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Thomas Jefferson University and University of the Arts to Study Physician Burnout in the Emergency Room

The two institutions will use virtual reality modeling to identify and improve conditions that contribute to stress, fatigue and poor job satisfaction in academic emergency departments

PHILADELPHIA – Two storied Philadelphia universities—both renowned for heralding the transformative power of creativity—are partnering in order to reduce physician burnout in emergency medicine settings. The collaboration is supported by a grant awarded by the Emergency Medicine Foundation and HKS Architects.

Nearly 60% of emergency physicians report experiencing burnout which can result in chronic exhaustion, health deterioration from stress and the potential for compromised health care delivery to patients.

"Now more than ever, we must understand and redesign the human experience of frontline emergency rooms," said Stephen K. Klasko, MD, MBA, President of Thomas Jefferson University and CEO of Jefferson Health. "It's a brilliant opportunity to provide much-needed relief and benefit emergency staff and their patients."

The study is distinct in both its approach and cross-disciplinary team. It will be anchored by Jefferson's Health Design Lab and the Emergency Medicine department, and University of the Arts' new Center for Immersive Media (CIM), a 5,600-square-foot facility devoted to emerging and new technologies. The project will use high-fidelity virtual reality modeling, conducted at the CIM, to analyze the environmental factors of the Emergency Medicine department at Thomas Jefferson University.

"It is this type of cross disciplinary thinking and creative collaboration that embraces the essential role of the arts that I believe is going to be critical to our success as society as we emerge from a global pandemic," says David Yager, president & CEO of University of the Arts. "We are proud to partner with Jefferson not only on this groundbreaking and timely study, but on a number of projects that demonstrate the innovative power that's at the intersection of the arts and sciences."

Environmental factors such as lighting, presence of windows, access to nature, aesthetics and imagery, ventilation, space, circulation and wayfinding, noise and ergonomics have been proven to correlate with levels of stress, fatigue and low job satisfaction in other healthcare settings, but have not been explicitly studied within emergency room settings—in part due to the complexity of studying an active and highly trafficked emergency setting. Leveraging virtual reality will help the team study, and later manipulate, the emergency setting's

environmental factors without disrupting the life-saving activities of a currently operating academic emergency department.

“If you have ever been in a busy ER, or seen one on TV, it’s not surprising people working in them frequently burnout. There can be high stress, chaos, noise, crowded halls, poor lighting and a lack of windows or respite areas. In the current pandemic, the impact of poor ER design is felt even more by frontline workers,” says Dr. J. Matthew Fields, principal physician investigator and associate professor of emergency medicine at Thomas Jefferson University.

“For years, people and hospitals have tried to reduce physician burnout, but no one has really attempted to change the environment itself,” Dr. Fields continues. “That’s why we are teaming up with the UArts’ Center for Immersive Media to explore provider burnout in a completely novel way, through high fidelity virtual modeling of the ER space. The goal will be to pinpoint those areas in the environment that create the most stress and apply design thinking principles to reimagine and redesign them.”

Dr. Fields also notes that this novel and collaborative approach will help pave the way for improving healthcare spaces in ways that will benefit providers, staff and patients.

“This is an exciting collaboration in which we are leveraging VR technology for contributing to the effectiveness and well-being of dedicated healthcare providers whose work routines take place in a chaotic, 24/7 environment,” says Alan Price, director of the Center for Immersive Media at University of the Arts and principal design investigator for the study. “The sensory-rich experience of VR has the ability to illicit increased verbal, physical, and emotional response to what physicians actually experience in emergency settings. Our VR simulation will allow doctors to ‘step out’ of the moment, and hopefully provide detail that would otherwise be difficult or impossible in the actual environment.”

The multidisciplinary team also includes architects of KieranTimberlake Architecture and health design psychologists of Thomas Jefferson University.

“Staff burnout is a significant issue across the health care system. Design can help mitigate stressful conditions and support staff wellbeing, which is critically important,” said Jason Schroer, AIA, principal and health practice leader at HKS. “We are honored to partner with EMF to research design’s potential to ameliorate caregiver burnout.”

In 2017, Jefferson, home of Sidney Kimmel Medical College—one of the first medical schools in the country—stunned the higher education world when it merged with Philadelphia University, nationally known for textiles, design, engineering, fashion and architecture. The new Jefferson continues to promote the humanities across its disciplines and teach the human skills of empathy, creativity, design thinking and compassion. Earlier this year, Jefferson announced a new creativity core curriculum for undergraduates.

“The Creativity Core Curriculum will help create a confident and flexible student mindset, said Dr. Mark Tykocinski, Provost of Thomas Jefferson University and Anthony F. & Gertrude M. DePalma Dean of the Sidney Kimmel Medical College. “Now more than ever, it is critically important to teach our students the human-centered skills that will allow them to find solutions to the world’s most pressing problems.”



UArts' mission is to advance human creativity. Throughout its more than 140-year history, UArts has educated generations of groundbreaking artists, performers, designers and creative leaders. Additionally, UArts recently became the first university in the country to offer a PhD in Creativity.

This joint research initiative is not the first or only collaboration between the two institutions. This past summer, Jefferson and UArts announced a reciprocal relationship that facilitates cross-registration for undergraduates: Students at both universities can enroll in courses at either institution. Jefferson has also served as an advisor to UArts on health protocols relating to a safely reopening UArts' campus in the heart of Center City Philadelphia. Finally, UArts has long partnered with Jefferson's Department of Family and Community Medicine for primary care services for their students.

All of these unique collaborations signal the beginning of a fruitful partnership with great potential for additional projects that focus on design and transdisciplinary scholarly activities and explore the intersections among art, science and the human experience.

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About Thomas Jefferson University

[Thomas Jefferson University](#) is a leader in interdisciplinary, professional education. Jefferson, home of the Sidney Kimmel Medical College and the Kanbar College of Design, Engineering and Commerce, is a preeminent university delivering high-impact education in 160 undergraduate and graduate programs to 8,100 students in architecture, business, design, engineering, fashion and textiles, health, science and social science. The new Jefferson is re-defining the higher education value proposition with an approach that is collaborative and active; increasingly global; integrated with industry; focused on research across disciplines to foster innovation and discovery; and technology-enhanced. Student-athletes compete as the Jefferson Rams in the NCAA Division II Central Atlantic Collegiate Conference.

About University of the Arts

University of the Arts' mission is simple: to advance human creativity. Established in 1876, UArts believes creativity is the most essential skill for success in today's society and has educated generations of groundbreaking artists, performers, designers and creative leaders for more than 141 years.

After being granted university status in 1987, University of the Arts became the largest institution of its kind in the nation, offering programs in design, fine arts, media arts, crafts, music, dance, theater and writing. It now features 30 undergraduate arts majors, 15 graduate programs and the nation's first PhD program in Creativity. UArts is also home to innovative centers across disciplines, including the Center for Immersive Media, Lightbox Film Center, Philadelphia Art Alliance and Rosenwald-Wolf Gallery. [Learn more about UArts.](#)