

Researcher Profiles: Drs. Jeffrey Friedrich and Kari Keys



Department of Surgery faculty members have widely varied clinical practices and research interests. This diversity of professional focus is one of the attributes that make the Department exceptional among its peers. However, there is one aspect that is common to every faculty member: the training of the next generation of surgeons is the common denominator and, as with other aspects of the surgical profession, there are many exciting research efforts happening in resident education. Drs. [Jeffrey Friedrich](#), Associate Professor and Residency Program Director in the Division of Plastic Surgery, and [Kari Keys](#), Assistant Professor in the Division of Plastic Surgery and Associate Program Director of Plastic Surgery Residency, both have a strong interest in surgical



education – not only in the actual teaching of residents, but also in investigating the many ways resident education can be enriched for the benefit of faculty, trainees, and patients.

Many resident education studies take the form of surveys and are often done in collaboration with national surgical education societies, including the [Association for Surgical Education](#) and the [American Council of Academic Plastic Surgeons \(ACAPS\)](#). These surveys have helped reveal important information about resident performance and plastic surgeon minimum competencies in subspecialties. Both Drs. Friedrich and Keys are active participants in these investigations. The results from these studies have enabled numerous improvements to be undertaken at the local programs within the Department of Surgery, including the creation of the ACAPS Microsurgery 101 Taskforce for which Dr. Keys was recently appointed co-chair. The goal of this task force is the creation of a comprehensive online national microsurgery curriculum, which will enable standardization of microsurgical training.

Beginning two years ago, the [American Council for Graduate Medical Education \(ACGME\)](#) enacted a seismic shift in the manner that resident trainees and residency programs are evaluated and accredited. This new program was entitled the [Next Accreditation System \(NAS\)](#), and one of the cornerstones of this effort is the specialty-specific Milestones. The Milestones are an expansion of the extant six core competencies and provide specific actions and tasks upon which residents are evaluated.

Dr. Friedrich has found this to be a fruitful area of research. He is using this transition as an opportunity to gather data about the

Milestones and to study how residents evaluate their own progress relative to faculty members' evaluations of them. Self-assessment has been used in other industries for decades, but medical education programs have not used this methodology as widely. It is anticipated that data from this study will enable surgeon-educators to use Milestones to their fullest capacity, and to improve how resident competency mastery is evaluated and tracked.

Another exciting area of education research is the use of simulation in surgical education. Unlike the Milestones, the use of simulation is not new and its utility in surgical education is not in doubt. Microsurgery is an essential component of plastic surgery training, and one that requires a considerable amount of practice. The ability to practice in a simulated setting allows trainees to achieve a more sophisticated microsurgical skill set by the time they need to use these techniques in the clinical setting.

Drs. Keys and Friedrich have invested considerable effort into incorporating more simulation training into the Plastic Surgery residency program. They recently obtained a grant from the [Center for Leadership in Medical Education \(CLIME\)](#) to develop a simulation-based microsurgery education module, which will enable residents to more readily develop nimble and skillful microsurgical techniques, making them much more expert when they begin performing these procedures in the clinical realm. This winter, Drs. Keys and Friedrich will apply for a Plastic Surgery Foundation (PSF)/ACAPS Combined Pilot Research Grant to take the microsurgery simulation curriculum to the national level with validation of simulation tasks leading to the development of a standard national microsurgery simulation curriculum similar to what the [Fundamentals of Laparoscopic Surgery \(FLS\)](#) has done for general surgery.

In the last year, Dr. Keys, with resident Erin Miller, MD, has also developed a low-cost breast reduction simulator that delivers hands-on practice with breast marking and shaping. These two elements of breast reduction are most often performed by a faculty member since the patient is awake at the time and the markings are critical to final breast size and shape. Prior to the simulator, the skill could typically only be learned by observation. This year, Dr. Keys and her team will be determining the effectiveness of this simulator in resident education.

Resident education research is a multifaceted component of an academic surgical program, and is vital to a program's continued ability to not only keep pace with new techniques, but also produce high-quality graduates who can safely practice the most complex surgical techniques. The development of skilled and ethical surgeons is the ultimate goal of any surgical training program, and education research is necessary to continually improve the quality of surgeons entering the workforce.