the sequella of these injuries and understanding the importance of the timing and titration of surgery in the multiply injured patient is the “cornerstone” of the teaching program.

b. The fellowship runs concurrently with the orthopaedic surgery residency training program. There are three key faculty for the Orthopaedic Trauma Fellowship, all of whom are orthopaedic trauma fellowship trained, that participate in the education of the orthopaedic surgery residents. Each of the faculty is involved in the teaching and supervision of the single orthopaedic trauma fellow throughout the twelve month period.

II. Institutional Resources and Organization

a. This system includes a free standing hospital with approximately 600 beds of which 120 are ICU beds. It has a free standing pediatric facility, a large emergency room, a digital radiology department, a supportive ancillary facilities including full-time anesthesia staffing as well as occupational therapy and physical therapy. This facility currently has ten post-graduate training programs with approximately 150 post-graduate residents. The closely associated orthopaedic surgery training program is a three resident per year (fifteen total) program.

b. The resources available to the orthopaedic trauma fellow include a clinical facility, an academic office, and a private orthopaedic practice. The clinical facility has approximately eight exam rooms and a self-supporting x-ray suite. A support staff is assigned to the clinic consisting of a manager/clinical cast tech, a receptionist, an x-ray tech and a medical assistant/clinical cast tech. Additionally, an orthopaedic x-ray file room and separate medical records are maintained on the clinic premises.

c. The academic side of the training program offers support staff for research in both clinical and biomechanical arenas as well as other administrative personnel to assist with necessary paperwork.

d. The facility also has a library with online access to most of the current journals and textbooks. There is also a free standing orthopaedic research laboratory and arthroscopy lab. The lab is equipped with an MTS testing system.

e. In addition to the facilities available to the orthopaedic surgery residency training program, the hospital itself has a very current and well respected medical library covering multiple disciplines. It is supported by two full-time librarians and is open 24 / 7 by a card key access.

f. The radiology department at the hospital has a state of the art digital imaging system and the staff to support and maintain an accurate radiographic file room. Images are also available via an online system.

g. There is also a very busy emergency room with several full-time emergency room physicians staffing the facility 24 / 7. There are

approximately 70,000 ER visits per year, of which 3,000 are considered trauma admissions.

h. Immediately adjacent to the clinic and hospital is a free standing private orthopaedic clinic where the three full-time faculty also have a private office. This facility has trauma cases carried back approximately nine years from the beginning of the trauma fellowship director's first employment at the institution. The two other faculty hold at least six years and an additional one year's worth of trauma follow-up. The trauma fellow has these records, both radiographic and medical records, at their disposal for use as a potential database.

i. The supporting institution, is very supportive of the post-graduate training programs and the orthopaedic trauma fellowship as well. There is cooperation with the other clinical services especially from emergency medicine, general surgery, anesthesia, rehab and radiology as previously stated.

III. Program Personnel

a. Program Director

The program director is licensed to practice in the state without restriction. He has adequately demonstrated clinical and educational abilities over the last 14 years with the university. Additionally, he continues to pursue research in both the clinical and biomechanical setting. He is board certified and has an active clinical practice with privileges at the main institution. He is an active member of the OTA.

b. Support Staff

The Residency Program Coordinator, Department Administrative Assistant, and Orthopaedic Librarian, Orthopaedic Research Coordinator also assist the Fellowship Program Director and the Department Chair in administering the Orthopaedic Trauma Program. Other Orthopaedic Surgery faculty are also involved in the Orthopaedic Trauma rotations and didactics.

IV. Goals and Objectives

The goals and objectives of the orthopaedic trauma fellowship are to help advance the orthopaedic surgeon's understanding of the treatment of severely injured polytraumatized patients with significant musculoskeletal injuries. This includes how these injuries affect the overall well-being of the patient, understanding the treatment of multiply injured patients in a critical care setting; the timing and titration of necessary musculoskeletal surgery and the effects it may have on the overall well-being of the patient. In addition to further complimenting their didactic education, attempts to advance their psycho motor skill set will be made. "Fine tuning" their ability to manage complicated articular fractures of the upper and lower extremity as well as management of significant pelvic ring disruptions and acetabular fractures will be emphasized.

The goals and objectives of the fellowship include:

1. Evaluation of injured patients both isolated and polytraumatized.
2. Performance of a thorough musculoskeletal exam of the polytraumatized injured patient.
3. Order appropriate studies of injured patients.
4. Determine the diagnosis of the patient.
5. Refine surgical skills with management of more simple fracture patterns.
6. Review the appropriate treatment of each patient as they have presented in a retrospective fashion in a fracture conference.
7. Create a treatment plan for each patient as they arrive.
8. Discern the principles of acute fracture management, both operative and non-operative and how these apply to each patient.
9. Carryout the treatment plan in a competent manner.
10. Communicate with other services including trauma surgery, neurosurgery, plastic surgery, to delineate the care needed to treat their musculoskeletal injuries and facilitate their best outcome.
11. To learn to appropriately diagnose and manage the musculoskeletal complications which occur in the multiply injured patient.
12. To discern the treatment plan in cases requiring surgical intervention with preoperative, intraoperative and post-operative planning.
13. To learn to appropriately manage the multi trauma patient with more severe peri articular fractures including but not limited to articular

injury to the shoulder, elbow, wrist, hip, knee and ankle as well as pelvis and acetabulum.

14. Develop a psycho motor skill set to perform difficult and invasive procedures throughout the body including the pelvis and acetabulum.

Implementation/Curriculum

1. Monthly fracture conferences center over one specific skeletal domain. We review the diagnosis and classification of these injuries as well as the many different treatment modalities. Post-operative case presentations and the treatment rendered are scrutinized. A review of the pertinent literature will ensue.
2. Associated closely with the orthopaedic surgery training program, there is a host of didactic lectures throughout the course of the year to address the basic science of fracture mechanics, fracture healing, treatment of osteomyelitis, the biomechanics of implants and management of nonunions.
3. Biweekly orthopaedic trauma topic one-hour Socratic lectures, including evaluation and care of multiply injured patients, principles of internal and external fixation, compartment syndrome, osteomyelitis, nonunions and specific anatomic fractures of pelvic and appendicular skeleton are discussed and reviewed.
4. Multi-disciplinary trauma rounds are held approximately every two months and are attended by general surgery, orthopaedics, neurosurgery, plastic surgery, and anesthesia.

5. Daily trauma checkout rounds are held with the trauma attendings, residents and the fellow.
6. Monthly morbidity and mortality (complications) conference.
7. Bimonthly orthopaedic trauma journal club.

Fellow Responsibilities

The fellow's responsibilities are to be involved in all aspects of the care in the trauma patients including preoperative, intraoperative and postoperative management. The fellow is under the direct supervision of the orthopaedic trauma faculty. When a chief resident is involved, the orthopaedic fellow will be secondary to the chief resident in the management plan, although their treatment plan will be reviewed with the orthopaedic trauma faculty member responsible for that patient. The chief resident will run the service with the fellow acting in a support role. When the chief resident is not involved, the fellow will be expected to manage the treatment of that patient.

Assistance in Surgery

The orthopaedic trauma fellow, in conjunction with the orthopaedic chief resident on the trauma rotation and in addition to a faculty member on the orthopaedic trauma team, is responsible for the timing and titration and planning of all the surgical procedures on each trauma patient. The fellow is expected to have read prior to all surgical procedures in order to obtain

maximum educational benefit. The fellow has unlimited textbooks available as well as pertinent articles that will support the treatment arm and further the understanding of the patient's condition and treatment modalities. Discussion of the surgical case with the attending preoperatively, intraoperatively and postoperatively is a critical part of their education process.

Assistance in Clinic

The orthopaedic trauma fellow is expected to attend orthopaedic trauma faculty private clinics at least one half day per week, and is encouraged to participate in the residents' trauma clinic on Friday morning. They are to assist in the formulation of treatment plans much to the level of an attending surgeon, but all plans will be reviewed by the orthopaedic trauma faculty. Physical and radiographic examinations of each patient are reviewed with the attending orthopaedic surgeon staffing the clinic. Teaching junior level residents the physical and diagnostic skill sets is a part of the orthopaedic trauma fellow's responsibilities.

Morning Rounds

The orthopaedic trauma fellow is responsible for attending 6:45 AM checkout rounds on the 2nd floor of the hospital in the orthopaedic library with the Orthopaedic Trauma surgeons. These rounds will be rather brief but include discussion of all patients admitted the night previous. All appropriate x-rays for those patients are available for review to highlight in a short manner

pertinent findings. Previous surgical patients with postoperative radiographs will be critiqued for teaching purposes. Pre-operative planning is done following morning report for that day's orthopaedic trauma cases with trauma attending staff. Teaching patient rounds will often follow Tuesday through Friday. Grand Rounds follow these rounds on Mondays.

Routines and Protocols

The orthopaedic trauma fellow is responsible for three and one-half days of surgical education in the operating room with the three orthopaedic trauma attendings. One half day a week is reserved for private clinic evaluation of patients with one of the orthopaedic trauma staff and the other half day in the orthopaedic surgery trauma clinic. The final one half day is reserved for research endeavors and will be encouraged to be used in such a way as to hopefully bring to fullation a research project prior to completion of their fellowship.

Research

Fellows are encouraged to take an active part in ongoing or new basic science or clinical research. Research efforts should result in one of the following:

1. Production/submission of a publication quality manuscript.
2. Production of an abstract suitable for submission to a national

meeting.

3. An IRB application completion/submission.

Reading List

In addition to all textbooks and journals in the library, the orthopaedic trauma fellow is asked to assimilate and become familiar with the following

1. Hoppenfeld's *Surgical Exposure in Orthopaedics: The Anatomic Approach*
2. *Skeletal Trauma: Adult and Pediatrics* 3rd edition
3. the 4th edition AO Manual
4. *Campbell's Operative Orthopaedics* 9th edition
5. Tile's textbook on *Pelvic and Acetabular Surgery*
6. Letournel's textbook on *Acetabular Surgery*
7. Mast book on *Indirect Reduction Technique*
8. The *Journal of Orthopaedic Trauma* – will be reviewed each month with the orthopaedic trauma attendings
9. The Master's Series on *Fracture Management*

Extra-mural Educational Events and Opportunities

- $1500 annual Department of Orthopaedic Surgery allowance for education (travel, lodging and course registration).
    1. Assistance/grants for AO Trauma North America Advanced Course attendance, if not already completed, or AO Trauma North America

Solutions course.

2. Orthopaedic Trauma Association Annual Meeting.
3. Participation in annual pelvic and acetabular course (AO Trauma North America or Stryker Letournel course).
4. Annual OTA fellow's "Boston" course.

Skills List

A predefined skill set will hopefully be obtained by the orthopaedic trauma fellow over the course of one year. In addition to the knowledge and understanding of management of musculoskeletal injuries, the specific skill set will be to

1. Organize and administer care to all patients on the orthopaedic trauma service with the chief resident of the orthopaedic surgery residency training program.
2. To help, evaluate and train PGY-1, PGY-2 and PGY-3 level orthopaedic surgery residents.
3. To describe and perform most acetabular and pelvic surgery with the assistance from the orthopaedic trauma staff.
4. Be able to prepare orthopaedic trauma M & M reports on a monthly basis.
5. Be able to discern the appropriate time and amount of surgery for all patients that are multiplied injured.

6. Perform all the necessary surgery on the multiply injured patient with articular fractures of the upper and lower extremity as well as the more common fractures of the musculoskeletal system.
7. Complete a biomechanical and/or clinical orthopaedic trauma research proposal with completion of IRB approval during fellowship year.