



Surgical Trainee Research Initiative and Evaluation (STRIVE) Annual Report 2017-2018

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*Supported by the Department of Surgery
Dartmouth-Hitchcock Medical Center*

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Introduction

The Surgical Trainee Research Initiative and Evaluation (STRIVE) Program was launched in July of 2016 to support general and vascular surgery residents pursuing a research fellowship with sponsorship from the Department of Surgery at Dartmouth-Hitchcock Medical Center, as well as those enrolled in the VA Quality Scholars Program. STRIVE was developed by Kayla Moore and Dr. Philip Goodney based on findings from a participatory needs assessment conducted in April 2016 and responds to needs identified by prior year research residents and department leaders.

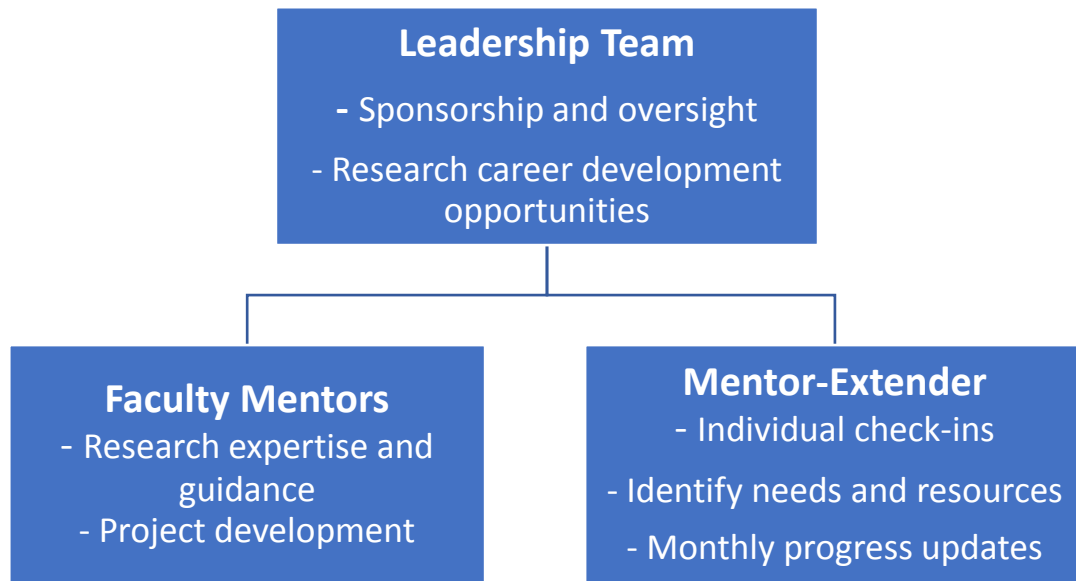
The STRIVE program provides individualized project management and operational support for research residents alongside a range of opportunities for residents to present, receive feedback, and engage in discussion on research projects with faculty and peers. These opportunities include bi-monthly research-in-progress meetings held as part of the Chair's Academic and Non-technical Development Opportunities (CAN-DO) conference, the annual Surgical Trainees Advancing Research Symposium (STARS), and Research Roundtables with multidisciplinary faculty from across Dartmouth.

Our intent is to empower residents to actively seek out opportunities that align with their interests both within and beyond Dartmouth and then provide guidance and links to resources as appropriate. To that end, residents have pursued a range of opportunities to gain the experience they desire, from self-directed research training and quality improvement projects, to external research fellowship programs, such as the Surgical Education Research Fellowship and the VA Quality Scholars Program.

STRIVE Program Overview

The STRIVE program aims to track and support the progress of research residents in the Department of Surgery and provide department leaders with timely and accurate information on the progress and achievements of research fellows.

The key elements of the program combine faculty mentorship, mentorship support, and leadership and oversight from the Department Chair, Vice Chair for Research and Vice Chair for Education. To help mentors and research fellows make efficient use of their time together, STRIVE uses a mentor-extender model in which research residents have regular check-ins with the STRIVE Research Director, Ms. Moore, in addition to their faculty mentor and/or Principal Investigators.



The Research Director helps the research residents with planning, organizing and executing their research projects and facilitates linkages with faculty experts, medical students, and support services as needed. The Department Chair and Vice Chairs are provided with monthly updates summarizing the current projects of each research resident and their progress. In addition, the Leadership Team and Research Director convene for semi-annual review meetings to discuss interim progress, challenges, and ideas to further strengthen the program.



Major Projects and Accomplishments

During the 2017-2018 academic year, the STRIVE program supported five surgical research residents: Ryland Stucke (general surgery), enrolled in the one-year home-based Surgical Education Research Fellowship (SERF) program; Daniel Underbakke (general surgery), engaged in self-directed research; and VAQS fellows: Spencer Trooboff (general surgery, 1st year research fellow), Jesse Columbo (vascular surgery, 2nd year research fellow), and Ravinder Kang (general surgery, 2nd year research fellow). At the beginning of the year, Ms. Moore met individually with each new resident to understand their goals, needs and project ideas, and make a plan for continued support according to their needs. Drs. Trooboff and Stucke, who were enrolled in formal fellowship programs, each with a defined structure, expert mentorship, and clear milestones, readily identified their goals and existing sources of support. Dr. Underbakke had a project concept and a supportive faculty mentor and was also enrolled in a Greenbelt QI Training. Based on their identified needs, Ms. Moore established a schedule of every-other-week check-ins with Dr. Underbakke, and monthly check-ins with Dr. Stucke and the VAQS fellows, with ad hoc communication and support for everyone in between. Ms. Moore kept a running list of each resident's projects and compiled monthly updates for the Leadership Team to keep them informed. The major projects and accomplishments of each research resident are summarized herein.

Dr. Ryland Stucke: With sponsorship from the Department of Surgery, Dr. Stucke dedicated his research year to furthering his interest in surgical education research through completion of the SERF program. Offered by the Association of Surgical Education (ASE), the SERF program aims to “equip investigators with the skills and knowledge needed to plan, implement and report research studies in the field of surgical education”. Dr. Stucke selected *defining surgical competence* as the primary focus of his SERF project, while simultaneously engaging in a variety of other research projects with faculty and residents at D-H, thus enabling him to develop a well-rounded research skill set that includes *survey methods*, *systematic review methodology*, and *qualitative analysis*, as well as deeper subject matter knowledge in *surgical consultation*, *opioid use*, and *bariatric surgery in adolescents*.

SERF pairs residents with a research advisor with expertise in surgical education who guides them in the design, execution and dissemination of their chosen research project. Designated milestones include attendance at the ASE Annual Meeting in the Spring preceding the start of the fellowship year for training, networking and to select a topic; presentation of a project proposal at the American College of Surgeons (ACS) Clinical Congress in the Fall of 2017; and a final project presentation at the ASE Annual Meeting the following Spring. Under the mentorship of his SERF advisor at University of Wisconsin, Madison, Dr. Stucke conducted a thorough literature review on training and evaluation of competence in surgical consultation, then designed and executed a Cognitive Task Analysis (CTA) which consisted of semi-structured key informant interviews from a total of 18 surgeons at Dartmouth-Hitchcock and University of Wisconsin, Madison. In addition to presenting his work during Surgical Education Week at ASE, Dr. Stucke also presented it locally at the Surgical Trainees Advancing Research Symposium (STARS). He then completed a follow-on project, applying the information learned from the CTA to develop an evaluation tool to assess surgical competence in consultation. After two rounds of pilot testing at multiple institutions and subsequent revisions, the tool was then shared with the Board of Surgery during Surgical Education Week in April 2018. Since then, Dr. Stucke has continued to refine the tool and has

been invited to give podium presentations on the project at the New England Surgical Society (NESS) meeting and the ACS Annual Meeting in the Fall of 2018.

In addition to his primary work on evaluation of surgical competence, Dr. Stucke collaborated with Drs. Maureen Hill and Richard Barth on multiple studies related to opioid prescribing habits and use in surgery. He has co-authored two manuscripts related to this work and delivered a podium presentation at the Academy Health Annual Meeting in June 2018. Dr. Stucke also played an important role as a co-author in a systematic review led by his peer, Spencer Trooboff on psychosocial outcomes of bariatric surgery in adolescents, and two survey projects led by Ravinder Kang on the effect of resident perceptions of midlevel providers on training.

Publications

1. Hill M, **Stucke RS**, Barth R, et al. Does inpatient opioid requirement predict outpatient opioid needs at discharge? JACS, In Press.
2. **Stucke S**, Sorensen M, Sullivan S. The Surgical Consult EPA: Defining Surgical Competence as a Basis for Evaluation. American Journal of Surgery [Under Review].
3. Kang R, Columbo JA, Kunkel ST, **Stucke RS**, Sabatino MJ, Tang A, Goodney PP, Rosenkranz KM. Residents' Impressions of the Impact of Advanced Practice Providers on Surgical Training. J Am Coll Surg. 2018 Jun;226(6):1036-1043. doi: 10.1016/j.jamcollsurg.2017.11.019. Epub 2017 Dec 7. PMID: 29224796.

Presentations

1. **Stucke R**. The Surgical Consult EPA: Defining Surgical Competence as a Basis for Evaluation. Presented at the Annual Meeting of the Association of Surgical Education, October 2017; San Diego, CA.
2. **Stucke R**. The Surgical Consult EPA: Defining Surgical Competence as a Basis for Evaluation. Presented at the Sixth Annual Surgical Trainees Advancing Research Symposium, April 13, 2018; Lebanon, NH.
3. **Stucke R**. Impact on Prescribing Habits for Elective Surgical Patients Following Mandatory Prescription Drug Monitoring Program Use. Presented at Academy Health Annual Research Meeting, Jun 24-26, 2018; Seattle, WA.
4. **Stucke R**. The Surgical Consult Entrustable Professional Activity (EPA): A Novel Tool to Assess Competence. To be presented at the ACS Scientific Forum; October 21-25, 2018; Boston, MA.
5. **Stucke R**. Defining Consult Competence: A Novel Tool for Evaluating the Surgical Consult Entrustable Professional Activity (EPA). To be presented at NESS, September 21-25, 2018; Portland, ME.

Dr. Daniel Underbakke: Dr. Underbakke entered his research year with an interest in studying how *patients perceive surgical competence, survey methods, as well as quality improvement*.

Dr. Underbakke's initial research efforts centered on developing a survey on patient perceptions of surgical competence as it relates to case volume, with the novel idea of using the internet-based crowdsourcing technology, Amazon Mechanical Turk (Mturk) to administer the survey to a relatively large number of people across the country. Under the mentorship of Dr. Sorensen, he completed a literature review, and then used a modified Delphi Method to develop the survey with input from faculty and residents at the Chairs Academic and Non-technical Development Opportunities conference. The project was shelved temporarily due to feasibility concerns but gained traction again later in the year with support from key faculty and a medical student. Dr. Underbakke remains engaged in the project in an advisory role.

After completion of his Greenbelt Training in September 2017, Dr. Underbakke worked with Nicole Batulis, a certified Lean Six Sigma Black Belt and experienced QI project advisor at D-H on a QI initiative to improve the efficiency of patient care from referral to follow-up. The project, which included surveys and interviews with

patients and surgeons from D-H's top referring health centers, afforded Dr. Underbakke the opportunity to gain skills in project design, interviewing, and qualitative data analysis. By December 2017, the project had resulted in several "quick wins" to improve efficiency and timeliness of patient care. Using the data collected during the Measure phase, Dr. Underbakke then developed a detailed process map and was able to recommend two interventions to improve efficiency in patient care. He plans to submit a manuscript to a QI journal in the coming year.

For his third project, Dr. Underbakke partnered with Dr. Srinivas (Joga) Ivatury to examine the geographic variation in surgical management of rectal cancer by concentration of board certified colorectal surgeons using the Dartmouth Atlas Rate Generator (ARG). Through this work, Dr. Underbakke gained experience using aggregated Medicare claims data and geographic information software. By combining cross sectional data from the ARG with zip codes of board certified colorectal surgeon practices across the US, he was able to demonstrate that a higher density of board-certified colorectal surgeons is associated with fewer abdominoperineal resections, and more frequent restorative reconstruction procedures. The results were presented at the Sixth Annual STARS and have also been accepted for podium presentations at NESS and ACS in the Fall of 2018. A manuscript is under development.

Presentations

1. **Underbakke D.** Medicare Beneficiaries with Rectal Cancer in Regions with Lower Colorectal Surgeon Density Have Higher Rates of Abdominoperineal Resection: A Dartmouth Atlas Study. Quickshot presentation at the Sixth Annual Surgical Trainees Advancing Research Symposium, April 13, 2018; Lebanon, NH.
2. **Underbakke D.** Medicare Beneficiaries with Rectal Cancer in Regions with Lower Colorectal Surgeon Density Have Higher Rates of Abdominoperineal Resection: A Dartmouth Atlas Study. To be presented at the ACS Scientific Forum; October 21-25, 2018; Boston, MA.
3. **Underbakke D.** Medicare Beneficiaries with Rectal Cancer in Regions with Lower Colorectal Surgeon Density Have Higher Rates of Abdominoperineal Resection: A Dartmouth Atlas Study. To be presented at NESS, September 21-25, 2018; Portland, ME.

External Programs in Research: VA Quality Scholars Program

The VAQS Fellowship is a two-year program that includes a Master's in Science at The Dartmouth Institute for Health Policy and Clinical Practice (TDI). Led by Dr. Louise Davies, Brant Oliver, Brenda Sirovich, and Philip Goodney, this VA-supported research experience has a longstanding history of success in mentorship and career development. It focuses on methods in outcomes research, quality improvement, and medical communication. A full report can be obtained at <http://www.vaoutcomes.org>. In the 2017-2018 year, Drs. Columbo and Kang completed their second year of the two-year fellowship and Dr. Trooboff completed his first year.

Dr. Spencer Trooboff: This year marked the first of Dr. Trooboff's two-year VAQS Fellowship and his research projects have encompassed a variety of topics including, *psychosocial outcomes for adolescents undergoing bariatric surgery, optimizing workup for breast cancer patients, readmission after cardiac surgery and effects of health policy on surgical practice.*

During the first half of the year, Dr. Trooboff devoted much of his time to conducting a systematic review on the psychosocial outcomes for adolescents undergoing bariatric surgery. To ensure the success of the project,

he recruited D-H's pediatric gastroenterologist, Dr. Marc Hofley to serve as the faculty mentor and secured collaboration from Ryland Stucke and several TDI classmates. He delivered a podium presentation on the study at NESS Resident and Fellow Research Day in May 2018 and is revising the manuscript and working to identify an appropriate journal after having sought and received comments from external experts at Cincinnati Children's Hospital.

For his second major study, Dr. Trooboff worked with Drs. Wong and Goodney to examine the role of surgeons and other specialists on cost performance of Accountable Care Organizations using the Performance Year Public Use File. The results showed that overall higher specialist use tended to decrease ACO savings with the exception of surgical intensity, which was associated with increase savings, thus highlighting the complexity of the issue surrounding healthcare costs in the US. The abstract was presented at the Sixth Annual STARS and accepted for podium presentation at the ACS Annual Meeting in October 2018.

As Dr. Trooboff enters the second year of his research fellowship, his interests around health policy have helped to shape two key projects which he will continue to work on in year two. The first will use the Vascular Quality Initiative registry-linked claims data to evaluate the cumulative cost of open and endovascular surgical repair for abdominal aortic aneurysms. To obtain permission to access the data Medicare claims data required for this study, Dr. Trooboff has applied for a Data Use Agreement and anticipates the data will be received in January 2019. For the second project, he aims to conduct a mixed methods study to assess surgeon engagement and integration in ACO implementation. For this study, Dr. Trooboff has been developing and piloting a survey which has been accepted as a poster at the VAQS Summer Institute.

Publications

1. **Trooboff S**, Kang R, Margenthaler J, Wong SL. Choosing Wisely, Optimizing Routine Testing in Newly Diagnosed Breast Cancer. *Breast Cancer Current Reports*. February 2018.

Presentations

1. **Trooboff S**. Psychosocial outcomes of adolescent metabolic and bariatric surgery: systematic review & meta-analysis. Presented at NESS Resident and Fellow Research Day, May 8, 2018; Waltham, MA.
2. **Trooboff S**. Understanding the black box: The role of specialist intensity and surgical care utilization in Accountable Care Organization performance. To be presented at the American College of Surgeons Clinical Congress, Boston MA, October 2018.

Dr. Ravinder Kang: Dr. Kang's research interests led her to focus her efforts on studies related to *surgical oncology, healthcare delivery, and resident education*. In addition, through her participation in the VA Outcomes Groups, she played an active role as a collaborator and co-author on a variety of studies related to vascular surgery outcomes. This year, Dr. Kang honed her qualitative research skills through expansion of a survey study to assess resident's perceptions of advanced practice providers, and through a mixed methods study to assess patient education materials.

Dr. Kang's survey project, which initiated with a TDI course on survey methods in early 2017, was first administered to surgical residents at D-H and then expanded to include residents at surgical residency programs throughout New England. The single institution manuscript was published in the *Journal of the American College*

of Surgeons (JACS) and presented at NESS in September 2017. Dr. Kang will present the multi-institutional project at the ACS Annual Meeting in October 2018 and is preparing the manuscript for submission.

In choosing a mixed methods project for her TDI capstone project, Dr. Kang demonstrated her ability to design and execute a complex, multi-faceted research project and adeptness with qualitative and quantitative methodologies. The study titled, “An Assessment of Colorectal Patient Education Materials: Consolidating Surgeon and Patient Perspectives” used the Patient Education Materials Assessment Tool, semi-structured interviews with surgeons, and focus groups with patients and their caregivers to assess the usefulness of printed patient education materials from multiple key perspectives. Dr. Kang has completed a draft of the manuscript and plans to submit it to JACS this summer.

Publications (2017-2018 year only)

1. **Kang R**, Columbo JA, Kunkel ST, Stucke RS, Sabatino MJ, Tang A, Goodney PP, Rosenkranz KM. Residents' Impressions of the Impact of Advanced Practice Providers on Surgical Training. *J Am Coll Surg*. 2018 Jun;226(6):1036-1043. doi: 10.1016/j.jamcollsurg.2017.11.019. Epub 2017 Dec 7. PMID: 29224796.
2. **Kang R**, Wong SL. Melanoma Surgery: Why Don't We Let the Guidelines Guide Practice? *Ann Surg Oncol*. 2017 Aug;24(8):2065-2066. doi: 10.1245/s10434-017-5891-6. Epub 2017 May 22. PMID: 28534078.
3. **Kang R**, Columbo JA, Kunkel ST, Stucke RS, Sabatino MJ, Tang A, Goodney PP, Rosenkranz KM. Resident Perceptions of Mid-Level Providers in the Surgical Setting. *JACS* (In Press).
4. **Kang R**, Wong S. (2018) Chapter 20: Being a Leader: Organizing a Health Services Research Program. Scoggins CR, Pollock RE, Pawlik TM (Eds). *Surgical Mentorship and Leadership: Building for Success in Academic Surgery*. New York, NY; Springer.
5. Kunkel ST, Sabatino MJ, **Kang R**, Jevsevar DS, Moschetti WE. A systematic review and meta-analysis of the direct anterior approach for hemiarthroplasty for femoral neck fracture. *Eur J Orthop Surg Traumatol*. 2018 Feb;28(2):217-232. doi: 10.1007/s00590-017-2033-6. Epub 2017 Aug 29. PMID: 28852880.
6. Columbo JA, **Kang R**, Goodney PP. Endovascular-First for Chronic Mesenteric Ischemia and the Importance of Long-Term Surveillance. *Angiology*. 2017 Nov;68(10):841-842. doi: 10.1177/0003319716679342. Epub 2016 Nov 16. PMID: 27856668.
7. Columbo JA, Lambour AJ, Sundling RA, Chauhan NB, Bessen SY, Linshaw DL, **Kang R**, Riblet NBV, Goodney PP, Stone DH. A Meta-analysis of the Impact of Aspirin, Clopidogrel, and Dual Antiplatelet Therapy on Bleeding Complications in Noncardiac Surgery. *Ann Surg*. 2018 Jan;267(1):1-10. doi: 10.1097/SLA.0000000000002279. Review. PMID: 28463896.
8. Columbo JA, Davies L, **Kang R**, Barnes JA, Leinweber KA, Suckow BD, Goodney PP, Stone DH. Patient Experience of Recovery After Major Leg Amputation for Arterial Disease. *Vasc Endovascular Surg*. 2018 May;52(4):262-268. doi: 10.1177/1538574418761984. Epub 2018 Mar 1.
9. Kunkel ST, Sabatino MJ, **Kang R**, Jevsevar DS, Moschetti WE. The Cost-Effectiveness of Total Hip Arthroplasty in Patients 80 Years of Age and Older. *J Arthroplasty*. 2018 May;33(5):1359-1367. doi: 10.1016/j.arth.2017.11.063. Epub 2017 Dec 5. PMID: 29276115.
10. Columbo JA, Kang R, Hoel AW, **Kang R**, Leinweber KA, Tauber KS, Hila R, Ramkumar N, Sedrakyan A, Goodney PP. A comparison of reintervention rates after endovascular aneurysm repair between the Vascular Quality Initiative registry, Medicare claims, and chart review. *J Vasc Surg*. 2018 Jun 15. pii: S0741-5214(18)30916-9. doi: 10.1016/j.jvs.2018.03.423. [Epub ahead of print] PMID: 29914838.
11. Columbo JA, Martinez-Cambor P, MacKenzie TA, **Kang R**, Trooboff SW, Goodney PP, O'Malley AJ. A comparative analysis of long-term mortality after carotid endarterectomy and carotid stenting. *J Vasc Surg*. 2018 Jun 15. pii: S0741-5214(18)31015-2. doi: 10.1016/j.jvs.2018.03.432. [Epub ahead of print]. PMID: 29914828.
12. Suckow BD, Goodney PP, Columbo JA, **Kang R**, Stone DH, Sedrakyan A, Cronenwett JL, Fillinger MF. National trends in open surgical, endovascular, and branched-fenestrated endovascular aortic aneurysm repair in

Medicare patients. J Vasc Surg. 2018 Jun;67(6):1690-1697.e1. doi: 10.1016/j.jvs.2017.09.046. Epub 2017 Dec 28. PMID: 29290495.

Presentations

1. **Kang R.** Review and Impact of National Cancer Database (NCDB) Participant User Files. Presented at Cancer Programs Conference, September 8-9, 2017; Chicago, IL.
2. **Kang R.** Resident Perceptions of Mid-Level Providers in the Surgical Setting. Presented at NESS, Sept 8-10, 2017; Brenton Woods, NH
3. **Kang R.** Receipt of Sentinel Lymph Node Biopsy (SLNB) for Thin Melanoma is Associated With Distance Traveled for Care. Presented at ACS Clinical Congress, October 22-26, 2017; San Diego, CA.
4. **Kang R.** Tracing the Trajectory of the National Cancer Database (NCDB) and Assessing the Impact of Participant User Files. Quickshot at ACS Clinical Congress, October 22-26, 2017; San Diego, CA.
5. **Kang R.** Cost-Effectiveness of Surveillance Strategies Following Resection of Stage III Melanoma. Presented at SSO, March 21-24, 2018; Chicago, IL.
6. **Kang R.** Colon Cancer Patient Education Materials: Assessing Understandability and Actionability Using a Validated Assessment Tool. Poster presented at SSO, March 21-24, 2018; Chicago, IL.
7. **Kang R.** Impact of autologous blood transfusion on survival and recurrence for patients undergoing hepatectomy for colorectal cancer liver metastases. Quickshot presentation at the Sixth Annual Surgical Trainees Advancing Research Symposium, April 13, 2018; Lebanon, NH.
8. **Kang R.** Impact of autologous blood transfusion on survival and recurrence for patients undergoing hepatectomy for colorectal cancer liver metastases. Presented at NESS Resident and Fellow Research Day, May 8, 2018; Waltham, MA.
9. **Kang R, et al.** Feasibility and efficiency of a decision aid to help Veterans choose between Open and Endovascular repair of abdominal aortic aneurysm. Presented at the Annual VA Surgeons Meeting, May 5-8, 2018; Miami Beach, FL.
10. **Kang R.** Colorectal Functional Outcomes. Presented at the New England Association of Colon and Rectal Surgeons Annual Meeting, June 2, 2018; Woodstock, VT.
11. **Kang R.** Impact of autologous blood transfusion on survival and recurrence for patients undergoing hepatectomy for colorectal cancer liver metastases. To be presented at NESS, September 21-25, 2018; Portland, ME.
12. **Kang R.** Perioperative outcomes after thyroidectomy: Does the level of the first assist matter? To be presented at New England Surgical Society Annual Meeting, September 21-25, 2018; Portland, ME.
13. **Kang R, et. al** A Multicenter Survey of the Impact of Advanced Practice Providers on Residents' Perceptions of Surgical Training. To be presented at the American College of Surgeons Clinical Congress, Boston MA, October 2018.
14. **Kang R, Columbo JA, Stucke RS, Rosenkranz KM, Goodney PP.** A Multicenter Qualitative Analysis of the Impact of Advanced Practice Providers Surgical Training. To be presented at the American College of Surgeons Clinical Congress, Boston MA, October 2018.

Dr. Jesse Columbo: During the second year of his two-year VAQS Fellowship, Dr. Columbo focused his research efforts on furthering the application of *advanced level statistics* to assess *outcomes of vascular surgery procedures*, using the Vascular Quality Initiative registry as well as registry-claims linked datasets developed by the Vascular Implant and Interventional Outcomes Network (VISION) at TDI and Weill Cornell Medical College.

Much of this research built upon a major project undertaken during the first year of his fellowship to validate the VQI-registry linked dataset through chart review.

His primary subject matter this year has been examining the outcomes of endovascular abdominal aortic aneurysm repair (EVAR). Working in collaboration with his primary research mentor, Dr. Goodney, and biostatistician James O'Malley (TDI), and others, Dr. Columbo has developed a series of manuscripts using an instrumental variable to reconcile the differences between observational and randomized studies which show differing results. For his TDI capstone project, Dr. Columbo used the VQI EVAR registry linked to New York State All Payer Data to examine rates of reintervention after EVAR. Dr. Columbo has submitted an abstract to the Eastern Vascular Society Meeting and is preparing a manuscript for submission to a vascular surgery journal.

A third project undertaken by Dr. Columbo this year used data from the Vascular Study Group of New England to compare the incidence of postoperative cardiac events among patients with negative stress tests versus who had no stress tests. The resulting abstract, titled, "Beware the Negative Stress Test: Postoperative Cardiac Events May Be More Prevalent Than in Patients Without a Preoperative Workup" was awarded first place at the Sixth Annual STARS.

Publications

1. Kang R, Kunkel ST, **Columbo JA**, Goodney PP, Davies L, Wong SL. Association of Hospital Employee Satisfaction with Patient Safety and Satisfaction within Veterans Affairs Medical Centers. Submitted to the Journal for Healthcare Quality, 2018.
2. Kang R, **Columbo JA**, Trooboff SW, Servos MM, Goodney PP, Wong SL. Receipt of Sentinel Lymph Node Biopsy for Thin Melanoma is Associated with Distance Traveled for Care. Submitted to the Journal of Surgical Oncology, 2018
3. **Columbo JA**, Kang R, Trooboff SW, Jahn KS, Martinez CJ, Moore KO, Austin AM, Brooks CG, Morden NE, Skinner JS, Goodney PG. Validating Publicly Available Crosswalks For Translating ICD-9 to ICD-10 Diagnosis Codes For Cardiovascular Outcomes Research. Submitted to Circulation: Cardiovascular Quality and Outcomes, 2018.
4. Leinweber KA, **Columbo JA**, Kang R, Trooboff SW, Goodney PP. A Review of Decision Aids for Patients Considering More Than One Type of Invasive Treatment. Submitted to the Journal of Surgical Research, 2018.
5. Zacharias N, Wang GJ, Sedrakyan A, **Columbo JA**, Boyle JR, Goodney PP. Using the Idea, Development, Exploration, Assessment, Long-term study Framework for Devices (IDEAL-D) to better understand the evolution of evidence surrounding fenestrated abdominal aortic endovascular grafts. Submitted to Circulation: Cardiovascular Interventions, 2018.
6. **Columbo JA**, Kang R, Newhall K, Spangler EL, Brooke BS, Dosluoglu H, Lee ES, Raffetto JD, Henke PK, Tang GS, Leila M, Kougias P, Johanning J, Arya S, Scali ST, Stone DH, Orion K, Halpern V, O'Connell J, Inhat D, Nelson P, Tzeng E, Zhou W, Barry M, Sirovich B, Goodney PP, The PROVE-AAA Study Team. Design and Initial Enrollment in The PReferences for Open Versus Endovascular Repair of Abdominal Aortic Aneurysm (PROVE-AAA) Trial. Submitted to Annals of Vascular Surgery, 2018.
7. **Columbo JA**, Martinez-Cambor P, MacKenzie TA, Staiger DO, Kang R, Goodney PP, O'Malley AJ. Comparing long-term mortality after carotid endarterectomy versus carotid stenting using a novel instrumental variable method for risk-adjustment in observational time-time-to event data. Accepted to JAMA Network Open, 2018.
8. Audu CO, **Columbo JA**, Sun SJ, Perri JL, Goodney PP, Stone DH, Nolan BW, Suckow BD. Variation in Timing and Type of Groin Wound Complications Highlights the Need for Uniform Reporting Standards. Accepted by the Journal of Vascular Surgery, 2018.

9. **Columbo JA**, Martinez-Cambor P, Kang R, MacKenzie TA, Goodney PP, O'Malley JA. A Comparative Analysis of Long-Term Mortality After Carotid Endarterectomy and Carotid Stenting. Accepted by the Journal of Vascular Surgery, 2018.
10. **Columbo JA**, Kang R, Hoel AW, Kang J, Leinweber KA, Tauber KS, Hila R, Ramkumar N, Sedrakyan A, Goodney PP. A Comparison of Reintervention Rates After Endovascular Aneurysm Repair Between the Vascular Quality Initiative Registry, Medicare Claims, and Chart Review. Accepted by the Journal of Vascular Surgery, 2018.
11. **Columbo JA**, Davies L, Kang R, Barnes JA, Leinweber KA, Suckow BD, Goodney PP, Stone DH. Patient Experience of Recovery After Major Leg Amputation for Arterial Disease. Vascular and Endovascular Surgery, January 2018. [Epub ahead of print] Pubmed ID: 29495957.
12. Jones DW, Goodney PP, Eldrup-Jorgensen J, Schermerhorn ML, Siracuse JJ, **Columbo JA**, Suckow BD, Stone DH. Active Smoking in Claudicants Undergoing Lower Extremity Bypass Predicts Decreased Graft Patency and Worse Overall Survival. Accepted to the Journal of Vascular Surgery, 2017.
13. Suckow BD, Goodney PP, **Columbo JA**, Kang R, Stone DH, Sedrakyan A, Cronenwett JL, Fillinger MF. National Trends in Open Surgical, Endovascular and Branched/Fenestrated Endovascular Aortic Aneurysm Repair in Medicare Patients. Journal of Vascular Surgery, December 2017. [Epub ahead of print] Pubmed ID: 29290495.
14. Kang R, **Columbo JA**, Kunkel ST, Stucke RS, Sabatino MJ, Tang A, Goodney PP, Rosenkranz KM. Resident Impressions of the Impact of Advanced Practice Providers on Surgical Training. Journal of the American College of Surgeons, December 2017 [Epub ahead of print] Pubmed ID: 29224796.

Presentations

1. **Columbo JA**, Barnes JA, Ramkumar N, Kang R, Austin AM, Hoel AW, Kang J, Sedrakyan A, Goodney PP. Patient Demographics, Aneurysm Size, and Five-year Rate of Reintervention After Endovascular Abdominal Aortic Aneurysm Repair in the Vascular Quality Initiative. Society for Vascular Surgery, Vascular Annual Meeting, Boston MA, June 2018. Championship round, poster competition.
2. **Columbo JA**, Martinez-Cambor P, Kang R, MacKenzie TA, Staiger DO, Goodney PP, O'Malley JA. Long-Term Survival After Carotid Endarterectomy and Carotid Stenting: A Propensity-Matched Analysis. New England Society for Vascular Surgery. Boston, MA, September 2017. Plenary Session.



STRIVE Faculty Mentorship and Collaboration

Columbo, Jesse

Faculty Mentors	Philip Goodney, MD, MD Mark Fillinger, MD David Stone, MD	DHMC, Vascular Surgery DHMC, Vascular Surgery DHMC, Vascular Surgery
Faculty Collaborators	James O'Malley, PhD Todd MacKenzie, PhD Doug Staiger, PhD Andrew Hoel, MD Francis Aiello, MD Matthew Alef, MD Brian Lucas, MD	The Dartmouth Institute The Dartmouth Institute Dartmouth College of Economics Northwestern, Vascular Surgery UMASS Worcester, Vascular Surgery University of Vermont, Vascular Surgery VA Outcomes Group, White River Junction VA Medical Center
Medical Students	Frank Miele, MS Kathleen Leinweber Peter Kang Sarah Bessen	Pegasus Lectures, Texas Geisel School of Medicine at Dartmouth Geisel School of Medicine at Dartmouth Geisel School of Medicine at Dartmouth

Kang, Ravinder

Faculty Mentors	Sandra Wong, MD, MS Louise Davies, MD, MS Philip Goodney, MD, MS	DHMC, Chair, Department of Surgery DHMC, General Surgery DHMC, Vascular Surgery
Faculty Collaborators	Kerrington Smith, MD George Blike, MD Richard Barth, MD Kari Rosenkranz, MD	DHMC, General Surgery DHMC, General Surgery DHMC, General Surgery DHMC, General Surgery DHMC, General Surgery

Underbakke, Dan

Faculty Mentors	Meredith Sorensen, MD Carolyn Kerrigan, MD S. Joga Ivatgury, MD	DHMC, General Surgery DHMC, General Surgery DHMC, General Surgery
Faculty Collaborators	Sandra Wong, MD, MS Philip Goodney, MD, MS	DHMC, Chair, Department of Surgery DHMC, Vascular Surgery

Trooboff, Spencer

Faculty Mentors	Sandra Wong, MD, MS Philip Goodney, MD, MD Marc Hofley, MD	DHMC, Chair, Department of Surgery DHMC, Vascular Surgery DHMC, Pediatric Gastroenterology
Faculty Collaborators	Alex Iribarne	DHMC, Cardiovascular Surgery
Medical Students	Peter Kang Sarah Bessen	Geisel School of Medicine at Dartmouth Geisel School of Medicine at Dartmouth

Stucke, Ryland

Faculty Mentors	Rebecca Minter, MD (SERF Advisor)	Chair, Department of Surgery, University of Wisconsin, Madison
Faculty Collaborators	Sandra Wong, MD, MS Kari Rosenkranz, MD Richard Barth, MS, MD Kerrington Smith, MD	DHMC, Chair, Department of Surgery DHMC, General Surgery DHMC, General Surgery DHMC, General Surgery

STRIVE Educational Programs and Courses

Columbo, Jesse

The Dartmouth Institute for Health Policy and Clinical Practice, MS degree program	June 2018
VA Outcomes Group, White River Junction VA Medical Center	July 2016 – June 2018
VA Quality Scholars Program, White River Junctions VA Medical Center, 2-year fellowship	July 2016 – June 2018
University of Massachusetts Vascular Skills Program	April 2017
Pacific Northwest Endovascular Course	May 2017
Vascular Annual Meeting	June 2017

Kang, Ravinder

The Dartmouth Institute for Health Policy and Clinical Practice, MS degree program	June 2018
VA Outcomes Group, White River Junction VA Medical Center	July 2016 – June 2018
VA Quality Scholars Program, White River Junctions VA Medical Center, 2-year fellowship	July 2016 – June 2018

Trooboff, Spencer

The Dartmouth Institute for Health Policy and Clinical Practice, MS degree program	Ongoing
VA Outcomes Group, White River Junction VA Medical Center	Ongoing
VA Quality Scholars Program, White River Junctions VA Medical Center, 2-year fellowship	Ongoing

Stucke, Ryland

Surgical Education Research Fellowship	July 2017 – June 2018
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Underbakke, Daniel

Greenbelt QI Training	May 2018
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STRIVE Research Meetings and Events

In addition to regular check-ins with research residents, STRIVE has integrated the elements for sharing research and receiving peer feedback that were previously in place. Twice a month, Dr. Goodney convenes a Resident Research-in-Progress meeting as part of the Chair's Academic and Non-technical Development Opportunities Conference in the Department of Surgery. The research discussions provide residents and faculty with a venue for sharing research in progress, receiving feedback, and refining ideas.



Chair's Academic and Non-technical Development Opportunities Conference – Schedule of Research Presentations

DATE	PRESENTER	TOPIC
		1) Contemporary Outcomes of Surgical Management of Complicated Thoracic Infections. 2) The Paradigm of Surgical Therapy for Lung Cancer: An Atlas of Care.
8/16/2017	Ian Bostock	
	Bjoern Suckow, Joe	
8/29/2017	Phillips, Phil Goodney	My experiences with research during training
		Review of Decision Aids in Medical and Surgical Practice
8/30/2017	Kathleen Leinweber	
	Christina Angeles, Joga	
	Ivatury, Maureen Hill,	
9/12/2017	Karina Newhall	My experiences with research during training
9/13/2017	Dan Underbakke	Project Proposal for Survey of Patient Perceptions of Surgical Competence
9/20/2017	Ryland Stucke	Project Proposal: Cognitive Task Analysis to Define Surgical Competency
		Survey domain/question selection for public perception of surgeon competence.
9/27/2017	Dan Underbakke	
10/11/2017	Ravinder Kang	Receipt of Sentinel Lymph Node Biopsy (SLNB) for Thin Melanoma is Associated With Distance Traveled for Care. (Practice talk for ACS)
10/18/2017	David Linshaw	Updates on 3RP Feasibility Study
11/8/2017	Jesse Columbo	Review of draft methods for ICD9 to ICD0 mapping manuscript
11/29/2017	Christina Angeles	How to present a poster
	Spencer Trooboff	
12/6/2017	Jenni Perri	Spencer Trooboff: "Trajectories in quality of life following adolescent bariatric surgery: a systematic review."

		Jennifer Perri: "Medicaid Reimbursement in Cardiac Surgery: Where is the Uniformity?"
12/13/2017	Joseph Phillips Ian Bostock, Abhishek Swarup, & Fariha Sheikh	How to present a paper
1/24/2018		ACS Practice Talks
2/14/2018	Dan Underbakke	Medicare Beneficiaries with Rectal Cancer in Regions with Lower Colorectal Surgeon Density Have Higher Rates of Abdominoperineal Resection
3/7/2018	Ravinder Kang	SSO practice talk, "Cost-Effectiveness of Surveillance Strategies Following Resection of Stage III Melanoma"
3/28/2018	Alex Iribarne	Imaging Surveillance After Proximal Aortic Procedures: Are We Following the Guidelines
4/11/2018	Ryland Stucke	Cognitive task analysis to define surgical competence
4/25/2018	Eleah Porter	Project Proposal
5/2/2018	Ravinder Kang & Spencer Trooboff	Practice Talks: NESS Resident and Fellow Research Day
5/9/2018	Allison Wilcox	Project Proposals
5/23/2018	Jesse Columbo	Reintervention After EVAR in VQI-Medicare

Surgical Trainees Advancing Research Symposium (STARS-6)

Fourteen young surgical investigators, participated in the fifth Surgical Trainees Advancing Research Symposium (STARS-5) this year, including three research residents. STARS was founded in 2013 by Drs. Stephan Holubar and Philip Goodney to promote interest in surgical health services research among young surgeons through a spirited competition. Dr. Kari Rosenkantz and Dr. Goodney co-directed this year's event, which was held over two days on April 12th and 13th. The Thursday Night "Dinner with the Stars" featured keynote speaker Dr. Adil Haider and "Quickshots" from residents. The symposium continued the next morning, April 13th with "Rising Stars Presentations" featuring the top young surgical investigators. DHMC's surgeon judges Christina Angeles, Philip Goodney, Srinivas J. Ivatury, Frank Penna, Kari Rosenkantz, Sandra L. Wong and visiting faculty Dr. Adil Haider scored each talk. First, second and third place awards were given to the top presenters.

First Prize: **Jesse Columbo**, MD, "Beware the Negative Stress Test: Postoperative Cardiac Events May Be More Prevalent Than in Patients Without a Preoperative Workup"

Second Prize: **Peter Kahng**, Geisel School of Medicine, "Testing the Efficacy of Intraoperative Imaging for Trans-Oral Surgery"

Third Prize: **David Han**, Geisel School of Medicine, "Overuse of cystoscopic surveillance among patients with low-risk non-muscle-invasive bladder cancer – A national study of patient, provider, and facility factors"

QuickShot Prize: **Abishek Swarup**, MD, “The Effect of Nonoperative Management of Chronic Anal Fissure and Hemorrhoid Disease on Bowel Function Patient-Reported Outcomes”



Presenters from the Sixth Annual STARS: Abishek Swarup, Ravinder Kang, Ryland Stucke, Jesse Columbo, Dan Underbakke, Erin D'Agostino, David Han, Shaun Cooper, Peter Kahng, Justin Zelones (not pictured: Brendin Beaulieu-Jones, Anna Vollstedt, Sarah Carlson, Spencer Trooboff).

Resident Travel Funds For Research Support

The Department of Surgery provides funding for travel expenses for residents to present original scientific work at regional and national professional society meetings. Use of this fund is monitored by the STRIVE Program Director. In the 2017-2018 year, the DoS sponsored 44 trips (33 National, and 13 Regional) totaling \$50,123 in expenditures. A total of 22 residents encompassing the sections of general surgery, urology, plastic surgery, dermatology, and otolaryngology made use of the fund for research presentations.



THE SIXTH ANNUAL STARS

(SURGICAL TRAINEES ADVANCING RESEARCH SYMPOSIUM)



Thursday Nite Dinner with the Stars

Featuring Keynote Presentation and “Quickshots” from surgical trainees. April 12th, 2018 from 5:30 – 8PM. Auditorium F

Order	Time	Author	Title
1	6:03	David S. Han Geisel School of Medicine	Patient, provider, and facility factors associated with underuse of guideline recommended surveillance for high-risk non-muscle-invasive bladder cancer – A national study
2	6:10	Ravinder Kang, MD, MS	Impact of autologous blood transfusion on survival and recurrence for patients undergoing hepatectomy for colorectal cancer liver metastases
3	6:17	Abhishek Swarup, MD	The Effect of Nonoperative Management of Chronic Anal Fissure and Hemorrhoid Disease on Bowel Function Patient-Reported Outcomes
4	6:24	Brendin R. Beaulieu-Jones Geisel School of Medicine	Screening versus Staging Magnetic Resonance Imaging-Guided Core Needle Breast Biopsies: Upstage Frequency and Lesion Characteristics for High-Risk Lesions
5	6:35	Adil Haider, MD, MPH <i>Harvard Medical School and Harvard School of Public Health</i>	Enhancing Our Cultural Dexterity: The Next Step in Reducing Disparities and Providing Patient-Centered Surgical Care
6	7:45	Dan Underbakke, MD	Medicare Beneficiaries with Rectal Cancer in Regions with Lower Colorectal Surgeon Density Have Higher Rates of Abdominoperineal Resection: A Dartmouth Atlas Study
7	7:52	Annah Vollstedt, MD, MS	The use of opioids for stones and ureteral stents: Insights from an EDGE Consortium patient survey
8	7:59	Justin Zelones, MD	Independent Plastic Surgery Residents and General Surgery Board Certification
9	8:06	Sarah Carlson, MD	Recanalization of Long Chronic Total Occlusions via Retrograde Pedal Access in High-Risk Patients with Critical Limb Ischemia

Friday Morning Rising Stars Presentations

Full length presentations from Surgical Trainees. April 13th, 2018 from 6:30 – 8:30AM. Auditorium G

Order	Time	Author	Title
1	6:45	David S. Han Geisel School of Medicine	Overuse of cystoscopic surveillance among patients with low-risk non-muscle-invasive bladder cancer – A national study of patient, provider, and facility factors
2	7:00	Jesse A. Columbo, MD	Beware the Negative Stress Test: Postoperative Cardiac Events May Be More Prevalent Than in Patients Without a Preoperative Workup
3	7:15	Spencer W. Trooboff, MD, MBA	Understanding the Black Box: The Role of Specialist Intensity and Surgical Utilization in Accountable Care Organization Performance
4	7:30	Ryland Stucke, MD	The surgical consult EPA: Defining competence as a basis for evaluation
5	7:45	Peter Kahng Geisel School of Medicine	Testing the Efficacy of Intraoperative Imaging for Trans-Oral Surgery
6	8:00	Shaun Cooper Geisel School of Medicine	Tea consumption and the risk of squamous cell and early-onset basal cell skin cancer in a case-control study
7	8:15	Erin D’Agostino Geisel School of Medicine	Mechanisms of functional improvement in deep brain stimulation to restore visuospatial learning in a mouse traumatic brain injury model: A pilot study

Co-Directors: Philip P. Goodney, MD MS; Kari Rosenkranz, MD

Prizes: \$500 / \$250 / \$100 / \$100 (1st/2nd/3rd, Quickshot Award)

Judges: Christina Angeles, MD; Philip P. Goodney, MD MS; Adil Haider, MD MPH;
Srinivas J. Ivatury, MD MHA; Frank Penna, MD; Kari Rosenkranz, MD; Sandra L. Wong, MD MS

Looking Ahead

Since the launch of STRIVE, Ms. Moore has worked closely with the general surgery research residents and VA Quality Scholars Research Fellows from the Department of Surgery, and kept leadership informed of their progress and challenges. Together, with Dr. Goodney, she has tailored the program to meet the individual needs of each research resident, providing consistent support through regular check-ins, project management guidance, and facilitating linkages to resources and research experts when appropriate.

In the coming year, Ms. Moore will initiate a schedule of group check-ins with the surgical research residents to encourage discussion and cross-fertilization, as well as identify opportunities and ideas of mutual interest. By meeting as a group, rather than individually, we hope to enhance collective know-how related to operationalizing surgical research at DHMC, encourage peer collaboration and support, and identify solutions to common needs.

Ms. Moore has already begun meeting with new research residents for 2018 Academic Year to identify their overall goals and project ideas and will continue to meet with them individually and collectively throughout the year to support and encourage their progress. Our hope is that as the STRIVE program continues, we will continue to build on the knowledge, insights and lessons learned from the first two years to strengthen the overall STRIVE program and ensure surgical residents have meaningful and productive research years.