

	Name of Protocol: NEUROLOGY RESIDENT RESEARCH POLICY	
	Effective Date: July 6, 2015	Revised Date: July 27, 2022

Overview

Research is a critical component of the mission of SIU School of Medicine and the Department of Neurology. The primary purpose for resident involvement in research is to provide residents with practical research experiences to enhance understanding of scientific methodology and to improve critical thinking and analytical skills. Research activities support the delivery of innovative treatment options to patients that are not widely available, while providing high quality education experiences to our students, residents, and faculty.

Resident Research Requirements

During the residency program, each resident must complete at least **one** clinical research project, discovery science research project or quality initiative (QI) project. Prior to the completion of their final academic year, a completed manuscript must be submitted to a peer-review journal. All resident research projects involving human subjects must be approved by the Neurology Director of Clinical Research, the Neurology Residency Program Director, the Chairman of the Department of Neurology, and an Institutional Review Board (IRB). This includes studies that are limited to chart review. The Director of Clinical Research, Neurology research staff, and the Center for Clinical Research are available as resources for guidance.

Overview of the Scientific Method

- *Observation/Problem/Question* – What is the purpose of your study? What is the research question? Is your study feasible? What knowledge does your study contribute to your practice/department?
- *Hypothesis* - A possible answer to a problem. Educated guess based on knowledge of what will likely be the answer to the problem/question. This knowledge is gleaned from medical and scientific literature.
- *Prediction* - The prediction is a formal way to put a hypothesis to a test. The prediction usually contains three parts: 1) if a hypothesis is true...2) then ____ should happen, 3) when ____ is manipulated. The first blank represents a dependent variable and the second blank represents the independent variable.
- *Experimentation* - Testing a hypothesis. You manipulate the independent variable and measure the dependent variable. Manipulate a variable in one or more groups and use a control or comparison group. The control/comparison group is used to ensure the results of manipulation were not caused by some unknown reason.
- *Analysis* - Statistical analysis and compilation are used to answer questions and assess the significance/probability of the results. In most statistical procedures, we allow 5% error to occur. This error, due to chance alone, means that a treatment could fail 1 time in 20 repeats and still be considered effective ($1/20 = 0.05 = 5\%$).

- *Conclusion* - Explain what the experimental results show. Discuss all the information collected during the study and talk about the reasons you think the hypothesis was or was not correct.

Primary Resident Research Project

A resident will consult with a Faculty Co-Investigator, the department Director of Clinical Research and the Residency Program Director and select a research topic. The research topic and a typed bibliography and literature review supporting the topic is required to be submitted by *June 1st of PGY2*. Residents are encouraged to seek advice from the Director of Clinical Research and appropriate faculty for the selection and execution of their project.

A research protocol must be designed, typed, and presented to the Department Chair, Clinical Research Director and the Residency Program Director for approval by *January 1st of PGY3*. The protocol design should be consistent with the templates accepted by the local IRB [Springfield Committee for Research Involving Human Subjects (SCRIHS)]. SCRIHS is charged with ensuring that research involving humans as subjects is in compliance with Regulations defined by Department of Health and Human Services and the Food and Drug Administration (FDA). Some projects may require approval from the Laboratory Animal Care and Use Committee (LACUC) which oversees Southern Illinois University School of Medicine's animal program and animal research activities. Forms for these committees are available by download from the SIU School of Medicine website. Approval is required prior to commencement of any part of a research project.

Proposal Format (see templates for SCRIHS or LACUC)

- Title
- Investigators
 - Principal Investigator
 - Co-investigators
- Abstract (250 words, Background, Objectives, Methods, Results, Conclusion)
- Introduction (with references)
- Objectives of Study
- Material and Methods
 - Study Design
- Randomized vs Non-randomized
- Retrospective vs Prospective
- Experimental group vs Controls
- Treatment/Group Assignments
 - Subject Inclusion/Exclusions
 - Number of subjects
 - Data collection and analysis.
- Study measures
- Outcome/Patient Assessments
- Primary and secondary endpoints
- Statistical Methods
- References
- Data collection forms/sheets/tools

- Subject informed consent document

Primary Resident Research Project Timeline

- **PGY 1**
 - Information gathering from the Residency Program Director, Director of Clinical Research, Department Faculty, and Senior Residents regarding research activities and potential opportunities.
- **PGY2**
 - *Jan*
 - Selection of a research topic and a Faculty Co-Investigator
 - *Jun*
 - Draft protocol due for presentation and approval by Chair, Faculty Co-I, Residency Program Director and Director of Clinical Research
- **PGY3**
 - *Jan*
 - Final protocol due for approval to the Department Chair, Faculty Co-Investigator, Residency Program Director and the Director of Clinical Research
 - Final protocol submitted to SCRIHS or LACUC
 - *Jun*
 - Data collection and statistical analysis due
- **PGY4**
 - *Jul*
 - Abstracts due for approval by Faculty Co-Investigator, Director of Clinical Research, Residency Program Director and Department Chair
 - *Oct*
 - Abstracts due to AAN
 - *Jan*
 - Abstracts due to SIU Trainee Research Symposium
 - Preparation of slides/posters and schedule for AAN
 - Presentation practice session scheduled
 - *April*
 - SIU Trainee Research Symposium/AAN presentation
 - *Jun*
 - Completed manuscript due to Faculty Co-Investigator, Director of Clinical Research, Residency Program Director and Department Chair

Presentation of Study Results

The most academic mechanism to disseminate scientific knowledge to the medical community is through publication in a reputable journal or presentation at a regional or national conference.

Manuscript Preparation

A completed manuscript suitable for submission to a journal is due by *January 1st of PGY4*. AAN accepted research should be submitted to *Neurology* prior to considering other journals. Follow "Instructions for Authors for Submission of Papers" and the formatting guidelines of *Neurology*. The manuscript will include:

- Title page
- Abstract
- Introduction (including an historical review of the topic/problem and purpose of the study).
- Materials and Methods
- Results (including statistics and Tables & Figures of publishable quality, Figure Legends).
- Discussion (including interpretation of the results in the context of existing literature).
- Bibliography with references annotated in the text
- Acknowledgments

Scientific Meetings

Residents are encouraged to present their scientific work at local, regional and national meetings. All abstracts require approval of the Faculty Co-Investigator, Clinical Research Director, Residency Program Director and Department Chair prior to submission to any meeting. Papers accepted for presentation at regional and national meetings will be funded at the discretion of the Department Chair.

The format for scientific presentation is different than that of a manuscript. The historical review in the presentation should be kept to a minimum. Emphasis is placed on Materials and Methods, Results and Discussion.

Guidelines for Slide Preparation

Slides should complement and clarify the presentation and not detract or complicate. Resident should use the green or white PowerPoint template version available for download from the SIU School of Medicine website. Each slide should follow these guidelines:

- Simple is better
- Do not overwhelm the viewer with data, less is better
- Minimize amount of text per slide
- Fonts and figures should be in a size easily read
- Slides should typically have a darker background with lighter content colors.
- Highlight major points with figures and illustrations
- Highlight minor points and findings with tables

Guidelines for Poster Preparation

- Keep material simple and concise.
- Use only pertinent information to convey your message.
- Be selective when showing results.
 - Present only those that illustrate the main findings of the project.
- Titles and headings should appear larger than other text, but not too large.
 - Consistently use underlined text, bold face, or italics to emphasize words and phrases.
 - Section headings should appear in the same position and size.

- Graphs/Tables
 - Choose graph types and tables that are appropriate to the information.
 - Graphs/captions should be of the same size and scale.
- Poster sections should be arranged to follow a project storyline.
- Review
 - Print draft versions of your poster and review for mistakes, legibility and inconsistency in style
 - ask colleagues for their critical input, opinions, and review

Evaluation (by Faculty Co-Investigator):

Research activities should fulfill the following criteria:

- Professionalism: Resident should
 - Respect and consistently meet deadline requirements
 - Incorporate feedback from research mentor
- Practice based learning and improvement/system based practice:
 - Research project tailored towards answering patient-care questions and/or incorporates evidence based medicine in study design and understands its limits
- Resident engages in research activity in the following discipline(s) (choose at least one):
 - Movement disorders
 - Neuromuscular disorders
 - Cerebrovascular disorders
 - Cognitive/behavioral disorders
 - Demyelinating disorders
 - Epilepsy/Clinical Neurophysiology
 - General neurology including headaches
 - Neuro-oncology
 - Quality improvement projects
 - Patient safety
 - Practice based learning and improvement
 - Professionalism