



## PRESS RELEASE

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### **NUS medical students get exposure to mass casualty incidents**

#### ***Complex medical emergencies come to life through virtual reality simulation technology***

*Singapore, 6 June 2019* — Medical students at the NUS Yong Loo Lin School of Medicine (NUS Medicine) can now put their knowledge and skills to the test as members of a medical emergency response team operating in various mass casualty incident scenarios, through a virtually simulated environment.

This is made possible through the School's introduction of the Virtual Interactive Simulation Environment (VISE) system at the Centre for Healthcare Simulation.

A part of the VR medical simulation project developed jointly by NUS Medicine and researchers from the Smart Systems Institute in NUS, this new supplementary learning system is native to NUS and Singapore. Beginning first with the development of the Virtual Interactive Human Anatomy (VIHA) three years ago, which enabled students to learn about human anatomy in great detail and depth, VISE is the next step forward in the application of VR technology for medical teaching and learning, said the School's Vice-Dean for Education, Associate Professor Lau Tang Ching.

#### **A powerful learning tool**

The three-dimensional, virtual casualty management system enhances the teaching and learning of situational patient management, added Centre director and Principal Investigator of the project, Associate Professor Suresh Pillai. "VISE lets multiple learners be immersed in various mass casualty situations where they experience high-resolution stereoscopic displays of realistic casualties in an authentic environment complete with multi-modal sensory and auditory stimuli."

"This new learning tool provides invaluable experience to our students, as mass casualty situations are laborious and costly to recreate in the real environment. But by harnessing the power of VR technology, they get to test learned skills and knowledge in mass casualty triage within a controlled environment, while gaining some appreciation for the complexities of operating as a team in a very demanding situation," added Assoc Prof Suresh. He is a senior consultant at the National University Hospital's Emergency Department.

In VISE, students don VR headsets and wield hand-held controllers to interact with each other in real-time as they manage multiple casualties. Their physical movements and actions are tracked and displayed in real-time for visualisation and evaluation. The students are able to conduct a host of assessments with the simulated casualties, including assessing and opening airways, evaluating breathing, assessing circulation by determining capillary refill time and pulse rate and assessing the physical disability status of the casualties. These actions underscore standardised and universally-practiced mass casualty triage protocols.

In order to ensure survival of as many casualties as possible in such situations, healthcare providers have to prioritise casualties according to the severity of their injuries. This process, known as triage, centres around making quick and effective decisions when the number of casualties outstrip available resources. VISE scenarios feature such casualties, challenging students to appreciate the dilemma faced by rescuers who must decide who can and should be saved in a major crisis.

### **Potential for more applications**

The VISE system also features an in-built self-evaluation component that lets learners evaluate their actions, while also providing immediate feedback to learners on the accuracy of their actions. This was one of the major considerations during the development of the system – that users become independent, self-motivated learners in keeping with the principles of Andragogy or Adult Learning. VISE's carefully integrated elements thus ensure maximum interaction and feedback loops to ensure high student engagement.

“The initial feedback from pilot studies amongst medical students have been very encouraging and we believe that this sort of experiential learning is integral in helping to enhance and reinforce the didactic curriculum. VISE will not be limited to healthcare students but can be developed to include scenarios for more advanced healthcare practitioners. We also hope to extend the use of VISE to other healthcare providers, including the all-important pre-hospital personnel from the SCDF as well as military personnel from the SAF,” Assoc Prof Pillai said.

With the development of the first VISE system, there are plans for more scenarios to be progressively added to the module. Possible future scenario depictions include managing multiple casualties in an Emergency Room and Operating Theatre, as well managing Infectious Disease Pandemics.

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### **About the National University of Singapore (NUS)**

The National University of Singapore (NUS) is Singapore's flagship university, which offers a global approach to education, research and entrepreneurship, with a focus on Asian perspectives and expertise. We have 17 faculties across three campuses in Singapore, as well as 12 NUS Overseas Colleges across the world. Close to 40,000 students from 100 countries enrich our vibrant and diverse campus community.

Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, 29 university-level research institutes, research centres of excellence and corporate labs focus on themes that include energy, environmental and urban sustainability; treatment and prevention of diseases common among Asians; active ageing; advanced materials; as well as risk management and resilience of financial systems. Our latest research focus is on the use of data science, operations research and cybersecurity to support Singapore's Smart Nation initiative.

For more information on NUS, please visit [www.nus.edu.sg](http://www.nus.edu.sg).

### **About the NUS Yong Loo Lin School of Medicine (NUS Medicine)**

Established in 1905, the NUS Yong Loo Lin School of Medicine is the first institution of higher learning in Singapore and the genesis of the National University of Singapore.

The School offers one of the finest undergraduate medical programmes in the Asia Pacific region and enjoys international recognition and respect. The Times Higher Education World University Rankings 2019 by subject and Quacquarelli Symonds (QS) World University Rankings by Subject 2019 list NUS Medicine as the leading medical school in Asia.

It admits 300 students to the MBBS degree programme annually and its principal missions are to educate and train the next generation of healthcare professionals, and foster research that will help to advance the practice of medicine.

The 18 NUS Medicine departments in the basic sciences and clinical specialties work closely with the Centre for Medical Education, the Centre for Biomedical Ethics, the Centre for Healthcare Simulation as well as the restructured public hospitals to ensure that teaching and research are aligned and relevant to Singapore's healthcare needs. The School is a founding institutional member of the National University Health System.

For more information about NUS Medicine, please visit <http://nusmedicine.nus.edu.sg>