Dear Colleagues,

Welcome to the Fall 2018 edition of our medicine residency research newsletter! This publication is aimed at both highlighting our residents’ exciting projects as well as informing trainees and recruits about the types of investigations being performed at Stanford. We define research comprehensively, including scholarly work done in quality improvement, global health, outcomes research, medical education, clinical investigation, translational research, implementation science, qualitative studies, clinical trials, and device/service innovation. Without further ado:

**Resident Research Symposium:**

The 1st Annual Stanford Internal Medicine Research Poster Session was held on Tuesday, June 12, 2018, in the Stanford University School of Medicine Li Ka Shing Building.

It was tremendous!

Nearly 50 residents presented posters of their scholarly works, covering the gamut of specialties and ranging from global health to medical education. Exuberant discussions and insights filled the air and set a solid stage for future symposiums to come. We thank Dr. Angela Rogers for being our faculty lead on this initiative, Dr. Bob Harrington (our Chairman) for his support, as well as all faculty participants and judges for the poster awards. Most importantly, we thank and congratulate our fellow residents for all the effort they have put into their respective works, all with the ultimate aim of improving the lives of our patients.
Stanford Resident Researcher Spotlight:

This Fall, we have the incredible opportunity to spotlight one of our true research superstars, Sonia Shah!

Tell us a little about yourself
SS: I grew up in central Florida and was a huge science nerd. I competed in the annual science fair from the age of 12 and was pipetting like a pro before I even started high school. My research projects ranged from examining the effects of water chemistry on algae growth in the Everglades, to evaluating the role of gene therapy in treating alpha-1 antitrypsin deficiency, to studying respiratory neuroplasticity in rats with cervical spinal cord injury. While these experiences did not help my popularity, they ultimately shaped my approach to problem-solving and have made me a strong believer in evidence-based medicine. I went to Northwestern University in Chicago for my undergraduate and medical training, and I am currently applying for cardiology fellowship with my husband (and co-resident!) Viraj Raygor.

Why Stanford?
SS: I still remember my interview dinner at Stanford and thinking that the residents I met that evening were not only brilliant, but really down-to-earth and clearly happy. That thought lingered with Viraj and me for a while after our interview, and after couples-matching here together, we were pleased to discover that our initial impression was right. Our connection to a world class university and Silicon Valley comes with a wealth of opportunities, but it is really the people here that make Stanford special.

Tell us about your current QI/research activities
SS: My research interests are primarily in women's cardiovascular health-- specifically clinical outcomes in women with coronary and valvular disease. Previously, I worked with Dr. Paul Heidenreich in the Department of Cardiology examining sex differences in short-term outcomes after TAVR. Currently, I am working with Dr. William Fearon in the Department of Interventional Cardiology examining sex differences in cardiac events and quality of life in patients with non-obstructive coronary artery disease and microvascular dysfunction. Non-obstructive CAD is much more common in women than men and is associated with a high rate of morbidity and mortality. Despite this, non-obstructive CAD has not been well studied, and there are currently no guidelines on the management of these patients other than standard risk-factor modification.

What advice do you have for interns and residents interested in scholarly activity?
SS: Start early and find a good mentor. Stanford has many accomplished clinical and basic science researchers, but it is important to find one who is willing to guide you and invest in your professional success. Don't be afraid to meet with multiple potential mentors before you make your decision and be upfront and realistic about your research goals. Also, it is okay (and encouraged!) to have more than one mentor, as the demands of a given project may vary over the course of a year. Researchers with access to large databases are also a great resource. You can often get multiple publications from a single database. For interns interested in a particular specialty, feel free to ask the PGY2s and PGY3s about their mentors to determine if these individuals are a good fit for you as well.
Stanford Faculty Researcher Spotlight:

For the Fall 2018 Newsletter, we have the great pleasure of spotlighting Dr. Kenneth Mahaffey. Dr. Mahaffey achieved his B.S. in Chemistry at Stanford and went on to receive his M.D. at the University of Washington. He completed his Internal Medicine residency and Chief Residency at the University of Arizona, followed by a Cardiology fellowship at Duke University. He remained on as a faculty member at Duke following his fellowship, where he made a name for himself designing and conducting large-scale, multinational clinical trials. He rose through the ranks to become a Professor of Medicine as well as an Associate Director of the Duke Clinical Research Institute, and was involved with a number of high-profile trials, including ATBAT, SYNERGY, PLATO, ROCKET-AF, CHAMPION, and TRACER. He joined Stanford in 2013 and is currently the Vice Chair of Medicine for Clinical Research in the Department of Medicine as well as the Director of the Stanford Center for Clinical Research (SCCR). Despite his busy schedule, Dr. Mahaffey has taken an active role in promoting resident research and is currently the Co-Director of the Clinical Research POD as well as a faculty advisor to the Residency Research Interest Group. We are incredibly fortunate to have him at Stanford and are so pleased to be able to highlight his unique perspective in this newsletter.

Tell us a bit about yourself and the path you took, particularly in your early career, to reach where you are today.

KM: As long as I can remember, I wanted to be a scientist. My dad has a PhD in Physics and my mom was a mathematician – my aspiration was probably not just a coincidence. Dinner conversations were often about wave forms rather than the geopolitical climate of the time. I didn’t start out as a pre-med, but during my junior year in college I decided that I wanted to pursue medicine – engaging with humans, doing experiments, and thinking quantitatively seemed like a great combination.

I was very fortunate to have had a series of medical school and residency mentors who provided me many opportunities. As a chief resident, I worked in an animal lab and had plans to continue that work in fellowship at Duke. Once I got to Duke, I met a group of clinical researchers at the Duke Cardiovascular Databank (the foundation of the Duke Clinical Research Institute) who became life-long mentors and friends – Rob Califf, Chris Granger and Bob Harrington. Califf asked me one Saturday morning after CCU rounds what I was going to do with my life --- I told him my plans to run an animal lab and explore novel therapies for CHF. He asked, “why on earth would you want to do that?” I said I enjoyed generating data, analyzing it, making inferences, and determining the implications for the next set of experiments. He told me he was generating data in trials with 10,000 patients I could analyze instead of data from studies with 10 rabbits. I’ve never been in another animal lab. I have spent the past 25 years designing and conducting phase 2 and phase 3 clinical trials as well as leading research groups that create the infrastructure for others to conduct their research.

What is your advice for approaching research as budding academic physicians?

KM: There are so many opportunities to get engaged in clinical research in the Stanford environment, so find a mentor and find a project. The Chief Residents, the Research Interest Group, or your POD leaders can help you connect with faculty if you have not been able to find a good mentor. Ideally you will find someone with a good mentoring track record, someone you enjoy spending time with, and someone clinically active or doing research in your area of interest. There are three things to prioritize as a house officer doing research:

1. Write, write, write

Write review articles, write papers of analyses from established databases that are available from STARR, from Population Health Sciences, from the Quantitative Sciences Unit (QSU), from the Stanford Center for Clinical Research (SCCR), or find researchers who have created registries or data sets in specific populations. There are many options across the School of Medicine. These ‘data on the shelf’ projects are great opportunities to hone your writing skills and they don’t depend on you creating a prospective dataset.

2. Develop quantitative skills

You can do this through course work or practical experience working with biostatisticians and bioinformaticians on the design of protocols and the conduct of the research. Think critically about the literature you read. Take or audit courses from Health Research & Policy. Sign up for ICCR (Intensive Course in Clinical Research) offered each September or attend the Essentials in Clinical Research Course that happens each year; visit the Spectrum website for more information about these courses. Finally, work with statisticians on every project you do, spend time with them, and learn from them.
Large multi-center clinical trials are the gold standard but are incredibly daunting projects. What skills have you found particularly important in such trials, and what advice do you have for residents who would like to develop these skills?

KM: Large trials can be daunting, but they create incredible opportunities for housestaff, fellows, and new faculty. A typical 10,000-patient trial will have multiple committees – Data Safety Monitoring Committees that oversee safety, Adjudication Committees that review endpoint events, Safety Monitors that process adverse events – all of these are chances to see the operations of large trials and how the data are collected, curated, analyzed, and reported. Talk to faculty working on big projects – we have several housestaff and fellows working or observing on these committees through SCCR.

These large programs require a deep-rooted belief in team science and collaboration. You are the stewards of the data that thousands of researchers have helped collect from tens of thousands of people and for which a sponsor (the government or industry) has invested a tremendous amount of money. You have to create trusted relationships. I have a formula that I use to ground myself in how I make decisions and conduct my personal and professional life that helps me focus my energies and align my work with my family.

BIP = Balance, Integrity, Presence

You need to find what identifies you so that people know who you are and how you will lead and make decisions.

Any parting words of advice for our residents?

KM: I use the “Mahaffey Rules” to set expectations for students, interns, residents, and fellows when I round on the inpatient service. I now apply them to all aspects of my professional life (in no particular order).

1. Have fun
   We all work too hard in medicine not to be having fun. If you aren’t having fun, then find a new pathway in medicine or outside of medicine.

2. Provide excellent care
   We are fortunate to have the ability to provide care and support for patients – it is a great responsibility but very rewarding. Do your best and ask when you don’t know.

3. Learn something every day
   Be curious. Think about what evidence we need to answer critical questions or support common decisions we make every day.
**Papers and Presentations:**

Congratulations to the following authors for their recent publications and presentations in the past year!

**Third Year Residents:**

1. **Grant E. Barber.** Hendler S, Okafor P, Limasui D, Limketkai B. Rising Incidence of Intestinal Infections in Inflammatory Bowel Disease: A Nationwide Analysis. Inflammatory Bowel Diseases. 2018. [PMID: 29722832]

2. **Grant E. Barber.** Rodrigues R, Ananthakrishnan AN. A comprehensive study of costs associated with recurrent Clostridium difficile infection. Infection Control & Hospital Epidemiology. 2017. [PMID: 27817758]


Recent Graduates:

Second Year Residents:


**Methods, Materials, Mentors:**

- Please see [http://lanc.janford.edu/classes-consult/laneclasses.html](http://lanc.janford.edu/classes-consult/laneclasses.html) for a list of upcoming research courses offered by Lane Library. Many of these classes are incredibly helpful, including advanced PubMed use, Data Visualization, SQL, Systematic Review Methodology, MATLAB, Introduction to R, and EndNote/Zotero/Mendeley among many others.

- Stanford Grant Writing Academy: [https://grantwriting.stanford.edu/](https://grantwriting.stanford.edu/) great resource with bootcamps, videos, and articles.

Best,
Stanford Internal Medicine Research Interest Group

*If you have research you’d like to have highlighted in the newsletter (or know of work other residents or recent graduates have taken part in) or are interested in being involved in the research interest group please make sure to email us at armoore7@stanford.edu.*