



Clinical Research Section

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The Year 2021 has been a year of change, adaptation, and resilience for the Penn Orthopaedics Clinical Research Program in parallel with the Department, the Institution and the larger community. Clinical Research activity at Penn Orthopaedics was brought to a temporary halt in March of 2020 preparatory to the clinical response to the COVID19 pandemic. Staff worked with Sponsors and faculty to ensure the safety of our research participants during this unprecedented time. We the clinical research staff echo all the pride that has been directed at our clinical and administrative staff in response to the pandemic and its impact on clinical operations and the continuity of patient care for both emergent and elective populations.

As clinical research always runs parallel to care, the Clinical Research Team and PIs had to overcome significant logistic challenges to keep pace with the ever changing physical and technical barriers of each day. Sponsors once eager to begin new work put new studies on indefinite hold. Existing studies each had to either adapt to virtual visits or suspend activity until in-person contact was permitted. All changes to protocols always require regulatory approval, and the team worked diligently with Sponsors, faculty, and the IRB to achieve operational success. At the same time, the Institution focused effort on prioritizing COVID19 related and other life-saving research.

Staff Update. Each year, our Team changes a little as many of our CRCs mature in their careers and seek other opportunities either to further their education or to take more advanced positions at Penn or in Industry. This year, we have had to adapt to these normal transitions in the wake of a University-wide hiring freeze anticipatory to the financial losses from the pandemic. We are very happy to congratulate the success of Christine Wojciechowicz, former Adult Reconstruction CRC, and Shawn Simmons, former Sports Medicine CRC, for their successful admission into Medical School for Fall 2020. We are also very proud of Evan Bannister who formally served the Department as a CRC for Trauma, Sports Medicine, and Shoulder & Elbow Divisions and informally cross covered studies in every other Division. Evan accepted an Industry position and left Penn in September, 2020. Renee Jurek, long time CRC in the Division of FOP has stayed within Penn but moved on to the Department of Epidemiology & Biostatistics. Most recently, Warren Harding, former CRC at PAH who served Foot & Ankle, Spine, and Adult Reconstruction Divisions, accepted a promotion in rank and has transitioned into the Department of Anesthesiology & Critical Care. All of these Team members will be missed as their contributions to the Department were significant. The search for new staff is underway.

Adult Reconstruction still has 11 active funded studies. All of these were temporarily paused or quickly adapted to the virtual visit model. Helena Moses had been working from home but was one of the first non-clinical people to return to the office when elective surgeries were permitted at PPMC. The myMobility study (NCT03737149) led by Dr. Israelite and the PCORI funded PEPPER study (NCT02810704) led by Dr. Nelson remain our largest projects in regards to targeted enrollment. Other PIs such as Drs. Hume, Lee, Sheth, and Travers also have active funded projects at various stages.

Foot & Ankle has maintained 3 funded projects through the pandemic, though one, the longest running, STAR study (NCT01284283) has come to its planned end with the last subject completing their last visit this year. This Division has welcomed a new Chief, Dr. Casey Humbyrd, and we have already benefited from her presence in the Divisional Research meetings. The Fellows in this Division are engaged and active and work closely with Dr. Mary Dooley to stay on track with compliance. The position recently vacated by Warren Harding will need replacing as the PAH Campus is energetic and poised for productivity. We also look forward to working with Dr. Anthony “Bobby” Ndu who trained in this Division as a Fellow. Dr. Ndu was active in Clinical Research during his Fellowship so we expect he will rejoin us with that same level of energy and engagement!

FOP. It is difficult to say enough about Team FOP. Despite the immediate shutdown of patient contact activities due to the pandemic, the tireless search for every conceivable approach to conquering this disease continues. Drs. Kaplan and Al Mukaddam have wrapped up the Natural History Study (NCT02322255) this year and prepare for additional investigations with Palovarotene (Ipsen <https://www.ipsen.com/>). They are also about to complete a study using the investigational product REGN2477 (Regeneron Pharmaceuticals, <https://www.regeneron.com/>) (NCT03188666). The FOP Program is still supported by Katherine Toder, Project Manager, and Kamlesh Rai.

Hand Surgery remains one of our most active and financially sound Divisions. Dr. Mary Dooley and Ashley Iwu continue to support this Division. Mary is known well throughout the Department as she assists in nearly every Division in some capacity. Ashley has also cross covered the Division of Trauma. Dr. Bozentka's Axogen Nerve Cuff Study (NCT01809002) is complete at our site and globally has fewer than 20 patient visits remaining for completion. Dr. Scott Levin is the Global PI on this study. Dr. Levin also serves as the Global PI on the Polyganics Sponsored Protect Neuroma study (NCT02993276) for which Dr. Gray is the local PI. The Polyganics study is complete and Dr. Levin is working on the

manuscript. We are very excited about how this positions our site for future work in Hand Research. Dr. Steinberg recently completed enrollment for an Investigator Initiated Trial funded by GE Healthcare which evaluates the use of Digital Tomosynthesis vs CT or MRI scanning when wrist fracture is suspected. The outcomes will be forthcoming. It is with extreme pride that we also report that Dr. Levin's Team has successfully enrolled all eligible adult Hand Transplant recipients and candidates in screening, into his DOD funded Qualitative Research Study (W81XWH1820067). This groundbreaking work wherein Dr. Levin serves as a partnering PI with Dr. Scott Tintle (Walter Reed Medical Center) and Dr. David Tulsy (University of Delaware) is capturing data that will assist all providers in the Hand Transplant selection, treatment, and recovery process garner a fuller understanding of this complex experience from the clinician and patient perspectives. This work and all of Dr. Levin's ceaseless efforts in this focus area will forever mark Penn Orthopaedics as a foundational leader in the world of Vascularized Composite Allograft Transplantation.

Shoulder & Elbow has developed a strong Clinical Research presence over the past 10 years with 5 funded studies currently ongoing. Currently, all studies in Shoulder & Elbow are led by Dr. Kuntz as PI, though there are pending projects for Dr. Huffman anticipated for FY21. We welcome Dr. Tamara Rial to the Shoulder & Elbow Division as the new Clinical Research Coordinator supporting this Division. Dr. Rial joined us in February 2021 and we look forward to her contributions to the Division and our team.

Spine continues to grow its Clinical Research program. The ViviGen Cellular Bone Matrix study (NCT02814825) is drawing to a close as all patients have completed all visits. "An Assessment of P-15L Bone Graft in Transforaminal Lumbar Interbody Fusion with Instrumentation" (NCT03438747) continues to be open to enrollment and we look forward to new funded work being initiated shortly that is driven by a collaboration between Dr. Smith and Dr. George Dodge (McKay Laboratory). We look forward to reporting on these studies in the next issue. The Spine Division also welcomes Dr. David Casper as the new Chief of Clinical Research. Dr. Casper has jumped into this role with both feet and has been having bi-weekly research meetings.

Sports Medicine has maintained the majority of their repertoire of active funded projects and Dr. Carey continues in his role as the Local and Global PI on the Vericel sponsored PEAK study (NCT03588975). The ROCK longitudinal study is transitioning operationally to CHOP. The loss of Shawn Simmons was impactful for this Division and the replacement of his role has been a top priority. A successful match is

pending. Dr. Kelly has established a formal collaboration with Dr. Dodge and at least one new study is pending and will start shortly. Drs. Sennett and Zgonis continue to engage in both funded and investigator initiated projects.

Ortho Trauma continues to remain a leader in Clinical Research. Dr. Mehta is the PI on 3 grant funded projects. Two of these projects are funded by the AO Foundation through Virginia Commonwealth University (1 is Investigator Initiated and 1 is AO Initiated). The third, is a PCORI funded project through the University of Maryland which has recently closed to enrollment. We look forward to initiating a new Industry-sponsored, ICU focused project during FY22. During this year the Division has also said farewell to Dr. Jaimo Ahn who will be sadly missed. Dr. Donegan remains active in both clinical and nonclinical research. Dr. Mehta also serves as the Medical Director of Clinical Research and has done an outstanding job of supporting our Team in every area of the research, administrative, and logistical processes that the work requires. We thank him for his indefatigable energy and leadership.

Collaborations. Inter-Divisional and Inter-Departmental collaborations have continued to thrive and new relationships have developed during the past year. The Departments of Orthopaedic Surgery and Anesthesia & Critical Care continue their synergistic relationships. Highlights include recently awarded 1R21NR019047-01A1 (NIH/NINR, PIs Cheatle & Compton,) which features Drs. Charles Nelson and Nabil Elkassabany as Key Personnel on the study team. This project will include the development and preliminary efficacy testing of a targeted cognitive-behavioral therapy (CBT) opioid taper intervention delivered in the 4 weeks immediately prior to planned TKA to mitigate pre-operative risk factors for chronic post-surgical pain. The PCORI sponsored REGAIN Trial (NCT02507505) (PI, Dr. Neuman) trial has reached complete enrollment with randomization of their 1,600th patient on Feb 18, 2021! Congratulations to Dr. Mark Neuman and the REGAIN Team for this amazing accomplishment! Multiple other similar relationships are either being activated or are in discussion.

Thank you to all the named and unnamed staff and faculty on our team, the residents, fellows, and other clinical support staff, and the leadership of Penn Orthopaedics and Anesthesiology & Critical Care for their ongoing support of our team. Specifically, we thank the Chairs, Drs. Levin and Hanson, the Vice-Chairs for Research, Drs. Soslowsky and Eckenhoff, as well as the Chief Operating Officers, Neil Ravitz and Kathryn Stamps, and BAs Cherie Jester and Cindy Bliven for your ongoing support throughout the year.

Orthopaedic Surgery Clinical Research Team



FOP Clinical Research Team



FOP Clinical Research Team



Figure 1. FY21 Orthopaedic Surgery + Anesthesiology & Clinical Research Teams. **Top row:** Mary Dooley (Cross covering most Divisions), Ashley Iwu (Primary Hand, cross covering Trauma), Helena Moses (Adult Reconstruction, PPMC), Tamara Rial (Shoulder & Elbow). **Middle row.** Katherine Toder, Kamlesh Rai (Not pictured, Giacomo Pazzaglia). **Bottom row:** Aliaksei Basatski, Annie DiLisio (on Active Duty Military Leave at this writing), Cassandra Dinh, Warren Harding.

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|  | <p>Samir Mehta, MD Chief, Division of Orthopaedic Trauma, Medical Director of Clinical Research Associate Professor of Orthopaedic Surgery</p> |  | <p>Annamarie Horan, MPA, PhD Director of Clinical Research Orthopaedic Surgery and Anesthesiology & Critical Care</p> |
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