

CMHS Resident Research Didactic Series

This didactic series runs concurrently with Journal Clubs in each specialty. This series is designed to foster the practical application and reinforcement of research and biomedical statistics concepts through individual research and quality improvement projects.

I. Research Foundations and Basics

- Residents will learn about population types (target, study, and sample populations) and their application in clinical studies
- Residents will become familiar with the concepts of primary and secondary outcomes, sample size, and power
- Residents will learn about different types of variables (continuous, dichotomous, ordinal, nominal) and why the causal link between variables is important
- Residents will become familiar with basic statistical terms used in medical literature, including p values and confidence intervals as well as the calculation and interpretation of sensitivity, specificity, and positive predictive value

II. What Kind of Research Do You Want to Do and Why?

- Residents will learn about the strengths and weaknesses of different study designs
- Residents will gain skills to make decisions about data: the type of data they need, the results they will measure, and the controls they will exert over data collection when doing clinical research
- Residents will learn what influencers and cofounders affect their data in real-world examples

III. When You Have Data, What Can You Do With It?

- Residents will become familiar with the strengths and weaknesses of different statistical tests frequently used in clinical studies
- Residents will be able to understand and interpret odds ratios, hazard ratios, and likelihood ratios as used in common clinical settings
- Residents will learn to interpret graphs or tabular presentations of outcomes, characteristics, or results
- Residents will be able to assess the strength of evidence for recommended treatments to facilitate discussions with patients

IV. What Do Your Findings Mean and How Do You Present Them?

- Residents will work together and use the skills developed in sessions I-III to design a research proposal to answer a clinical question related to patient care or a possible or ongoing research project. The proposal will include the following elements: research question, participants, recruitment, data collection procedures, and method of analysis. Residents will present to their colleagues during the session.

Sessions will begin with a short didactic session to explain statistical concepts followed by a workshop where residents work together on an exercise to illustrate a concept. Every effort will be made to use studies from the medical literature illustrating these concepts in order to provide residents with examples to interpret the literature in the context of patient care or their own scholarly work. Residents may be given a brief assignment prior to the session to facilitate discussion.