

The only level-1 trauma center for nearly a quarter of the U.S. surface area, serving a population of 9.9 million, Harborview Medical Center is a unique institution with incredible opportunities for clinical innovation, education, and trauma research. With our relocation to the new Inpatient Expansion Building in 2008 (Figure), we expect to enhance interactions between the academic and clinical enterprises, increase productivity, and provide a completely new home for our future expansion. The establishment of a Fellowship in Trauma and Reconstructive Surgery in 2005, regular involvement of urology residents in the Harborview Injury Prevention Research Center, and an expanding volume of trauma and elective reconstruction make these exciting times at Harborview.

The fellowship at Harborview focuses on multi-disciplinary surgical care of the acutely injured and chronically damaged genitourinary tract. The Fellow and UW residents participate in a multidisciplinary team amongst trauma surgeons, orthopedic surgeons, interventional radiology, and critical care during the acute post-injury phase. The vast majority of our trauma is blunt, primarily motor vehicle crashes, but with a number of other interesting mechanisms including skiing and snowboarding, rodeo, mining and logging, kite sailing, and boating. The severity of injuries that is seen at Harborview is significant. We see the worst of the worst, and it is the rare patient who has an isolated kidney or bladder injury. An important part of the team is our clinic staff. This loyal group of individuals, including Agnes Navarro and Christine Tang, Dolores Palacpac and Kay Longhi, are critical to our mission.



View of the IEB (left) and bridge to main hospital. The bridge provides seismic upgrade to existing structures

We also have a strong emphasis on elective reconstruction of complex urethral and genital problems in men. Post-traumatic scarring, iatrogenic injuries, cancer surgery and radiation make up a major part of the training program. Important interactions are required to complete these reconstructions including orthopedic management of chronic bony pelvis injury, colorectal surgeons to deal with fistulas, expert radiologists for appropriate imaging of the urinary tract, and a team of plastic surgeons to help with genital skin deficiency, flap coverage, and arterial revascularization of penile and genital ischemia. The overarching philosophy at Harborview is that the multi-disciplinary team allows the best people to work on the different aspects of a problem to achieve a positive outcome for the patient.

A recent example is a middle-aged man who suffered a severe sawmill injury, requiring extensive initial vascular, trauma, and urological surgery including partial penile amputation. That the patient survived at all is amazing, and a testament to the acute injury management. A year later however, his urological problems continued to plague

him. Extensive reconstructive surgery included mobilization and lengthening of the residual penis, creation of a new urethrostomy at the tip of the penile stump, local skin rearrangement, and split thickness skin graft to resurface the newly advanced penis.

Our clinical research has thrived with the combined energy, analytical skills, and collaborative efforts of our residents and fellows. Jonathan Wright, a current Oncology Fellow in the department, became the first urology trainee to spend a year at the Harborview Injury Prevention Research Center. While obtaining his M.S. in Biostatistics and Epidemiology, Dr. Wright help forge important relationships with the Center and one of it's founders, Fred Rivara, M.D., Ph.D. This led to numerous publications, most notably a recent analysis of the Pennsylvania Trauma Outcome Study looking at sexual and excretory dysfunction after pelvic fracture in men and women. Other work on the subject of bladder and urethral injury related to pelvic fracture has also moved Harborview into prominence as a center focused on this problem. We view pelvic fractures as important because of the overall numbers of injured patients (114,000 per year), significant percentage with genitourinary injuries (5% bladder, 3% urethra) and the potential broad impact on sexual and urinary function in up to 15-20% of these patients. Pelvic fracture leads to a significant burden of disease in the United States related to these dysfunctions. On-going studies to analyze the causes and predictors of this dysfunction are the focus of our current fellow. Matt Sorensen, M.D., a PGY-4 in the department is following in Dr. Wright's footsteps in completing a yearlong research experience in HIPRC. Again under the mentorship of Dr. Fred Rivara, Matt has been privileged to work on a very large and important trauma study, The National Study of Causes and Outcome of Trauma (NSCOT). Using this rich and important dataset, Matt is investigating the issue of sexual dysfunction after major trauma. Other avenues of investigation being pursued by our current fellow, Dr. Josh Broghammer include the role of angioembolization in renal injury management both at the local level and on a nationwide scale using the National Trauma Data Bank.

A final important area of investigation is in renal injury mechanisms and prevention. Our first fellow, Dr. James Kuan, was awarded the 2nd prize for the 2007 AUA ACMI/Gyrus Prize Essay Contest for his work looking at crash kinematics of renal injury. In a provocative analysis of data from the Crash Injury Research Engineering Network (CIREN) preliminary evidence suggests that frontal crashes can cause renal injury by accelerating the occupant into the seatbelt, whereas side-impacts injure when the vehicle's side panel intrudes into the compartment striking the occupant. All though these are preliminary findings, they point the way towards further studies to be carried out by current and future fellows that might ultimately lead towards redesign of vehicle compartments or restraint elements to reduce the risk of solid organ injuries.

As the burden of disease worldwide related to road traffic accidents and other forms of trauma continue to mount, strategies that will prevent injuries or reduce the morbidity of complications from trauma are essential. The combination of extensive clinical material, multi-disciplinary research collaboration, and the Harborview Injury Prevention Research Center will contribute to continued leadership in the field of Trauma by the University of Washington Department of Urology.