Research Elective for Medical Students
Department of Emergency Medicine
Downstate Medical Center
Kings County Hospital

Research Rotation Information Package

Contents:

For questions regarding the rotation, curriculum, schedule, or research topics, please contact:

Shahriar Zehtabchi, M.D.
Chief Resident of Research
ResearchElective@yahoo.com

Research Elective for Medical Students

Department of Emergency Medicine
State University of New York, Downstate Medical Center, Kings County Hospital

Objectives

- Students will be able to understand higher-level concepts in research methods and develop awareness and knowledge of the wide variety of research strategies available in Medicine and the situations in which they may be used.

- Students will understand the principles of and participate in laboratory and clinical research projects in the Department of Emergency Medicine.

- Students will learn and practice how to come up with a practical research idea, develop a research project, perform literature search, collect the required data, analyze the data, and put the information in an appropriate format for publication.

- Students will be able to read, criticize, and find the clinical application and validity of published research projects in the literature.

Brief Description of activities

This elective offers students with strong interest the opportunity to explore some area of medical research by participating in clinical and laboratory studies. The elective is intended to engage students in a variety of activities related to the conduct of a research project. This includes participation in the design and conceptualization of the projects as well as the gathering and analysis of data. Students will also learn how to do a literature search and will read and critically analyze the literature related to the chosen project. By the end of the elective the student will have gained an understanding of research principles and have active participation in development and conduct of different research projects.

Current clinical projects in the department of emergency medicine have involved a wide variety of subjects and approaches, including retrospective review of clinical data, prospective clinical studies, and screening projects. Some of the research projects are performed on animal models as well.

Students are also encouraged to attend in research oriented lectures and seminars and also weekly department conferences.

Duration of elective

The elective is given throughout the year. Duration is 4 weeks.

Student per period:

Unlimited

Taught component

- Date collection
- Data analysis
- Research skills
- Research process
- Suggested reading

Key responsibilities of the students while on elective:

- Meet with research director and the research chief resident on a regular basis to discuss progress.
- Appropriate literature search and background readings into respective projects.
- Participation in research meetings and attendance in applicable department conferences.
- Independent study
- Conscientious data collection

Elective Schedule:

- ***Introduction:*** The first day of the elective students are briefed about the objectives of the elective and will be introduced to the different research projects in the department of Emergency Medicine. The faculty or the resident running each project will briefly explain the logic and the structure of their studies and will train the students about collecting data for each project.

- ***Clinical Data Collection:*** Each student is assigned certain number of data collection shifts in the clinical area. Main duty of students in each shift would be entering the patient information in the appropriate study data collection sheets.

- ***Research Seminars:*** During the four two-hour weekly seminars, students will be lectured on the concepts of medical research, designing a project, literature

review, data collection, and data analysis and writing research papers. Students will also have the opportunity of learning how to work with different computer programs used in literature review and data analysis.

- ***Animal Labs:*** During the two-hour biweekly animal lab practice session, students will become familiar with different projects using animal models and will practically learn how to use animal lab facilities and will also participate in the current animal studies.

- ***Students' Presentations:*** Each student or group of students is assigned to perform a literature search about a common subject in the beginning of the elective. Students have to present their findings and the results of their literature search in 15 minutes sessions. Oral presentations will be held once a week for duration of one hour.

Method of Student evaluation:

Students will be evaluated based on their active participation in interactive research seminars, their literature review presentation, and the level of their activity in the clinical area (data collection).

Scheduling Information:

Research elective is directly supervised by Director of Research in the department of emergency medicine (Richard Sinert, DO , nephron1@bellatlantic.net) and coordinated by Chief Resident of Research (Shahriar Zehtabchi, M.D., researchelective@yahoo.com) Students should contact Dr. Zehtabchi before starting the rotation and also obtain the rotation package from Ms. Odelle Haynes (718-245-2975), the student coordinator of the department of emergency medicine.

.

Research Elective for Medical Students
Literature search topics

1/ Diagnostic Strategies in Myocardial Infarction

Background:

In most hospitals, approximately 15 percent of patients who are admitted to the emergency room for evaluation of acute chest pain have an acute myocardial infarction. Of patients admitted to coronary care units with acute chest pain , 30 percent to 50 percent have acute myocardial infarction. Clinical data are helpful in distinguishing patients with ischemic pain from those with non-ischemic pain, but diagnostic tests are required to determine which patients with probable ischemic pain have an infarction. Because the management of patients with myocardial infarction involves a significant use of medical resources, the strategies to improve early risk stratification are highly desirable to help decide which patients to admit to a coronary care unit.

2/ Diagnostic Strategis in Deep Vein Thrombosis

Background:

The presence or absence of signs and symptoms of deep venous thrombosis does not correlate well with the presence or absence of clots in the veins of the lower extremity. Almost one-third of patients with signs suggestive of deep venous thrombosis do not have radiographic evidence of clots.

Whenever venous thrombosis is suspected, objective testing is essential. Ascending functional venography is the gold standard for proximal or distal deep venous thrombosis. When available, ultrasonography is a reasonable non invasive alternative to venography for identifying the proximal deep venous thrombosis. Impedance plethysmography has a lower sensitivity.

3/ Infected Endocarditis

Background:

Making the diagnosis of infective endocarditis on the bases of clinical findings can be difficult because the signs and symptoms of this disease are neither sensitive nor specific. The high index of suspicion is required to identify the disease in patients with atypical presentations.

Pretest probabilities for infective endocarditis are inexact. In patients with several specific findings, such as immonologic phenomena (Osler nodes, Roth Spots), vascular phenomena (Janeway lesions, multiple arterial emboli), and new or changing heart murmur, the pretest probability is 80% to 90%. In patients with one or two sensitive but nonspecific findings such as fever or unchanged heart murmur, the pretest probability is low.

4/ Diagnostic Strategies in Pulmonary Embolism

Background:

Among patients presenting with possible pulmonary embolism, between 20 percent and 30 percent actually have an embolism. Although information from the history, physical examination, chest radiography, electrocardiography, and arterial blood gas analysis can help revise the pretest probability of PE, further testing is usually needed to establish the diagnosis.

A normal partial pressure of oxygen in arterial blood ($PaO_2 > 80$ mmHg) or a normal alveolar-arterial oxygen gradient does not exclude the diagnosis of pulmonary embolism.

Patients with suspected PE should be evaluated for conditions that could place them at risk of thromboembolic disease.

Medical Students' Research Elective Monthy Schedule

1w	2w	3w	4w	Mon	Tue	Thur	Fri	Sat	Sun
A	**D**	**C**	**B**	-	-	PM	PM	PM	-
B	**A**	**D**	**C**	-	AM	AM	AM	-	-
C	**B**	**A**	**D**	AM	AM	AM	-	-	PM
D	**C**	**B**	**A**	PM	-	-	AM	AM	AM

- Students are divided into 4 groups (A,B,C, and D) and each week schedule is according to the above table (Total of 14 shifts a month).
- All students are required to participate in Department's didactic conferences on Wednesdays. Students' Research lectures and presentations will also be on Wednesdays, according to the table below.
- First day of each rotation will be dedicated to orientation (from 8 am to 10 am).
- Students scheduled for working the first day, will start their clinical shift at 10 am.
- AM shifts are from 7am to 7 pm and PM shifts are from 7 pm to 7 am.

Medical Students' Research Workshop Schedule

	Time	Title
1st. Wednesday	1-2 pm	How to perform literature search
	2-3 pm	Research Lecture (Medical Statistics part 1)
2nd. Wednesday	1-2 pm	How to read a paper
	2-3 pm	Research lecture (medical statistics part 2)
3rd. Wednesday	1-2 pm	Journal club (students' presentation): Group C
	2-3 pm	Journal club (students' presentation): Group B
4th. Wednesday	1-2 pm	Journal club (students' presentation): Group A
	2-3 pm	Journal club (students' presentation): Group D

* If any question, please contact chief resident of research, Dr. Shahriar Zehtabchi at researchelective@yahoo.com