



EXCEPTIONAL HEALTHCARE THROUGH SIMULATION | DES SOINS DE SANTÉ EXCEPTIONNELS GRÂCE À LA SIMULATION

VIRTUAL INTERPROFESSIONAL EDUCATION FOR THE MEDICAL LABORATORY

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59 member organizations



2,300 individuals



221 certified simulationists

- EVENTS
- PROFESSIONAL DEVELOPMENT
- SUPPORT
- CONNECTIONS
- ADVOCACY



GOALS

- 1) Collaborative practice and interprofessional education (IPE) in the medical laboratory context
- 2) Simulation and IPE
- 3) Virtual simulation and game-based learning



1

Collaborative practice and interprofessional education (IPE) in the medical laboratory context



COLLABORATIVE PRACTICE & INTERPROFESSIONAL EDUCATION

COLLABORATIVE PRACTICE

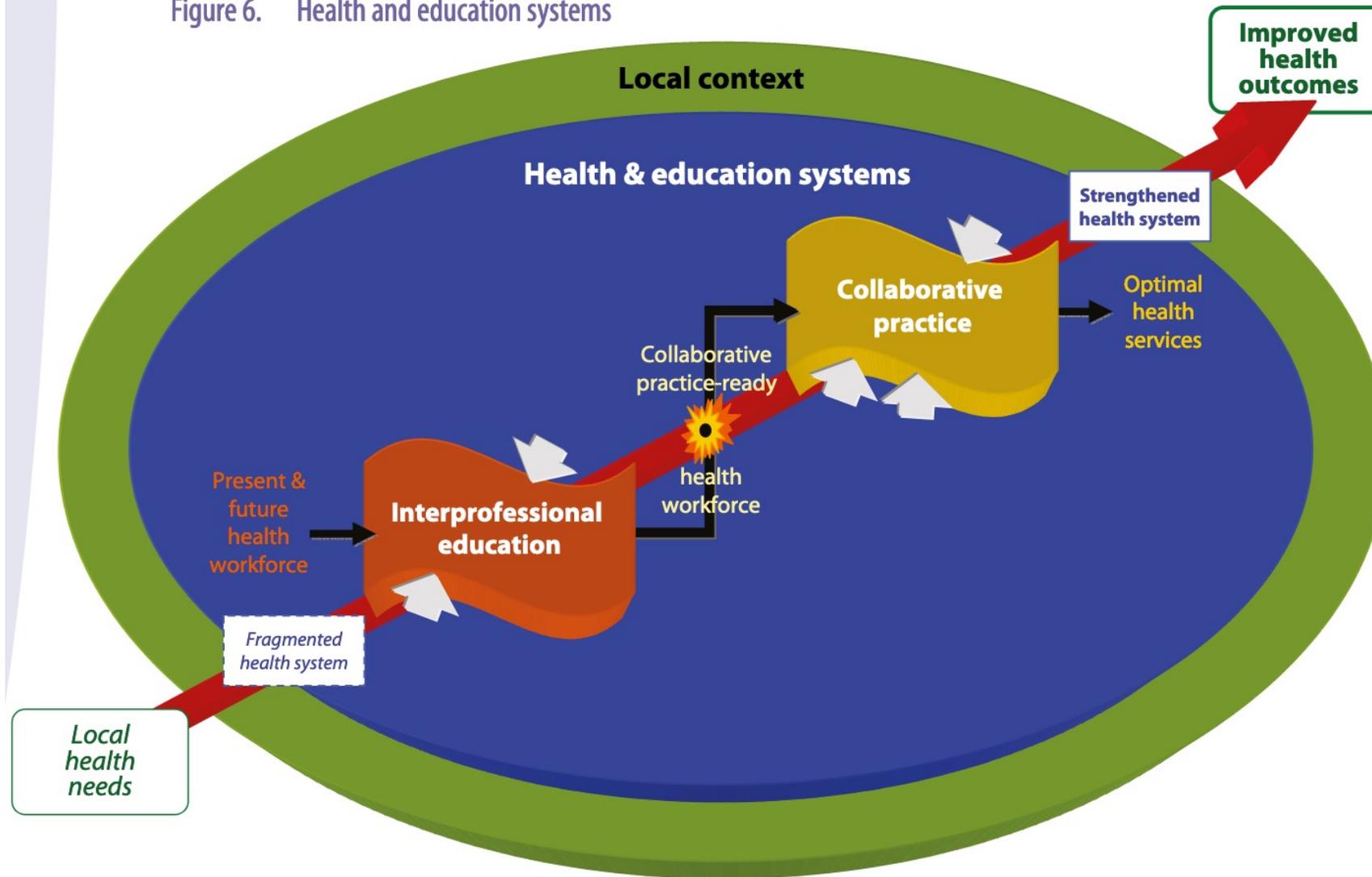
- Collaborative practice occurs when healthcare providers work with people from within their own profession, with people outside of their profession and with patients/clients and their families. (CIHC)
- Collaborative practice requires a climate of trust and value, where healthcare providers can comfortably turn to each other to ask questions without worrying that they will be seen as unknowledgeable. (CIHC)

INTERPROFESSIONAL EDUCATION

- Interprofessional education is the process by which we train or educate practitioners to work collaboratively. (CIHC)
- Interprofessional education occurs when **students from two or more professions learn about, from and with each other** to enable effective collaboration and improve health outcomes. (WHO)
- Interprofessional education is a necessary step in preparing a “collaborative practice-ready” health workforce that is better prepared to respond to local health needs. (WHO)



Figure 6. Health and education systems



WHO Study Group on Interprofessional Education and Practice. (2010). *Framework for Action on Interprofessional Education & Collaborative Practice*. World Health Organization. http://www.who.int/hrh/resources/framework_action/en/

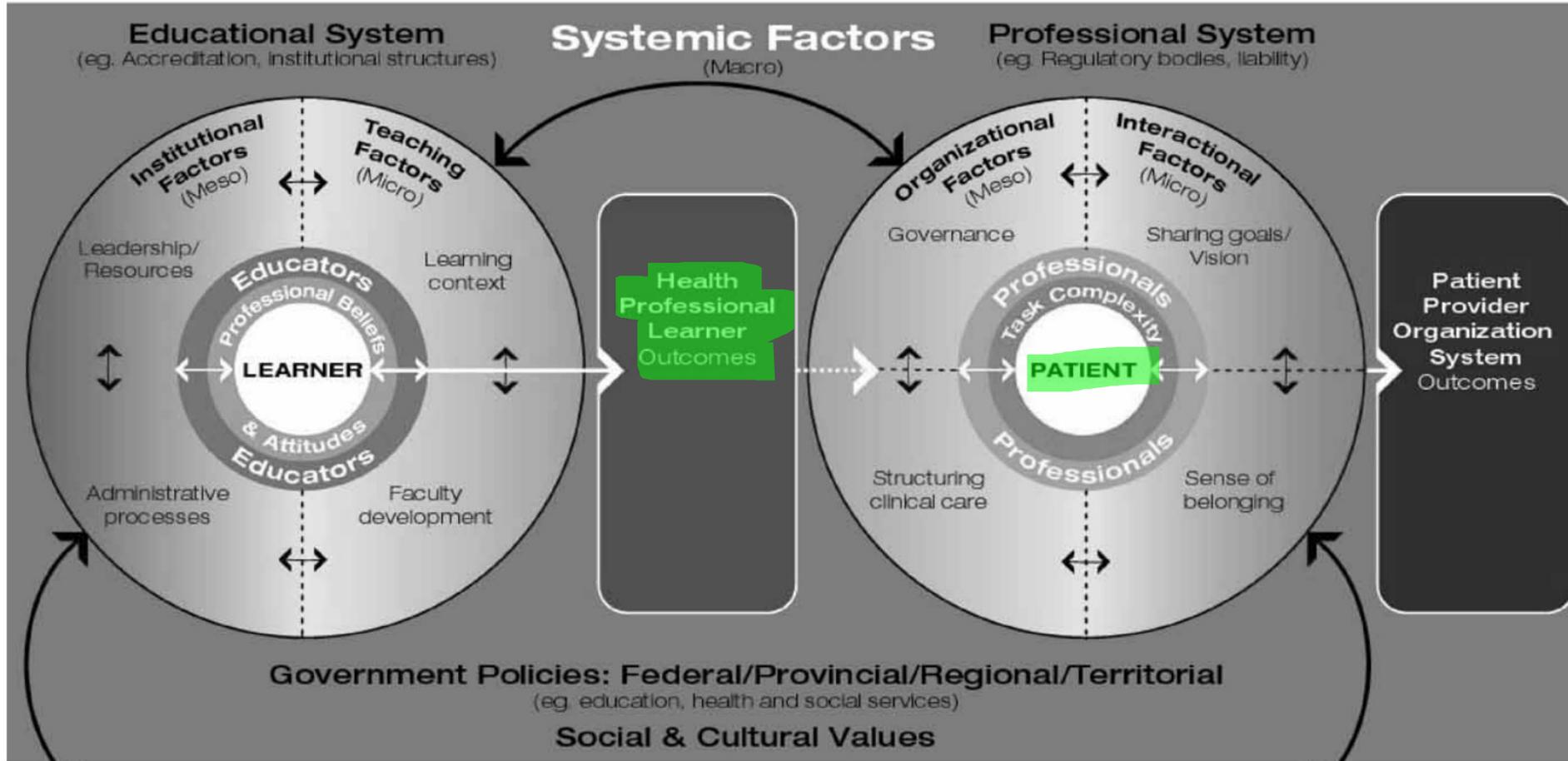


Interprofessional Education for Collaborative Patient-centred Practice: An Evolving Framework

Interprofessional Education
to Enhance **Learner** Outcomes

◀ **Interdependent** ▶

Collaborative Practice
to Enhance **Patient Care** Outcomes



Research to Inform & to Evaluate

- Understand the processes related to teaching & practicing collaboratively
- Measure outcomes/benchmarks with rigorous methodologies that are transparent
- Disseminate findings

D'Amour, Oandasan (2004)

D'Amour, D., & Oandasan, I. (2005). Interprofessional practice and interprofessional education: an emerging concept. *Journal of Interprofessional Care*, 19 Suppl 1, 8–20. <https://doi.org/10.1080/13561820500081604>



INTERPROFESSIONAL COLLABORATION & THE MEDICAL LABORATORY

- What does this mean to you?
- Examples of IPC involving the lab?



INTERPROFESSIONAL COLLABORATION & THE MEDICAL LABORATORY



INTERPROFESSIONAL COLLABORATION & THE MEDICAL LABORATORY

National Forum on Simulation for Quality & Safety

Interprofessional Massive Transfusion Protocol Simulation

- 2016 – Alberta Health Services, Edmonton
- 2017 – St. Michael's Hospital, Toronto
- 2019 – Hôpital Montfort, Ottawa
- 2022! – IWK Health Centre, Halifax

All reduced time to transfusion by several minutes
→ huge impact on survival!



INTERPROFESSIONAL COLLABORATION & THE MEDICAL LABORATORY

2019 Institute for Quality Management in Healthcare
Spring Forum

Pre-Analytical Best Practices: Inspiring Action

Several presentations included collaborative and patient-centred practice





Canadian Interprofessional Health Collaborative
Consortium pancanadien pour l'interprofessionnalisme en santé

A National Interprofessional Competency Framework



FEBRUARY 2010

<http://www.cihc-cpis.com/publications1.html>



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Simulation and Interprofessional Education



SIMULATION

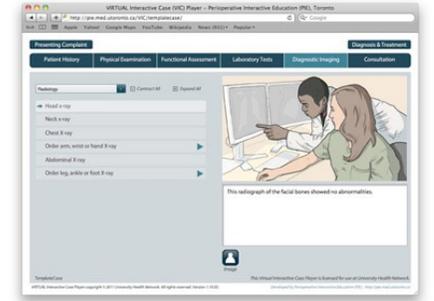
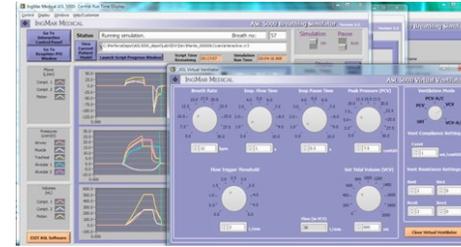
“[A] technique to replace or amplify real experiences with guided experiences, often immersive in nature, that evoke or replicate aspects of the real world in an interactive fashion.”

Gaba DM (2004). The future vision of simulation in health care. *Quality and Safety in Health Care*, 13 (Suppl 1), i2–i10

TECHNIQUE
not
TECHNOLOGY

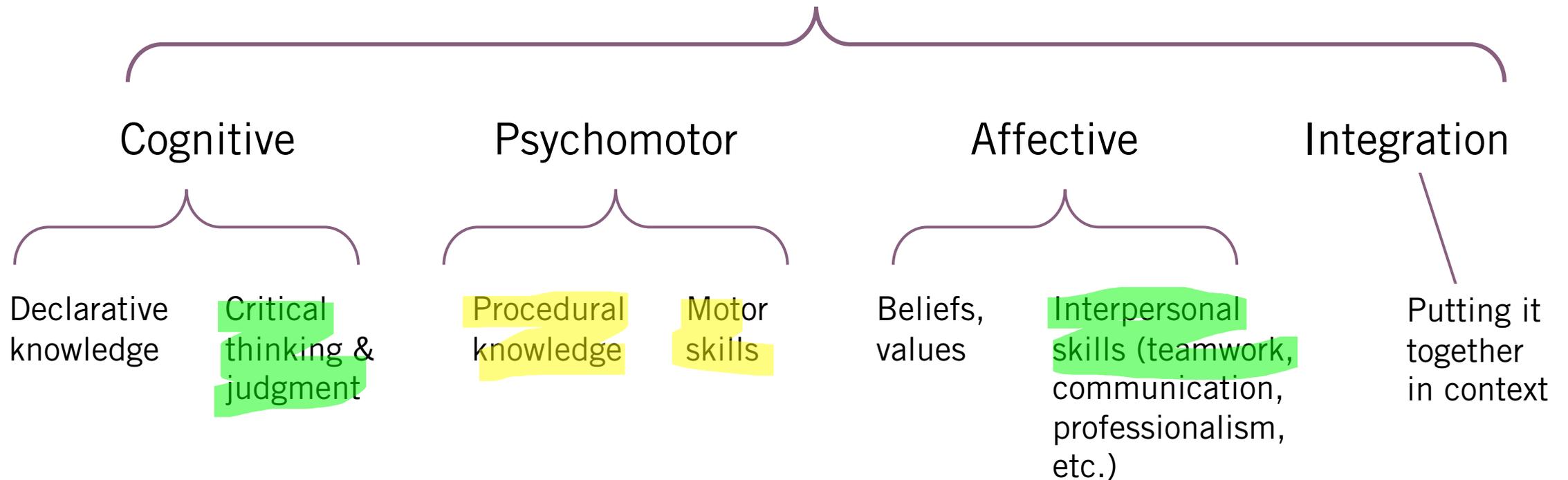


SIMULATION SCOPE: MODALITIES



SIMULATION SCOPE: LEARNING OUTCOMES

Learning Goal/Outcome/Competency



EVIDENCE

- ✓ Superior to non-simulation education (high-level learning objectives)
- ✓ Individual competencies
- ✓ Team competencies
- ✓ Translates to practice
- ✓ System & process improvement
- ✓ Patient outcomes, patient safety, cost-effectiveness

Cook DA, Brydges R, Hamstra SJ, et al. Comparative Effectiveness of Technology-Enhanced Simulation Versus Other Instructional Methods: A Systematic Review and Meta-Analysis. *Simul Healthc.* 2012;7(5):308-320. doi:10.1097/SIH.0b013e3182614f95

Griswold-Theodorson S, Ponnuru S, Dong C, Szyld D, Reed T, McGaghie WC. Beyond the Simulation Laboratory: A Realist Synthesis Review of Clinical Outcomes of Simulation-Based Mastery Learning. *Acad Med.* 2015;90(11):1553-1560. doi:10.1097/ACM.0000000000000938

Bogne kamdem V, Daelemans C, Englert Y, Morin F, Sansregret A. Using simulation team training with human's factors components in obstetrics to improve patient outcome: A review of the literature. *Eur J Obstet Gynecol Reprod Biol.* 2021;260:159-165. doi:10.1016/j.ejogrb.2021.03.015

Fent G, Blythe J, Farooq O, Purva M. In situ simulation as a tool for patient safety: a systematic review identifying how it is used and its effectiveness. *BMJ Simul Technol Enhanc Learn.* 2016;1:103-110. doi:10.1136/bmjstel-2015-000065

Goldshtein D, Krensky C, Doshi S, Perelman VS. In situ simulation and its effects on patient outcomes: a systematic review. *BMJ Simul Technol Enhanc Learn.* April 2019:05 April 2019. doi:10.1136/bmjstel-2018-000387



SIMULATION + INTERPROFESSIONAL EDUCATION

Gathering in space

- Use virtual modalities

Gathering in time

- Asynchronous sims
- Simulate other professionals

Authentic experiences

- Based on real clinical cases/events

Purposeful debrief

- Necessary part of every sim
- Trained facilitators



3

Virtual Simulation and Game-Based Learning



“VIRTUAL SIMULATION”

The simulator itself is virtual

Physical simulation facilitated virtually
= telesimulation

Screen-Based Simulations
(Virtual gaming sims,
virtual patients)

Extended Reality (XR)

Virtual
Reality
(VR)

Augmented
Reality
(AR)

Mixed
Reality
(MR)



GAMIFICATION

“The intentional application of game elements to nongame contexts, with the intention of creating playful experiences or gameful interaction. It is often used to motivate and increase user activity or user retention.” - Encyclopedia of Computer Graphics and Games

GAME-BASED LEARNING

“The use of games for expected learning outcomes. The expression emphasizes the importance of the context of using digital games for educational purpose rather than the use of stand-alone applications.” - Encyclopedia of Education and Information Technologies



SIMULATION + GAMIFICATION

Authentic scenario
Defined learning objectives
Application of knowledge
Feedback & debriefing

Digital interaction
Autonomy
Individualization
Risks vs rewards
Replayability
Achievements



EVIDENCE & RECOGNITION

- ✓ Virtual pts & VR: Skill development better than traditional education
- ✓ Develop communication, teamwork and decision-making
- ✓ Socialization into professional roles
- ✓ Enhanced when followed by facilitated debrief
- ✓ Joint statement by int'l simulation societies

Kononowicz AA, Woodham LA, Edelbring S, et al. Virtual patient simulations in health professions education: Systematic review and meta-analysis by the digital health education collaboration. *J Med Internet Res*. 2019;21(7):1-20. doi:10.2196/14676

Foronda CL, Fernandez-Burgos M, Nadeau C, Kelley CN, Henry MN. Virtual Simulation in Nursing Education: A Systematic Review Spanning 1996 to 2018. *Simul Healthc*. 2020;15(1):46-54. doi:10.1097/SIH.0000000000000411

Woon APN, Mok WQ, Chieng YJS, et al. Effectiveness of virtual reality training in improving knowledge among nursing students: A systematic review, meta-analysis and meta-regression. *Nurse Educ Today*. 2021;98:104655. doi:10.1016/j.nedt.2020.104655

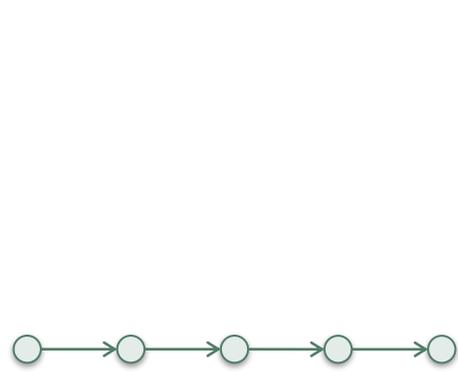
Peddle M, Bearman M, Nestel D. Virtual Patients and Nontechnical Skills in Undergraduate Health Professional Education: An Integrative Review. *Clin Simul Nurs*. 2016;12(9):400-410. doi:10.1016/j.ecns.2016.04.004

Verkuyl M, Lapum JL, Hughes M, et al. Virtual Gaming Simulation: Exploring Self-Debriefing, Virtual Debriefing, and In-person Debriefing. *Clin Simul Nurs*. 2018;20:7-14. doi:10.1016/j.ecns.2018.04.006

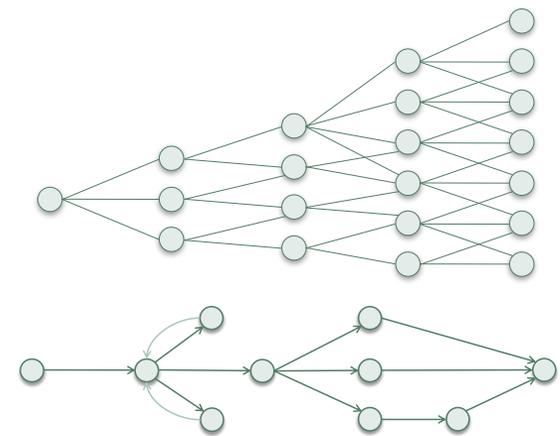
Society for Simulation in Healthcare, International Nursing Association for Clinical Simulation and Learning. *Position Statement on Use of Virtual Simulation during the Pandemic*. 2020. <https://www.ssih.org/COVID-19-Updates/ID/2237/COVID-19-SSHINACSL-Position-Statement-on-Use-of-Virtual-Simulation-during-the-Pandemic>



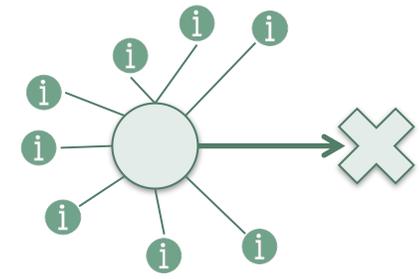
VIRTUAL SIM PLATFORMS: TYPES / ARCHITECTURES



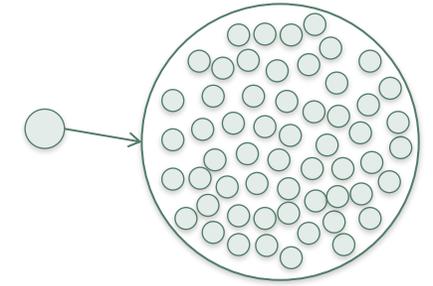
Linear



Branching
& pseudo-branching



Exploratory



Responsive



Communication



Procedural



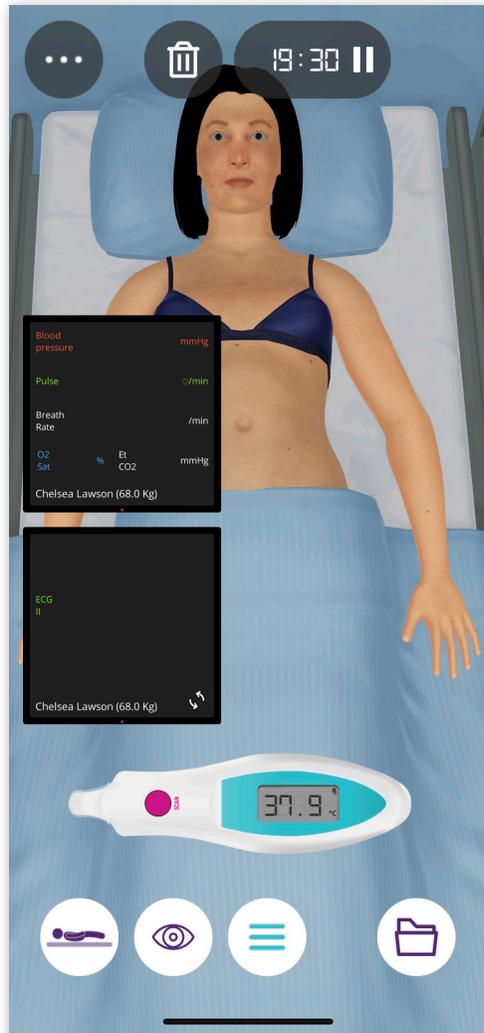
Collaborative



Interactive Video



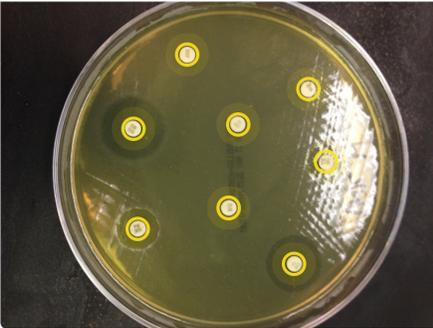
VIRTUAL SIM PLATFORMS: TECHNOLOGIES



Burn Patient

- Interpretation Chart •
- Oxidase Test •
- Growth on BAP, Mueller Hinton, MacConkey Agar •

Click on the hot spots of the Disc diffusion plate to measure the zone sizes of each antibiotic and enter values in the chart. Interpret the zone sizes from the CLSI interpretive chart.



0 of 8 hotspots explored

Disc Diffusion Measurements

Enter your zone size measurements and their interpretations, as Sensitive, Intermediate, or Resistant.

Type your response here.

Navigation ^ Continue



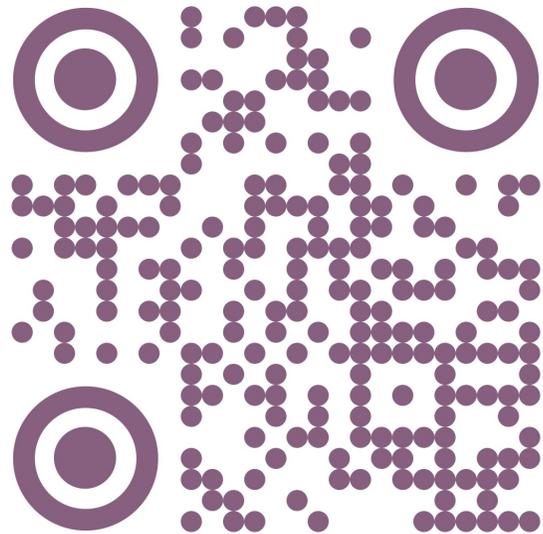


Virtu-WIL



Virtu-AIT

- Funded by ESDC
- >40 colleges & universities
- >120 virtual simulations
 - 21 are med lab
- Public release coming soon



Announcements: <http://eepurl.com/c99IDX>





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