

Using AI to help address aggression in the ED

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Credit: Pixabay from Pexels

Artificial intelligence (AI) has been integrated into an immersive virtual-reality-enhanced computer simulation program developed by researchers from Edith Cowan University (ECU) to train frontline health care

workers in de-escalating aggression in patients.

"Barry" is an AI computer-based model that allows clinicians and students to verbally interact with him in a hospital setting. Users have an actual conversation with Barry, and he responds in real time.

Given the use of AI, Barry's response to each verbal interaction is entirely unique, even if users provide the same wording more than once. The training simulation incorporates emotive facial animations that align with [real-time](#) verbal responses, and Barry's anger levels will either escalate or de-escalate based on the empathy displayed from the user.

The unique responses given by Barry are based on upfront prompting from the development team, outlining the gender, race and age of the user undertaking the training, which can be customized to suit different user profiles.

"Exposure to aggression and violence is an unfortunate reality for frontline health care staff on the forefront of the health care system. These incidents have long-lasting impacts on health care workers.

"Health Departments provide de-escalation and safety training to staff to prepare them to manage aggressive incidents in health care settings. However, access to training can sometimes prove difficult within busy health care systems, and exposing learners to realistic simulations that are also safe is highly resource intensive and problematic to implement at scale, particularly in rural and remote areas," said ECU Senior Lecturer Dr. Brennen Mills.

Dr. Mills said that this highly innovative project has the capacity to revolutionize education and training practices for health care workers in the aggression and violence de-escalation space.

The project, led by the Simulation & Immersive Digital Technology Group at ECU, has been supported by a multitude of work health safety and clinical staff across the Department of Health WA.

Workplace violence & aggression coordinator, South Metropolitan Health Service, Department of Health WA, Mr. Kallan Griffin said simulation systems like Barry could provide frontline health care workers with life-like experience, without placing the users in the way of actual harm.

"The integration of the AI into the immersive computer simulation provides an element of randomness, which is what we are constantly faced with every day in a hospital setting. This system provides staff with an opportunity to practice in a safe environment, and to build their skill sets and [knowledge base](#) in that setting.

"The opportunity that it possibly could present is that we can help staff to identify knowledge gaps and provide authentic and realistic training opportunities to improve their own practice in this space."

[Recent research from ECU](#) has found that violence in hospital emergency departments was significantly on the rise, and that current strategies in place to manage the issue are perceived to be insufficient.

Barry is currently in its first phase of development, and Dr. Mills noted that the second phase of development would incorporate [motion capture](#) to create animated [body movements](#) for Barry to match his speech and facial expressions, which could include situations where Barry actually turns physically violent.

Additional work will also address lag times between prompt and response times, as well as further work to refine Barry's AI model to respond to different user profiles.

Provided by Edith Cowan University

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