UNC ESHELMAN SCHOOL OF PHARMACY

CAROLINA VIRTUAL PATIENT INITIATIVE

Robert Hubal, Jerry Heneghan—UNC Eshelman School of Pharmacy

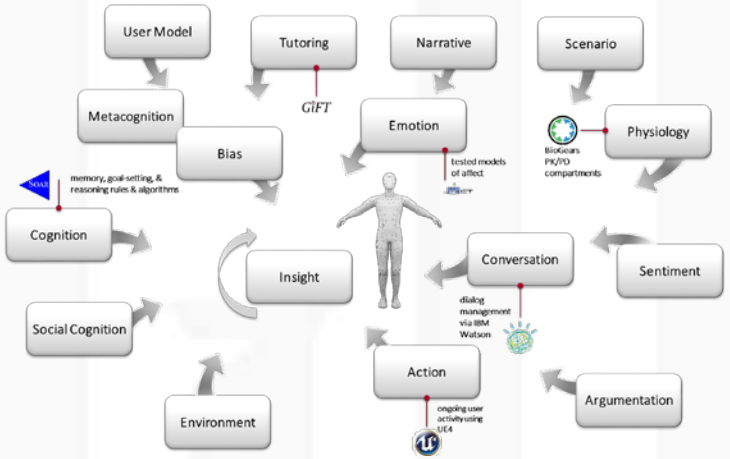
Background

The virtual patient—**nXhuman**—technology platform provides immersive educational experience to students in clinical professions (pharmacy, nursing, medicine, social work, global public health) to increase their confidence and competence. Virtual patient simulations are prevalent but, when scrutinized, limited in their scope; none present a comprehensive patient experience to students. The **nXhuman** approach is to model that full person to teach students how to correlate, process, and act on information within dynamic situations. Through this games-based platform the **nXhuman** team is providing a mechanism for students to have dozens of simulated opportunities with virtual characters to properly interview, differentially diagnose, and recommend therapy, better preparing them for actual patient engagement experiences.

nXhuman targets educational objectives including: *understanding* complex provider-patient interactions; *identifying* normal lab values associated with age, sex, genetics, disease progression, lifestyle choices, environment, and course of therapy; *monitoring* therapeutic decisions given the variability in a patient's uniquely programmed clinical characteristics; and accurately *predicting* patient outcomes.

Aims

The intent of **nXhuman** is to develop a highly realistic simulation for students' clinical education. The platform is intended to: enable *repeated practice*—with continuous feedback—in clinical decision making; *prepare students* prior to seeing their first patients during immersive learning experiences; and present *transitions of care*, as through the hospital, clinic, and community pharmacy.



Methods

nXhuman 'in-game' activities include: interacting with patients in a 3D world, using natural dialog; reviewing electronic healthcare records; ordering virtual lab results; presenting findings and therapy recommendations; and remediating, repeating, and progressing through case variants and tailored cases.

Results

nXhuman is in active development. The platform is functional, with physiology, emotion, cognition, and dialog based on existing programs as well as integrated with new technologies. Initial cases aging patient with breast cancer, dementia, diabetes, encounters), while subsequent cases address other common obesity, opioid dependency, osteoarthritis, other cancers,

are being designed and being implemented; the first case is an hyperlipidemia, and hypertension (portrayed through seven disease states (alcoholism, asthma, Crohn's, depression, MI, pregnancy, and respiratory infections).

Conclusions

The **nXhuman** team is building the virtual patients upon many years incorporating lessons learned both from its experiences and from attempted to blend all of these components together in a virtual ness, impact, usability, and validation studies of the initial **nXhuman** of developing, testing, and implementing virtual characters, other researchers. To date, no other research group has character simulation to act cohesively. Acceptance, effective-case are underway.