

# **Virtual Reality Simulation and Social Determinants of Health: A High-Tech Strategy to Improve Health Outcomes**

## **Research Week 2019**

**Sandra L. Regan, PhD**

**Assistant Professor**

**Associate Director**

**Research Division**

**Department of Family & Community Medicine**

[sandra.regan@uc.edu](mailto:sandra.regan@uc.edu)



# Acknowledgement

The Medicaid Equity Simulation Project is funded by the Ohio Department of Medicaid and administered by the Ohio Colleges of Medicine Government Resource Center. The views expressed in this presentation are solely those of the authors and do not represent the views of the state of Ohio or federal Medicaid programs.

# Social Determinants of Health (SDH)

“...conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality of life outcomes and risks.”

*Healthy People 2020*

# Social Determinants of Health

- Economic stability
- Demographics
- Social and community context
- Health and health care
- Neighborhood and built environment

# Discrimination

“When stigma leads to social exclusion or discrimination (‘experienced stigma’), it results in unequal access to resources that all people need to function well: educational opportunities, employment, a supportive community, including friends and family, and access to quality health care.”

*CDC (2012)*

# Training on SDH

- Didactic
- Standardized patients
- Clinical rotations
- Community visits

# Medicaid Equity Simulation Project

- Grant from Ohio Department of Medicaid given to each Academic Health Center
- Create a product to assist in educating providers about the SDoH
- Targeted to Ohio Medicaid providers
  - Reduce implicit bias
  - Increase cultural competence
  - Recognize and address health disparities

# Medicaid Equity Simulation Project

- *Virtual Reality: Educating Medicaid Providers on Health Disparities*
  - College of Nursing (Susan Brammer, Lead Principal Investigator, Gordon Gillespie, Co-PI)
  - College of Medicine (Saundra Regan, COM Principal Investigator)
  - UC Center for Simulations & Virtual Environments Research (UCSIM) (Chris Collins, Senior IT Manager)



# Development of Simulations

- The scripts for the two virtual reality (VR) simulations were written by a communications expert and Medicaid Primary Care Providers
- Reviewed by “experts” physician and advanced practice nurse providers who work with Medicaid patients, as well as standardized patients who have worked with students about SDoH, and virtual reality experts
- Tested through phases by the experts on an iterative basis

**Virtual Reality  
Simulation and  
Social Determinants  
of Health:**

**A High-Tech Strategy  
to Improve Health  
Outcomes**



**Simulation #1:  
No Show**



**Virtual Reality  
Simulation and  
Social Determinants  
of Health:**

**A High-Tech Strategy  
to Improve Health  
Outcomes**



**Simulation #2:  
Schizophrenia**



# Simulation One

- No-Show
  - Depicted from the patient perspective.
  - Character is a middle-aged woman who is primarily Spanish-speaking.
  - She has several chronic diseases-CHF, HTN, Diabetes.
  - She has experienced several instances of being unable to make her primary care appointments due to lack of transportation.
  - She is headed to her appointment leaving her apartment and the elevator is out. She must climb down several flights of stairs and is not standing outside her building when her Medicaid transport bus arrives and they leave, she attempts to make it to the bus stop as the bus is pulling away.
  - Walking back to her apartment she collapses from shortness of breath.

# Simulation One

- She is taken to the ED and is evaluated for exacerbation of CHF.
- The discharge nurse reads through her discharge instructions which include dietary changes and a new medication. The nurse asks if she understands everything and has any questions.
- The character nods and signs but doesn't understand very well since everything is in English.
- When she gets home she calls the clinic for a new appointment and is informed that she has been discharged as a patient for 3 successive no-shows.

# MEDICAID EQUITY SIMULATION PROJECT

## SCENE MODELING





# MEDICAID EQUITY SIMULATION PROJECT CHARACTER AND SCENE MODELING



# Simulation Two

- Schizophrenia
  - Depicted from the patient perspective
  - Character is a young man living with his mother in an apartment.
  - He has schizophrenia and has not been taking his medication because he doesn't like taking pills.
  - He is 45 minutes late to his appointment with the psychiatrist at the FQHC as he doesn't have a car and has to take several buses to get there.
  - The provider is rushed and isn't sure she can see him because he is so late and she has other patients waiting. She asks him some basic questions and writes his prescription. She asks him if would like to have case management.
  - He is suspicious about everyone knowing his business.



# Simulation Two

- He heads out and misses his bus and walks home. The neighborhood shows signs of poverty and crime.
- He gets home to find overdue bills on his doorstep. There is nothing in the refrigerator.
- His mother is angry and yells at him complaining of his inability to find or keep a job.

# MEDICAID EQUITY SIMULATION PROJECT CHARACTER MODELS



# MEDICAID EQUITY SIMULATION PROJECT SCENE MODELING



# Evaluation

- Evaluation will center on:
  - the use of the technology in educating providers about SDoH
  - how close the VR simulations are to the reality of the patients they see in daily situations
  - the patients in the simulation experience many types and forms of SDoH
  - how could facilitate better training of learners and providers
  - improvements that can be made to the simulations

# Evaluation Timeline

<b>February 2019</b>	Practitioner and Standardized Patient Participant Assessment for Content Validity
<b>February/March 2019</b>	Initial Expert Panel Critique
<b>March 2019</b>	Initial Expert Panel Assessment for Usability and Utilization/ Pilot Simulation 2 at All-Ohio Psychiatry Annual Meeting
<b>April 2019</b>	Final Expert Panel Evaluation
<b>April 2019</b>	Pilot Testing
<b>April/May/June 2019</b>	Evaluation of Learning Experience by Provider Participants of the Virtual Reality Simulations
<b>May/June 2019</b>	One Month Follow-up Evaluation
<b>June 2019</b>	Data Analysis / Evaluation
<b>July 2019</b>	Final Report

Take your VR content anywhere.

VR Suitcase for HTC Vive







**Medical Providers and Learners  
Please evaluate our Virtual  
Reality Simulation developed so  
far.**

**305 PROCTER HALL  
COLLEGE OF NURSING  
UNTIL 1 PM TODAY**



Thank you !

