Research/Scholarly Activities

Highlights

- *24 peer reviewed manuscripts, 10 published abstracts, over 50 presentations and posters*
- *Recipient of E.J. Wylie Travelling Fellowship from the Society for Vascular Surgery to study smoking cessation and risk factor modification in vascular disease*
- *Recipient of Stephen Abrahamson Award for Innovation for research on use of an app-based study aide for general surgery students*
- *Institutional Principal Investigator for three multicenter national trials*
  - *GREAT Registry*
  - *BEST-CLI*
  - *PRESERVE Trial*
- *"Distinguished Reviewer" for the Journal of Vascular Surgery*
- *Associate Editor for upcoming edition, Essentials of General Surgery Textbook (Editor: Peter F. Lawrence)*
- *Member, Chronic Mesenteric Ischemia Writing Group, Society for Vascular Surgery*

Overview/Research Interests

As part of an academic center, involvement in research is essential. My involvement in research includes retrospective outcomes reviews from our institution, clinically oriented surveys, multi-center retrospective views, educational research and involvement in/leadership in national clinical trials. My academic output has steadily increased during my time at UAMS (see charts below demonstrating output per year (Fig. 1) and cumulative (Fig. 2)).

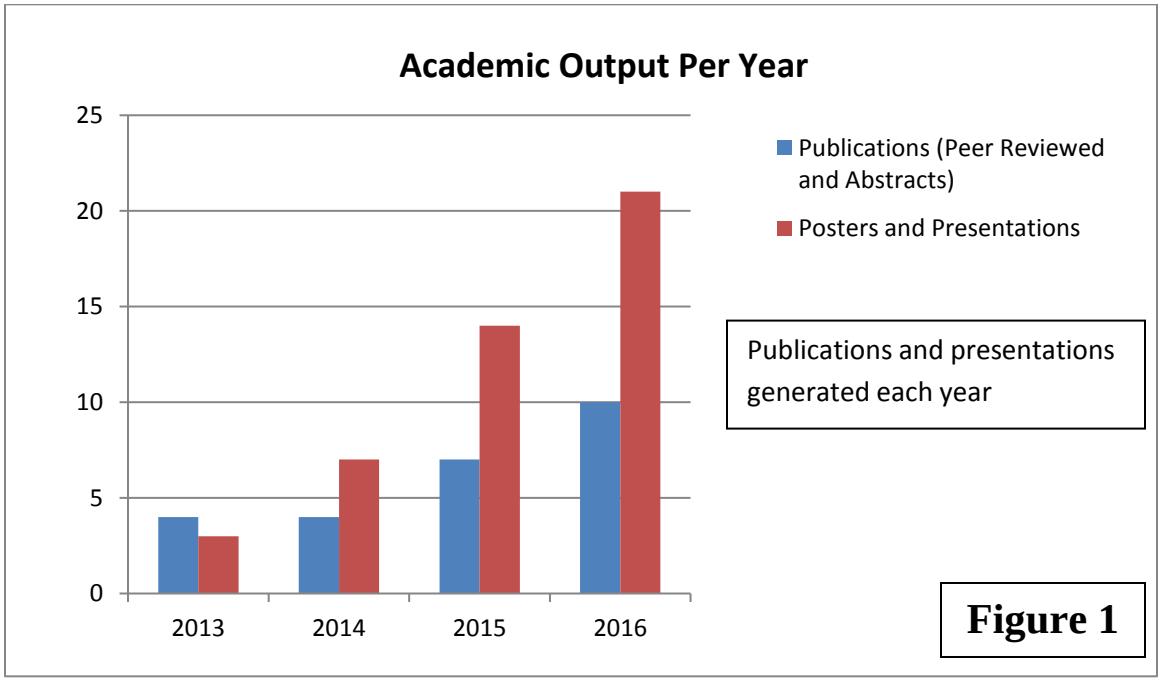
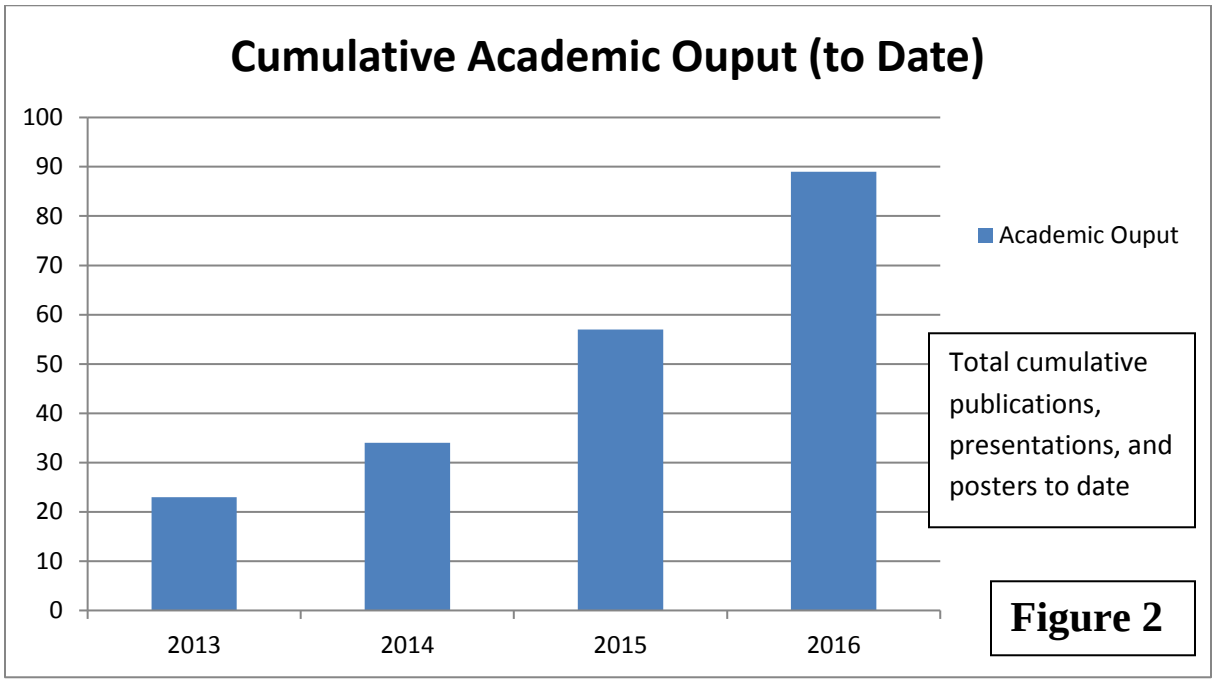


Figure 1



While my research interests cover several different areas of vascular surgery as well as education, I have taken a keen interest within the last two years in risk factor modification/smoking cessation and vascular disease. I applied for and received the "E.J. Wylie Travelling Fellowship" from the Society for Vascular Surgery this past year. This award, given to a single vascular surgeon supports travel and fellowship with vascular surgeons nationally and internationally as well as allowing the recipient to take on a subject to study more in depth. The subject I proposed was smoking cessation and vascular disease, and as such, I've been visiting surgeons and tobacco experts nationally and internationally to discuss these topics. Additionally, as part of these efforts,I have petitioned the Society for Vascular Surgery to create a guidelines writing group to cover smoking cessation and risk factor modification, in order to provide guidelines for vascular surgeons to use in their practice.

Detailed descriptions of my publications can be found in the annotated bibliography section and in my CV within this packet. However, below is a brief review of some of my research endeavors undertaken over the past several years.

Local Retrospective Reviews

Over my time at UAMS, I have produced several research projects resulting in publications, presentations, and posters using data obtained from procedures and techniques used and developed here at UAMS. These include serving as senior author on several studies, including (but not limited to): 1.) Looking at outcomes following percutaneous procedures done on patients with elevated INR's, 2.) Studying our outcomes following open surgical revascularization for occlusive iliac disease, 3.) Determining differences between midline and bilateral subcostal incisions in patients undergoing open aortic surgery, 4.) Reporting on

outcomes following use of deep vein for non-occlusive prosthetic bypass failures, and 5.) Looking at use of an arterial closure device to decrease complications following percutaneous procedures. Please see CV for complete list of projects.

Multi-Center Retrospective Reviews

Early on after joining UAMS, I made contacts with faculty at UCLA and began to contribute to the Vascular Low Frequency Disease Consortium (VFLDC). This consortium is a multi-institutional program that studies low-frequency or uncommon vascular diseases where only small series or discrepancies in management recommendations exist within the published literature. This is done by collecting data on disease processes that are not collected by large administrative databases and is contributed to by both private and academic surgeons across the country. I contributed data to two projects initially (studying renal artery aneurysms and carotid body tumors). These were both presented at national conferences and resulted in co-authorship on publications. I then developed an idea to use the consortium to study management of infected endovascular stent-grafts, a low frequency problem in vascular surgery. I became the first non-UCLA surgeon to be the national PI on a VFLDC project, and our analysis resulted in a national presentation at the Society for Vascular Surgery annual meeting as well as a publication in the Journal of Vascular Surgery. Additionally, I have been invited to give other presentations on this data both nationally and internationally. I recently presented it at the Australian-New Zealand Society for Vascular Surgery meeting (summer, 2016) and last fall, I was invited to participate in a vascular surgery review course for general surgeons discussing this topic at the American College of Surgeons annual meeting. I continued my work with the VFLDC by developing another project as the national PI looking at management of cystic adventitial disease. We presented this data at this years' Society for Vascular Surgery meeting, and we just had our manuscript accepted by the Journal of Vascular Surgery for publication. I am currently developing a third project as national PI studying management of infected aortobifemoral bypass grafts.

On a smaller scale, I have also combined data from retrospective reviews with a colleague of mine from the University of Cincinnatti. We have just completed our analysis examining the use of deep vein to treat isolated limb infections and have submitted this for presentation at the Society for Clinical Vascular Surgery next year (under review).

Clinically Oriented Surveys

I have developed several survey projects that are clinically relevant. Please see my CV for a complete list of projects. Briefly, some of these include:

1.) A national survey I created looking at management of acute limb ischemia by vascular surgeons to determine what modern vascular surgeons are doing for this disease. This was done in collaboration with a vascular surgeon colleague of mine from UT-Houston. There are many options for ALI management, but few established guidelines. This

demonstrated wide variation in practice patterns, with some effects of provider training. This research resulted in presentation at a national vascular meeting, and is currently under review by the Annals of Vascular Surgery for publication.

2.) A survey of all vascular surgery patients here at UAMS looking at smoking cessation and nicotine dependence to see if there are any factors predictive of willingness to consider quitting smoking. This has been accepted for presentation at the Midwestern Vascular Surgery Society annual meeting this fall, and I was invited to give a presentation of the data this summer at the Australian New Zealand Society for Vascular Surgery as well. It is currently being written up for publication.

3.) A survey of all patients presenting to our vascular laboratory for carotid artery duplex on snoring behavior. I developed this survey and sought out collaborators at two other institutions (Henry Ford Hospital in Detroit and University of Cincinnati) in order to determine if there is a correlation between snoring and carotid artery stenosis. This data was recently accepted for presentation as a poster at the Midwestern Vascular Surgery Society annual meeting this fall, and is in the process of being written up.

4.) A survey on smoking cessation and risk factor modification activities of vascular surgeons. This is a national survey I am in the midst of collecting data from, to determine contemporary strategies of risk factor modification being used by practicing surgeon.

Educational Research

My interests in educational research began with my involvement in the Teaching Scholars Program at UAMS, which I graduated from in the spring of 2014. As a part of this, I developed an app-based study guide for our third year general surgery students. This project has resulted in multiple presentations and a publication (highlighted on the cover issue) in the Journal of Surgical Research. Additionally, the work won the Stephen Abrahamson award for innovation from the Innovations in Medical Education conference in the spring of 2016 at the University of Southern California. Earlier this spring, I applied for and received a Medical Education Foundation for Arkansas (MEFA Grant) to cover the cost of this app. We are continuing the use of the program for our students, and plan on creating an app-based study guide for our general surgery residents as well.

Other educational research projects that have been presented/published include: 1.) A study looking at vascular trainees perceptions of the new ACGME milestones used for assessment, 2.) A study examining mock oral examination use by vascular surgery programs, 3.) A survey of vascular trainees nationwide on mentorship, 4.) Study of our implementation of the summer in surgery program here at UAMS, 5.) A survey of general and vascular surgery on study habits and factors predictive of success/failure on their respective in-training examinations.

Since 2013, I have also been actively participating in the Surgical Education Research Working Group. This is a group of like-minded surgical faculty interested in surgical education who meet on a weekly basis to work on topics related to educational research.

National Clinical Trials Involvement

Very early on in my career in order to gain a better understanding of the design, implementation, organization and interpretation of clinical trials, I was selected to take part in the Clinical Trials Methods Course, which is presented by the American College of Surgeons. This intensive 1 week course involves creating a clinical trial proposal which is reviewed by their expert panel. My group won "best proposal" of the conference. Since then, I have sought out, applied, and had UAMS accepted into several national clinical trials, of which I am the institutional principal investigator. These include:

1.) *Best Endovascular vs. Best Surgical Therapy in Patients with Critical Limb Ischemia (BEST-CLI Trial):* This is a large multicenter national trial that randomizes patients into endovascular or open surgical treatment for critical limb ischemia. If hopes to shed light on whether an endovascular "first" approach to patients with peripheral arterial disease is appropriate.
2.) *Global Registry for Endovascular Aortic Treatment (GREAT Registry):* This is a multicenter national/international study looking at real life use of the Gore endovascular stent grafts for endovascular aneurysm repair. Outcomes include complications of the procedure, long-term outcomes, and graft patency.
3.) *Predicting the Safety and Effectiveness of Inferior Vena Cava Filters (PRESERVE Trial):* This is a large multicenter trial looking at efficacy of multiple brands of IVC filters, retrieval rates, and complications.
4.) *PRICE Trial:* This is a randomized controlled comparative study on the efficacy and cost of heparin-bonded versus non-heparin bonded PTFE dialysis access grafts. It is a smaller trial, with only 3 other centers involved.

In addition, I have taken leadership roles in some trials as well. I am a member of the Data Safety and Monitoring Board (DSMB) of the Acute Uncomplicated Type B Aortic Dissection Trial (ACUTE-B Trial), which is a randomized controlled comparative study on effectiveness of endovascular repair versus best medical therapy for acute uncomplicated type B aortic dissection. Additionally, I am a member of the executive committee of the PRICE trial described above.

Editorial Work

Over the last several years, I have been increasing my editorial work. In 2013, I became an ad hoc reviewer for the Journal of Vascular Surgery, the premier journal of our specialty. I have reviewed over 50 articles for this journal and have rapidly advanced from an ad hoc reviewer to a key reviewer the following year, to a distinguished reviewer this past year. The

"distinguished reviewer" designation is reserved for the top 15% of all reviewers based off the quality, quantity, and timeliness of the reviews. Additionally, I serve as a reviewer for the Annals of Vascular Surgery, for which I have reviewed over 20 articles and Journal for Surgical Research.

In the spring of 2016, because of work I have done with medical student surgical education, particularly in regards to assessment/question writing, I was named an associate editor for the next edition of the Essentials of General Surgery textbook, edited by Peter F. Lawrence, MD, which is used by the majority of medical students throughout the United States. This endeavor has just started, but I am proud to be a part of this process, and look forward to contributing to the premier medical student surgical textbook.

Summary

In summary, my research productivity has steadily increased during my tenure at UAMS. I have actively sought out multiple collaborations nationally for these projects, and have contributed to the personal mentorship of many students, residents, and fellows at our home institution. These research endeavors have resulted in national awards, some small grant funding, and editorial positions both with well-respected journals and textbooks of surgery. I continue to be actively involved in research, with several submitted papers currently awaiting review by journals, and multiple abstracts recently submitted for review for presentation at national meetings.