UNIVERSITY OF ROCHESTER ALLERGY/IMMUNOLOGY & RHEUMATOLOGY DIVISION
CURRICULUM IN *RHEUMATOLOGY*

TRAINING PROGRAM MISSION STATEMENT

It is the mission of this fellowship program to train physicians to become consultants who will be clinically competent in the field of Rheumatology; who are prepared to work in a variety of settings including private practice, academia, and other settings; and who will continue life-long learning in clinical and research areas which will enhance their knowledge base, skills, and professionalism.

GENERAL GOALS AND OBJECTIVES OF THE TRAINING PROGRAM

The specific goals are derived from the Mission Statement and include measurable competency in the 6 areas outlined by the ACGME:

1. **Patient care:** compassionate, appropriate, and effective care for the treatment of health problems and the promotion of health in the ambulatory clinic, the hospital floors, the emergency room, the intensive care unit, and other settings in both in the private arena and academic settings.
   - History taking and physical examination skills
   - Medical record keeping skills
   - Problem solving ability
   - Differential diagnosis
   - Treatment plan
   - Clinical judgment
   - Patient communication skills, patient education
   - Competent performance of procedures
   - Humanistic qualities

2. **Medical knowledge:** core knowledge base in multiple disciplines including anatomy, biochemistry, epidemiology, ethics, genetics, human behavior, immunology, pharmacology, physiology and statistics as they apply to Rheumatology and the application of this knowledge to patient care.
   - Basic science knowledge
   - Clinical knowledge
   - Knowledge and clinical application of current literature

3. **Practice-based learning and improvement:** evaluation of one's own patient care, appraisal and assimilation of scientific evidence, and improvements in patient care.
   - Analysis and modification of clinical practice in systematic manner
   - Use of information technology and resources to improve patient care
   - Demonstration of self directed learning

4. **Interpersonal and communication skills**: effective information exchange and collaboration with patients and their families as well as with other health professionals.
   - Communication that is effective with patients and family
   - Function as a team member/leader (commensurate with year of training)
   - Quality of oral presentations

- Treatment plan
    - Safely and effectively use nonsteroidal anti-inflammatory drugs, disease-modifying drugs, biologic response modifiers, glucocorticoids, cytotoxic drugs, antihyperuricemic drugs, and antibiotic therapy for septic joints in the management rheumatic diseases (1st year)
    - Understand indications for therapeutic injections of diarthrodial joints, bursae, and tenosynovial structures and recommend as appropriate. (1st year)
    - Understand indications for as well as the preoperative and postoperative medical and rehabilitative care of joint surgery and arthroscopic procedures (2nd year)
- Patient communication skills, patient education
    - Provide disease specific education on causes of rheumatologic conditions, preventative measures, treatment options, medication effects and adverse effects, and long term prognosis. (1st and 2nd year)
    - Be able to obtain informed consent for treatments and procedures. (1st year)
- Competent performance of procedures
    - Arthrocentesis and intra-articular injection (1st year)
    - Tendon and bursal injections (2nd year)
    - Microscopic analysis of synovial fluid (1st year)
    - Ultrasound of musculoskeletal structures for diagnosis (2nd year)
    - Ultrasound-guided needle placement into joint and soft tissue structures for aspiration or therapeutic injection (2nd year)
- Preventive health
    - Discuss indications for and recommend appropriate vaccinations (1st year)
    - Discuss indications for and recommend disease-specific screening for cardiovascular, neoplastic, and other complications of rheumatic disease (1st year).
- Medical team
    - Initiate appropriate referrals to other specialists including Orthopedics, Nephrology, Neurology, Ophthalmology, Dermatology, Gastroenterology, Physiatry, and others, and demonstrate effective communication and care coordination. (1st year)
    - Effective use of physical therapy, occupational therapy, social work, and other health professionals. (1st year)

2. **Medical knowledge:**
- Clinical knowledge
    - Understand the pathophysiology, and management of rheumatologic diseases including connective tissue diseases (CTD), rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), scleroderma (PSS), polymyositis (PM), dermatomyositis (DM), seronegative spondyloarthropathies, vasculitis, crystal-induced synovitis, osteoarthritis, regional musculoskeletal pain syndromes, nonarticular rheumatic diseases including fibromyalgia, nonsurgical, exercise-related (sports) injuries, systemic diseases with rheumatic manifestations, metabolic diseases of the bone including osteoporosis, infection of joints, and acute and chronic musculoskeletal pain. (1st and 2nd year)
    - Participate in Rheumatology review and discussion sessions. (1st and 2nd year)
    - Present cases on rounds and at teaching conferences. (1st and 2nd year)
    - Demonstrate independent learning based on patient care needs. (1st and 2nd year)
- Basic science knowledge
    - Understand the underlying anatomy, biochemistry, epidemiology, ethics, genetics, human behavior, immunology, pharmacology, physiology and statistics as they apply to Rheumatology.
        - 1st year – basic understanding.
        - 2nd year – ability to discuss at the level of a practicing subspecialist.

- Accept responsibility for continuity of patient care.
- Sensitivity (1st and 2nd year)
  - Demonstration of respect, compassion and integrity towards patients, family, and colleagues.
  - Demonstrate sensitivity to culture, age, gender, sexual orientation, and disability.

6. **Systems-based practice:**
   - Demonstration of ability to utilize available resources to provide quality medical care and advocate effectively for patients to ensure access. (1st and 2nd year)
   - Practice high quality medical care. (1st and 2nd year)
     - Participate in quality assessment and improvement initiatives within the division.
   - Practice of cost-effective medical care. (1st and 2nd year)
     - Understand the costs of medications prescribed to patients and how they pay for them.
   - Demonstration of understanding of role as a rheumatology consultant in the larger context of the health care system. (1st and 2nd year)

SPECIFIC GOALS AND OBJECTIVES by ROTATION

GOALS AND OBJECTIVES OF THE AMBULATORY EXPERIENCE

1. Become proficient in evaluating, diagnosing, treating and monitoring patients with rheumatologic diseases in the out patient setting, including:
   - rheumatoid arthritis (RA),
   - systemic lupus erythematosus (SLE),
   - scleroderma (SS),
   - inflammatory myopathies including polymyositis (PM) and dermatomyositis (DM),
   - seronegative spondyloarthropathies,
   - vasculitis,
   - crystal-induced synovitis,
   - osteoarthritis,
   - regional musculoskeletal pain syndromes,
   - nonarticular rheumatic diseases including fibromyalgia,
   - nonsurgical, exercise-related (sports) injuries,
   - systemic diseases with rheumatic manifestations,
   - metabolic diseases of the bone including osteoporosis,
   - infection of joints,
   - acute and chronic musculoskeletal pain.
2. Develop an understanding of the natural history of rheumatologic conditions over an extended period of time.
3. Become proficient in taking a high-quality medical history, performing a complete and accurate musculoskeletal examination, fluid analysis, laboratory interpretation, and interpretation of radiologic imaging studies.
4. Become proficient in formulating an appropriate differential diagnosis based on critical analysis of the data and integration of this analysis with a basic fund of medical knowledge.
5. Develop the ability to appropriately order further diagnostic studies based on the differential diagnosis.
6. Develop the ability to formulate an appropriate therapeutic plan based on critical analysis of the data and integration of this analysis with a basic fund of medical knowledge.
   - Develop an understanding of the risks, benefits, contraindications, costs, and expected outcomes in the outpatient setting of pharmacotherapy (including nonsteroidal anti-inflammatory drugs, disease-modifying drugs, biologic response modifiers, glucocorticoids, cytotoxic drugs, antihyperuricemic drugs,

The faculty member will supervise all diagnostic aspiration, therapeutic injections, and fluid analyses until the fellow is credentialed and then will provide general supervision. The faculty member will document supervision by signing the fellow's clinic note. The fellow will be responsible for dictation of the clinic note, follow up of any diagnostic or monitoring studies, and appropriate referrals to consultants and therapists.

(3) Independent Study and Conferences: The fellow is expected to supplement his ambulatory clinic experience with independent reading (see Rheumatology Fellowship Reading List). Clinical conference and Multidisciplinary Conference will provide a venue in which to discuss clinic cases in a formal and scholarly manner while Case Conundrum will a provide a venue in which to discuss diagnostic and treatment dilemmas in a group setting. Journal Club will provide an opportunity to review and discuss the most current advances in pathophysiology and treatment. Radiology Conference will provide and opportunity to both classic radiographs for teaching purposes and complex radiographs for patient care purposes. Grand Rounds will provide scholarly reviews on less common topics. Research Conference will provide cutting edge treatment information.

Evaluation During the Ambulatory Experience:

(1) Evaluation of the Fellow: Using the Allergy/Immunology and Rheumatology Unit self-assessment form (assessment of patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice), the fellow will complete this using clinic experiences. The faculty will complete their clinical competency assessments of the fellow annually using clinic experiences. The fellow will be evaluated on a semi-annual basis using the appropriate Unit evaluation form via E*Value (assessment of patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice) by each faculty member who supervises the fellow in clinic. The Program Director will also collect verbal feedback from each faculty member with whom the fellow works in clinic on a semi-annual basis (assessment of patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice). Nurses, Clin Techs, and clerical staff will evaluate the fellows twice a year using the appropriate Unit evaluation form (assessment of interpersonal and communication skills, professionalism, and systems-based practice). Twice a year, the fellow will be observed performing a complete new patient evaluation and his performance and evaluation of the patient will be reviewed. Usually one of these is of an outpatient. Residents who complete an Allergy/Immunology and Rheumatology elective will also provide feedback on the fellow's effectiveness as a teacher. On a semi-annual basis, the Program Director will review with the fellow the evaluation forms and the verbal feedback.

(2) Evaluation of the Faculty: On a semi-annual basis, the Program Director will elicit verbal feedback from the fellows and will share it with the faculty. At the end of the year, the fellow will complete an anonymous evaluation of the faculty.

(3) Evaluation of the Ambulatory Experience: On a semi-annual basis, the Program Directory will elicit verbal feedback from faculty and fellows. At the end of each year the fellows will complete an anonymous evaluation of the program.

GOALS AND OBJECTIVES OF THE INPATIENT CONSULTATIVE EXPERIENCE

1. Become proficient in evaluating, diagnosing, treating and monitoring patients with rheumatologic diseases in the emergency, inpatient, and intensive care settings, including:
    - Acute and severe cases of systemic lupus erythematosus (SLE), scleroderma (SS), inflammatory myopathies including polymyositis (PM) and dermatomyositis (DM), and other connective tissue diseases (CTD).

Strong Memorial Hospital for which the Allergy/Immunology and Rheumatology service is the attending of record.

The consult team consists of an attending, one to two fellows, medical residents as assigned, and medical students as assigned. Fellows will assign new consults in a rotating fashion to members of the team. When a fellow is assigned a consult, he is expected to complete a thorough evaluation including a history, physical exam, and review of the diagnostic studies. He will then write a consult note which will include an accurate and legible summary of the data as well as a complete differential diagnosis and evaluation and treatment plan. When a resident or medical student is assigned a consult, the fellow will familiarize himself with the case and will ensure that timely follow up of symptoms, physical findings and diagnostic studies occurs.

All members of the team will be supervised on a daily basis by the attending. The attending will round with the entire team during the week and with the resident or fellow on call on weekends. The attending will also be available after rounds to see new consults as necessary and will be available at all times for questions or problems which arise. Teaching by the attending will occur on rounds and will be centered around the diagnoses and problems of the patients currently on the team. The fellow will supervise, direct, and teach the residents and medical students within the scope of his current level of training. The attending will supervise all diagnostic aspirations, therapeutic injections, and fluid analyses until the fellow has been credentialed. Once the fellow has been credentialed, he may perform these procedures independently and may supervise residents and medical students with the back up and general supervision of the attending physician.

(2) Independent Study and Conferences: The fellow is expected to supplement his consultative experience with independent reading (see Rheumatology Fellowship Reading List).

Clinical conference and Multidisciplinary Conference will provide a venue in which to discuss clinic cases in a formal and scholarly manner while Case Conundrum will a provide a venue in which to discuss diagnostic and treatment dilemmas in a group setting. Journal Club will provide an opportunity to review and discuss the most current advances in pathophysiology and treatment. Radiology Conference will provide and opportunity to both classic radiographs for teaching purposes and complex radiographs for patient care purposes. Grand Rounds will provide scholarly reviews on less common topics. Research Conference will provide cutting edge treatment information.

<u>Evaluation During the Consultative Experience:</u>

(1) Evaluation of the Fellow: Using the Allergy/Immunology and Rheumatology Unit self-assessment form (assessment of patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice), the fellow will complete semi-annually using consultative experiences. The fellow will be evaluated by each attending with who they work using the standard Allergy/Immunology and Rheumatology Unit evaluation form via E*value. Annually the fellow is observed performing a complete history and physical on a new patient and his evaluation of the patient is reviewed. A consult patient may be used for this exercise. The Program Director will also collect verbal feedback from each faculty member with whom the fellow works on the consult service twice a year. Residents who complete an Allergy/Immunology and Rheumatology elective will also provide feedback on the fellow's effectiveness as a teacher. Twice a year the Program Director will review with the fellow his evaluation forms and the verbal feedback.

(2) Evaluation of the Faculty: Twice a year the Program Director will elicit verbal feedback from the fellows and will share it with the faculty. At the end of the year the fellow will complete an anonymous evaluation of the faculty through E*Value.

(3) Evaluation of the Consultative Experience: Twice a year the Program Directory will elicit verbal feedback from faculty and fellows. At the end of each year the fellows will complete an anonymous evaluation of the program through E*Value.

Methods of Teaching in the Pediatric Experience:

(1) Ambulatory Clinics: Fellows will attend at least 12 sessions of the Pediatric Rheumatology outpatient clinic during their second year of training (Dr. Siegel). Fellows will evaluate new and follow-up patients and will present their findings and assessment to Dr. Siegel. The faculty member will be physically present during clinic and will be available after clinic to discuss laboratory studies and diagnostic testing results when they become available. The faculty member will supervise procedures.
(2) The fellow will be responsible for follow up of any laboratory or diagnostic testing and will be responsible for discussing this data with the supervising faculty member.
(3) Independent Study and Conferences: The fellow is expected to supplement his consultative experience with independent reading (see Rheumatology Fellowship Reading List). Clinical conference and Multidisciplinary Conference will provide a venue in which to discuss clinic cases in a formal and scholarly manner while Case Conundrum will a provide a venue in which to discuss diagnostic and treatment dilemmas in a group setting. Journal Club will provide an opportunity to review and discuss the most current advances in pathophysiology and treatment. Radiology Conference will provide and opportunity to both classic radiographs for teaching purposes and complex radiographs for patient care purposes. Grand Rounds will provide scholarly reviews on less common topics. Research Conference will provide cutting edge treatment information.

Evaluation During the Pediatric Rheumatology Experience:

(1) Evaluation of the Fellow: The fellow will be evaluated by each attending whom they work using an Allergy/Immunology and Rheumatology Unit evaluation form via E*Value. Twice a year, the Program Director will review with the fellow his evaluation forms.
(2) Evaluation of the Faculty: Twice a year, the Program Director will elicit verbal feedback from the fellows and will share it with the faculty. At the end of the year, the fellow will complete an anonymous evaluation of the faculty.
(3) Evaluation of the Pediatric Experience: Twice a year, the Program Directory will elicit verbal feedback from faculty and fellows. At the end of each year the fellows will complete an anonymous evaluation of the program.

GOALS AND OBJECTIVES OF THE ORTHOPEDIC AND SPORTS MEDICINE EXPERIENCE

1. Fellows will gain experience in the evaluation, diagnosis, and appropriate referral of rheumatologic patients with orthopedic and exercise-related problems.
2. Become proficient in taking a high-quality history and in performing a complete and accurate musculoskeletal exam as they pertain to orthopedic and exercise-related problems.
3. Develop the ability to formulate an appropriate differential diagnosis for an orthopedic or exercise-related problem based on critical analysis of the data and integration of this analysis with a basic fund of medical knowledge.
4. Develop the ability to appropriately order further diagnostic studies, including ordering and interpreting radiologic studies, based on the differential diagnosis for patients with orthopedic and exercise-related problems.
5. Develop the ability to formulate an appropriate therapeutic plan for orthopedic and exercise-related problems based on critical analysis of the data and integration of this analysis with a basic fund of knowledge.
6. Develop an understanding of the risks, benefits, contraindications, costs, and expected outcomes of non-operative management, surgery, and post-operative rehabilitation.
7. Develop clinical competence in the evaluation and appropriate orthopedic or sports medicine referral of patients with rheumatic diseases and diseases with rheumatic manifestations.
8. Develop qualities of professionalism and humanistic skills.

EMG/NCS, functional capacity examinations, work hardening evaluations, and radiographic studies as they pertain to physical medicine and rehabilitation problems.

4. Develop the ability to formulate an appropriate therapeutic plan for physical medicine and rehabilitation problems based on critical analysis of the data and integration of this analysis with a basic fund of knowledge.
5. Understand the risks, benefits, contraindications, costs, and expected outcomes of non-operative management including bracing, physical therapy, occupational therapy and pharmacotherapy.
6. Develop clinical competence in the evaluation and appropriate physical medicine and rehabilitation referral of patients with rheumatic diseases and diseases with rheumatic manifestations.
7. Develop qualities of professionalism and humanistic skills.
8. Develop the interpersonal and communication skills necessary to communicate effectively to all members of the health care team both verbally and through written communications. Learn to document accurately and legibly in the outpatient record including history, physical, data, assessment including differential diagnosis, and plan.
9. Develop the skills necessary to educate referring physicians, students and residents, other health care professionals, and patients while exhibiting professionalism in all interactions.
10. Develop an understanding of community resources and interdisciplinary team needed to care for the orthopedic or sports medicine patient.
11. Develop and implement strategies for self-assessment and improvement in the ambulatory setting using practice-based learning and improvement.

Methods of Teaching in the Physical Medicine and Rehabilitation Experience:

(1) Ambulatory Clinics: Fellows will spend five clinics with a Physical Medicine and Rehabilitation faculty member. During these clinics they will evaluate new and return patients and discuss the patients with the attending. The faculty member will be physically present during clinic to supervise the fellow. They will spend one day with a Physical Therapist and one day with an Occupational Therapist. During these sessions they will evaluate new and return patients and discuss the patients care plans with the therapist.

(2) Independent Study: The fellow is expected to supplement his consultative experience with independent reading (see Rheumatology Fellowship Reading List). Clinical conference and Multidisciplinary Conference will provide a venue in which to discuss clinic cases in a formal and scholarly manner while Case Conundrum will a provide a venue in which to discuss diagnostic and treatment dilemmas in a group setting. Journal Club will provide an opportunity to review and discuss the most current advances in pathophysiology and treatment.

Radiology Conference will provide and opportunity to both classic radiographs for teaching purposes and complex radiographs for patient care purposes. Grand Rounds will provide scholarly reviews on less common topics. Research Conference will provide cutting edge treatment information.

Evaluation During the Physical Medicine and Rehabilitation Experience:

(1) Evaluation of the Fellow: The fellow will be evaluated by each attending with whom they work during this experience. Twice a year, the Program Director will review these evaluations with the fellow during their progress meetings.

(2) Evaluation of the Physical Medicine and Rehabilitation Experience: Twice a year, the Program Director will elicit verbal feedback from the fellows. At the end of each year the fellows will complete an anonymous evaluation of the program.

GOALS AND OBJECTIVES OF THE RESEARCH EXPERIENCE

1. Develop an understanding of the design and implementation of an original research project.

manifestations, metabolic diseases of the bone including osteoporosis, infection of joints, and acute and chronic musculoskeletal pain

(2) Provide an opportunity to learn about the risks, benefits, contraindications and necessary monitoring of use nonsteroidal anti-inflammatory drugs, disease-modifying drugs, biologic response modifiers, glucocorticoids, cytotoxic drugs, antihyperuricemic drugs, and antibiotic therapy.
(3) Provide an opportunity to develop a differential diagnosis and therapeutic plan in complicated patients by drawing upon the experience of multiple rheumatologists.
(4) Provide an opportunity to gain medical knowledge through critical review of the literature.
(5) Provide an opportunity for practice-based learning through the application of the medical knowledge obtained from a critical review of the literature to patient evaluation and treatment.
(6) Provide an opportunity for developing the interpersonal and communication skills necessary for teaching and the presentation of data.

Objectives of Case Conference

(1) Fellows will learn about specific diseases including but not limited to diffuse connective tissue diseases (CTD), rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), scleroderma (PSS), polymyositis (PM), dermatomyositis (DM), seronegative spondyloarthropathies, vasculitis, crystal-induced synovitis, osteoarthritis, regional musculoskeletal pain syndromes, nonarticular rheumatic diseases including fibromyalgia, nonsurgical, exercise-related (sports) injuries, systemic diseases with rheumatic manifestations, metabolic diseases of the bone including osteoporosis, infection of joints, and acute and chronic musculoskeletal pain in a didactic setting and will draw upon the experience of other rheumatologists.
(2) Fellows will learn about the risks, benefits, contraindications and necessary monitoring of use nonsteroidal anti-inflammatory drugs, disease-modifying drugs, biologic response modifiers, glucocorticoids, cytotoxic drugs, antihyperuricemic drugs, and antibiotic therapy in a didactic setting and will draw upon the experience of other rheumatologists.
(3) Fellows will draw upon the experience of other rheumatologists to develop skills in formulating an appropriate differential diagnosis and treatment plan.
(4) Fellows will develop the skills necessary for life-long learning and teaching.
(5) Fellows will improve their application of evidence-based medicine to the everyday care of the patient
(6) Fellows will improve clinical and diagnostic reasoning.

Methods of Teaching for Case Conference

Case Conference is held several times per month. It is designed to provide an informal setting to present a case for which the fellow has a particular question. These are questions that the fellows should be learning to generate on all their patients, an important part of the endless road to becoming a more thoughtful and scholarly clinician.

During the presentation, the fellow should present the history, physical exam, and labs and answer any questions from the group regarding this information. This should be followed by a discussion focusing on the question put forth by the fellow.

The only definite requirement for this conference is that it be focused (limiting it to 30 minutes will help with this). The fellows should utilize this conference with some flexibility to best meet their educational goals and interests. For example, the focus of the conference can be a diagnostic or treatment dilemma. Fellows can also use this conference to review focused topics of interest that represent a knowledge gap for them and are too limited for grand rounds (for example, present a patient with Pagets and then review the topic briefly because when you saw the patient in clinic you realized you knew little about the disease entity).

If diagnosis focused, a significant amount of time can be spent in group discussion about the differential diagnosis and appropriate work-up. An important goal of this conference is to generate this discussion. This goes one step beyond the case conundrum conference, however,

(2) Fellows will learn about the risks, benefits, contraindications and necessary monitoring of use nonsteroidal anti-inflammatory drugs, disease-modifying drugs, biologic response modifiers, glucocorticoids, and cytotoxic drugs in a didactic setting and will draw upon the experience of other rheumatologists.
(3) Fellows will draw upon the experience of other rheumatologists to develop skills in formulating an appropriate differential diagnosis and treatment plan.
(4) Fellows will develop the skills necessary for life-long learning and teaching.
(5) Fellows will develop the skills necessary for life-long continuous quality improvement.
(6) Fellows will learn the unique presentations of rheumatic diseases in the elderly and the unique treatment considerations in this age group.
(7) Fellows will develop an appreciation for the unique life goals of the geriatric population.
(8) Fellows will gain experience in the interpretation of histologic specimens.
(9) Fellows will gain expertise in succinctly presenting complex cases, with the right amount of detail and synthesis necessary to facilitate discussion among practitioners from various backgrounds.
(10) Fellows will draw upon the experience of other sub-specialists to develop skills in formulating an appropriate differential diagnosis and treatment plan.

Methods of Teaching for Multidisciplinary Conference

Multidisciplinary Conference is held once per month to every other month. During this conference a very complex case in which there is a diagnostic and/or treatment dilemma is discussed. This is followed by a multi-disciplinary discussion which includes all relevant specialists who were involved in the care of the patient, review of pathologic specimens, and a review of the pertinent literature focusing on evidence-based medicine. The fellow is expected to present the history, exam, and relevant data, as well as define the goals of the conference at the beginning. Targeted questions that are deemed important to answer for improving the clinical care of the patient should be stated up-front. These should be generated with faculty supervision before the conference. This is one of the more challenging but important/rewarding educational objectives of this conference. The fellow should become increasingly skilled at identifying the key gaps in clinical/scientific knowledge that are relevant to the case, generating targeted questions that can be answered by consulting the literature, identifying specific ways our consultants can contribute to care, and succinctly reviewing the relevant rheumatology literature.

Discussion of the differential diagnosis and specific topics chosen follows amongst all present. Although discussion should and could move outside these defined topics as guided by the interests of the group, the fellow (with attending help) should guide the discussion to the questions of interest. This is a challenging but important skill that we can all improve upon. It is expected that as fellows become more senior their facility with this will improve.

This is followed by brief presentations (5-10 minutes) (usually limited to 2 topics) by the fellow of the literature that pertains to the topics chosen for discussion. A goal is to inform the clinical care of the patient in as evidence based a fashion as possible. The fellow will increase their knowledge base about the particular disease entity and also recognize the limitations of the data in the literature. Over time, skill in making clinical decisions when the evidence based data is sub-optimal will increase. This is a critical skill to learn in rheumatology.

Evaluation of Multidisciplinary Conference

(1) Evaluation of the Fellow: An evaluation form will be completed at the end of each conference by attendees. The fellow will be evaluated on a semi annual basis through verbal feedback gathered by the Program Director from the faculty. Residents who complete an Allergy/Immunology and Rheumatology elective will provide feedback on the fellow's effectiveness as a teacher. Twice a year, the Program Director will review with the fellow his evaluation forms and verbal feedback.

Fellow's presentations should be introduced with a representative case whenever possible. This can be a brief platform for discussion of the topic or a more detailed discussion of the work-up and differential diagnosis depending on the case and interests of the fellow. This is followed by an in-depth discussion of the topic based on review of the literature. The fellow is expected to review the most relevant articles from the primary literature, from an evidence based approach

It is expected that the scientific/immunology basic science that is relevant to the topic will be discussed.

It is expected that in the process of researching the conference, organizing it, and delivering it, the fellow's knowledge about the topic will become detailed and multi-faceted, in the way only a formal presentation of material to others can do. Hence, once a fellow is proficient at reviewing the literature, organizing it, and presenting it to an audience, the grand rounds conference still fulfills an important educational objective.

Evaluation of Grand Rounds

(1) Evaluation of the Fellow: An evaluation form will be filled out at the end of each conference by attendees. The fellow will be evaluated twice a year through verbal feedback gathered by the Program Director from the faculty. Residents who complete an Allergy/Immunology and Rheumatology elective will provide feedback on the fellow's effectiveness as a teacher. Twice a year the Program Director will review with the fellow his evaluation forms and verbal feedback.
(2) Evaluation of Visiting Faculty: An evaluation form will be completed at the end of each conference by attendees.
(3) Evaluation of Grand Rounds Conference: Twice a year the Program Director will elicit verbal feedback from faculty and fellows. At the end of the year the fellows will complete an anonymous evaluation of the program.

1. Case Conundrum

Educational Goals of Case Conundrum

(1) Provide an opportunity to discuss cases which pose a diagnostic, therapeutic, or ethical dilemma in an informal setting so as to increase medical knowledge.
(2) Provide an opportunity to discuss practical day to day issues of patient care.
(3) Provide an opportunity for continuous practice-based learning and improvement.

Objectives of Case Conundrum

(1) Fellows will develop the ability to diagnosis and manage complicated patients by drawing on the experience of multiple rheumatologists.
(2) Fellows will develop the skills necessary to address day-to-day practice issues in patients with rheumatologic problems.
(3) Fellows will develop the skills necessary for life-long continuous practice-based learning and improvement.

Methods of Teaching for Case Conundrum

Conference will be held once per week. Cases will be presented by fellows and faculty members. No formal presentation will be prepared. The presenter will pose his question(s) to the group. The focus of the conference will be on group discussion of the questions proposed based on personal experience and expertise and personal knowledge of the literature. Fellows and faculty will follow up with a search of the literature when appropriate.

Methods of Evaluation for Case Conundrum

(3) Provide an opportunity to develop the ability to apply critically reviewed evidence-based literature to the diagnosis and management of patients with rheumatologic diseases.
(4) Provide an opportunity to develop practice-based learning and improvement skills.

Objectives of Journal Club

(1) Fellows will increase their basic fund of knowledge as it applies to immunology and rheumatology and will develop an understanding of design, implementation and interpretation of research studies.
(2) Fellows will develop the skills necessary to critically review published data.
(3) Fellows will learn to interpret and appropriate apply evidence based literature to the diagnosis and management of patients with rheumatologic diseases.
(4) Fellows will develop the skills necessary for practice-based learning and improvement.

Methods of Teaching for Journal Club

Journal Club will be held monthly. One to three articles, depending on length and complexity will be presented at each meeting. Fellows and faculty members will present. Articles will be chosen from Nature, Science, Cell, Immunity, Journal of Clinical Investigation, Journal of Immunology, JACI, Arthritis and Rheumatism, New England Journal of Medicine, or Annals of Internal Medicine and should take an evidence-based approach. Presenters will discuss and critique the techniques used, statistical analysis, results and conclusions.

Evaluation of Journal Club

(1) Evaluation of the Fellows: Twice a year the Program Director will gather verbal feedback on the fellow's participation from the faculty and share it with the fellows.
(2) Evaluation of the Faculty: Twice a year, the Program Director will obtain feedback from the fellows and share it with the faculty. At the end of the year, the fellows will complete an anonymous evaluation of the faculty.
(3) Evaluation of the Faculty: At the end of the year, the fellows will complete an anonymous evaluation of the program.

4. Research Conference

Educational Goals of Research Conference

(1) Provide a format in which to discuss preliminary results of current research in progress at the University of Rochester.
(2) Provide an understanding of study design and implementation.
(3) Provide an understanding of state-of-the-art research techniques.
(4) Provide an opportunity to increase ones fund of knowledge as it pertains to immunology and molecular biology.
(5) Provide an opportunity for fellows to discuss their research and obtain constructive feedback regarding the interpretation of current data and direction for future studies.

Objectives of Research Conference

(1) Fellows will remain informed about current research projects and preliminary results at the University of Rochester that are pertinent to Immunology and Rheumatology.
(2) Fellows will develop expertise in study design and implementation.
(3) Fellows will develop expertise in the application if data generated using of state-of-the-art research techniques including its limitations.
(4) Fellows will expand their basic science fund of knowledge as it pertains to Immunology and Rheumatology.

Radiology Conference will be held monthly. A short didactic presentation on the principles of interpretation of the various radiologic studies will be presented by a faculty member in Radiology. Cases of rheumatologic interest will be submitted by faculty and fellows in both Rheumatology and Radiology. The age of the patient and complaint will be presented. The Radiologists will then describe the findings and give their differential diagnosis based on the radiographic findings. The Rheumatologist will then provide clinical data to place the case in context.

Evaluation of the Radiology Conference

Twice a year, the Program Director will elicit the verbal feedback of faculty and fellows. At the end of the year, the fellows will evaluate the program.

6. Immunology Course

Educational Goals of the Immunology Course

(1) Provide a basic and advanced understanding of the principles of immunology including but not limited to an understanding of cellular elements of the immune system, immune and inflammatory mechanisms, cellular interactions and immunomodulation, immune responses, and immunoregulation.
(2) Provide an understanding of the current theories of pathogenesis of immune mediated diseases.
(3) Provide an understanding of the current research exploring the pathogenesis of immune mediated diseases.
(4) Provide an opportunity to develop life-long learning skills.
(5) Provide an opportunity to interpret and apply the literature as it pertains to basic immunology.

Objectives of the Immunology Course

(1) Fellows will develop a sophisticated understanding of the principles of basic immunology.
(2) Fellows will develop an understanding of the current knowledge regarding the pathogenesis of immune mediated diseases.
(3) Fellows will develop the skills necessary for life-long learning.
(4) Fellows will develop the ability to critically review the basic science literature.

Methods of Teaching in the Immunology Course

The first six months of the year are focused upon developing a solid background in basic immunology using an immunology test book as well as relevant review articles. Each week, the first year fellow(s) lead(s) a discussion of the assigned chapter in the textbook while the senior fellow(s) review a relevant peer reviewed article. During the second six months of the year selected advanced topics such as HIV, transplant immunology, inflammation induced bone resorption, and others are covered. This is done as a two-week block with the first week dedicated to the review of recent original articles on the subject. During the second week, an invited expert on the topic leads the discussion.

Evaluation of the Immunology Course

(1) Evaluation of the Fellow: Twice a year, the Program Director will elicit verbal feedback from the faculty and will share it with the fellow.

During both years of fellowship, the fellow will work under the supervision of a faculty member as they participate in clinical trials ongoing in the Unit. They will be involved in the enrollment, evaluation and monitoring of patients.

Evaluation During the Research Experience

(1) Evaluation of the Fellow: Twice a year, the Program Director will elicit verbal feedback from the faculty and will share it with the fellow. At the end of the third Research Block, the fellow's mentor will complete a Unit research evaluation form which will be shared with the fellow at the next meeting with the Program Director.
(2) Evaluation of the Mentor: Twice a year, the Program Director will elicit verbal feedback from the fellow and will share it with the faculty. At the end of the year, the fellow will complete an evaluation of his mentor.
(3) Evaluation of the Research Experience: Twice a year, the Program Director will elicit verbal feedback from the faculty and fellows. At the end of each year, the fellow will complete an anonymous evaluation of the program.

RHEUMATOLOGY FELLOWSHIP READING LIST

The following is a list of resources for pertinent reading during the fellowship. It includes clinical and basic sciences references.

(1) ACR Recommended Reading List for Fellows
(2) Kelley's Textbook of Rheumatology, 7t^{h} Edition, Ed. Harris, W.B. Saunders, Philadelphia, 2005.
(3) Rheumatology, 3rd Edition, Ed. Hochberg et.al., Mosby, Edinburgh, 2003.
(4) Dubois' Lupus Erythematousus, 6th Edition, Ed. Wallace & Hahn, Williams & Wilkins, Baltimore, 2001.
(5) Lupus, 3rd Edition, Ed. Lahita, Garland Publishing, New York, 1999.
(6) Essentials of Musculoskeletal Care, 2nd Edition, Ed. Snider, American Academy of Orthopedic Surgeons, Rosemont, 1997.
(7) Immunology: The Immune System in Health & Disease, 4th Edition, Ed. Janeway, Taylor and Francis, 2004.
(8) Arthritis and Rheumatism, current articles.
(9) Annals of Internal Medicine, current articles.
(10) Journal of Rheumatology, current articles.
(11) New England Journal of Medicine, current articles.
(12) Seminars in Arthritis and Rheumatism, current articles.
(13) Nature, current articles.
(14) Science, current articles.
(15) Journal of Experimental Medicine, current articles.
(16) Lupus, current articles.
(17) Journal of Immunology, current articles.
(18) Cell, current articles.
(19) Immunity, current articles.
(20) Journal of Clinical Investigation, current articles.
(21) JACI, current articles.

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