

Building Interprofessional Skills in Respiratory Care Through Simulation

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Learning Objectives

- Examine the importance of interprofessional collaboration (IPC) in healthcare.
- Describe the key terminology.
- Analyze the use of simulation-based training (SBT) in healthcare.
- Evaluate the role of SBT in building IPC skills.
- Examine where more work is needed.
- Furnish add'l resources

Most Would Agree that Health Professionals (and Humans) Should Collaborate

- The US Health system is highly fragmented and has the most different health professions.
 - Most counties do not use RTs
- Communication/collaboration is the antidote for Silo-ism (my profession is better than yours).
- Many medical errors are caused by poor communication or collaboration.
- However, quality can be enhanced by effective communication and collaboration.

Terms and Definitions

- ***Interprofessional Collaboration***: When two or more health professions...
- ***Interprofessional Education Collaborative (IPEC)***: Resources to help prepare future health professionals for enhanced team-based care and outcomes
- ***Simulation-enhanced interprofessional education (Sim-IPE)***: the education of healthcare professionals with different but complementary knowledge and skills in a simulation environment that promotes a collaborative team approach.

Background

- According to the World Health Organization (WHO, 2010) Interprofessional collaboration (IPC) is critical to quality care.
- The Agency for Healthcare Research & Quality (AHRQ) Addresses IPC in their Reports.
- Interprofessional Education Collaboration Framework (IPEC) was developed largely as a result.
- Most Health Education Accrediting Bodies require IPC.
 - The Comm. On the Accreditation for Resp. Care (CoARC) Requires Demonstrable Integration in RT curriculum.
- Many Healthcare Organizations offer Training and Education Specific to IOPC

Background: Interprofessional Collaboration

**1990's-
2000's**

- General sense that Interprofessional Collaboration (IPP) is correlated to Healthcare Quality
- IOM Cites IPP as Key to Crossing the Chasm

2010

- WHO & AHRQ: Interprofessional Collaboration/Communication is a Key Determinant of Quality Patient Care and Outcomes

2011-2016

- Interprofessional Education Collaborative (IPEC) Issue & Updates Competencies & Provides Guidance
- Health Education Accreditation Require IPE/IPP Content

Present Day

- Questions Remain About:
 - Achieving Meaningful Curricular Integration
 - Translating Education in Practice

IPEC

IPEC is an organization that promotes **interprofessional education (IPE)**—when students from two or more professions learn *about, from, and with each other* to improve collaboration and healthcare outcomes.

It defines **core competencies** in four domains:

- Values/Ethics for Interprofessional Practice
- Roles/Responsibilities
- Interprofessional Communication
- Teams and Teamwork

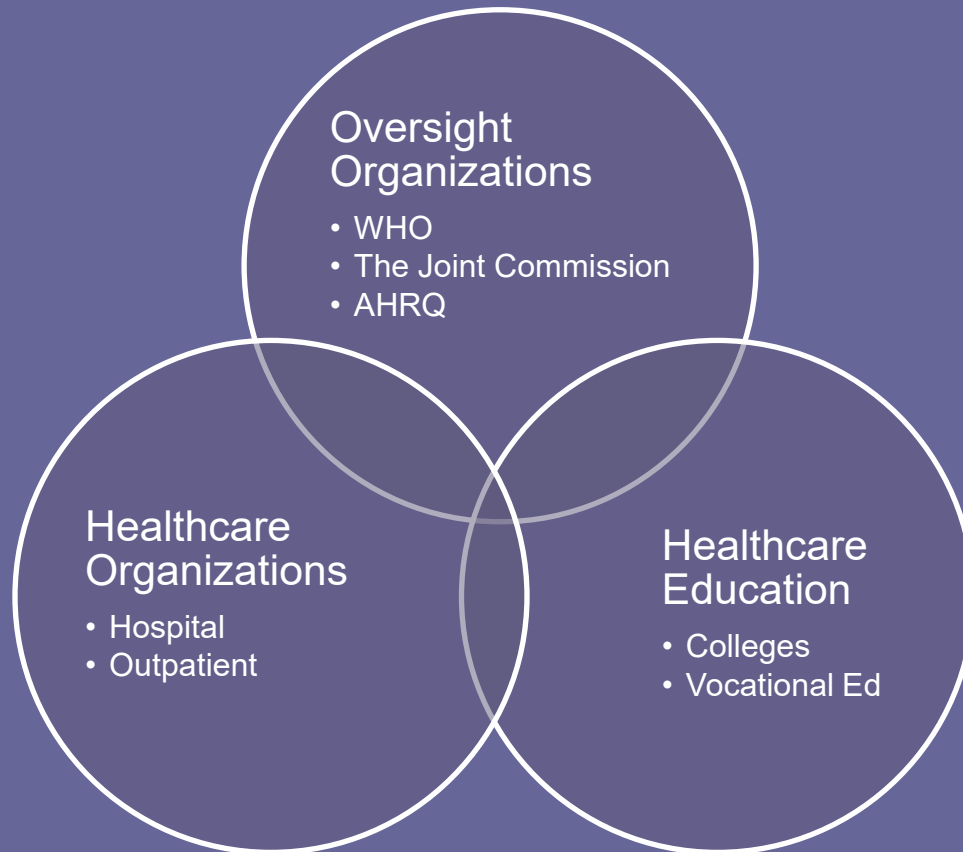
In Healthcare and Respiratory Therapy Education:

- Encourages **collaborative, team-based care** that improves patient safety and outcomes.
- Prepares RT students for **real-world team-based care**, especially in ICUs, emergency departments, and neonatal units.
- Shapes curricula to include **IPE activities**, simulations, and clinical team experiences.

Why RTs Need Strong Interprofessional Skills

- They function throughout the continuum of care—*From Critical Care to Homecare.*
- Their patients are often complex with comorbidities requiring multiple specialties.
- Their profession is increasingly complex with more diagnostic and therapeutic options.
- They operate *under* prescribing clinicians
 - Doctors, advance practitioners (PA's & NPs)

Despite Multifaceted Attention on IPC, Problems Persist



Why Problems Persist

- People not born on teams and not everyone develops team skills with age.
- Solutions sound good on paper but are not fully operational.
- Hierarchies in Healthcare
- Role ambiguity
- Strategies lack end-user input.
- Persistent Silo-ism.
- Resistance to Change.

A Poor Collaboration Example

- Physician orders via the EHR that ET Tube be advanced 3 cm as tip is 5 cm above carina.
- Physician simultaneously orders repeat CXR.
- Never directly communicates with RN nor RT.
- 15 minutes later RT sees X-Ray tech ready to shoot repeat CXR.
- RT checks the EHR and asks that CXR be delayed until ET Tube is advanced.
- Physician assumed RT was continually on HER.
 - Almost wasted resources
 - Almost risked radiation exposure



Paradoxically: EHRs May Inhibit IPC

- Order just placed with no interprofessional discussion.
 - Provider places orders like ordering from a menu!
- More patient management from “Afar”.
- ABG and other labs look good but patient doesn’t.
 - The patient’s EHR looks better than they do!

“Remote” and Isolated Patient Assessment & Monitoring *Houston, We Have Problem!*



Traditional Strategies to Overcome Barriers

- Policy and Institutional Support
 - Accreditation standards (CoARC, IPEC)
- Cultural Competencies Training/Education
 - Understanding diversity in healthcare
 - Addressing biases
- Communication Training/Education
 - Active listening
 - Conflict resolution

Other Interprofessional Building Strategies

- Huddles
 - Intra-Professional-Within Disciplines (RT Shift Huddles)
 - Inter-Professional—Across Disciplines (ICU Shift Beginning)
- SBAR (Situation, Background, Assessment, Recommendation)
 - Structured approach to shift hand-off
 - Can also be used in patient transfers
- Interprofessional Rounds
 - Unit Specific – ICU patient rounds
 - Disease-specific—Tumor rounds
- Transformational Leadership- Relies on empowerment and employee development and Trust.
 - Espoused by Magnet Nursing

Latest Technology-Based Strategies

- Telehealth and virtual care teams
- Electronic health records (EHRs) communication platforms
- Simulation-enhanced interprofessional education (Sim-IPE).
 - Refers to the education of healthcare professionals from different disciplines in an environment which mimics real life clinical situations that promotes a collaborative team approach.

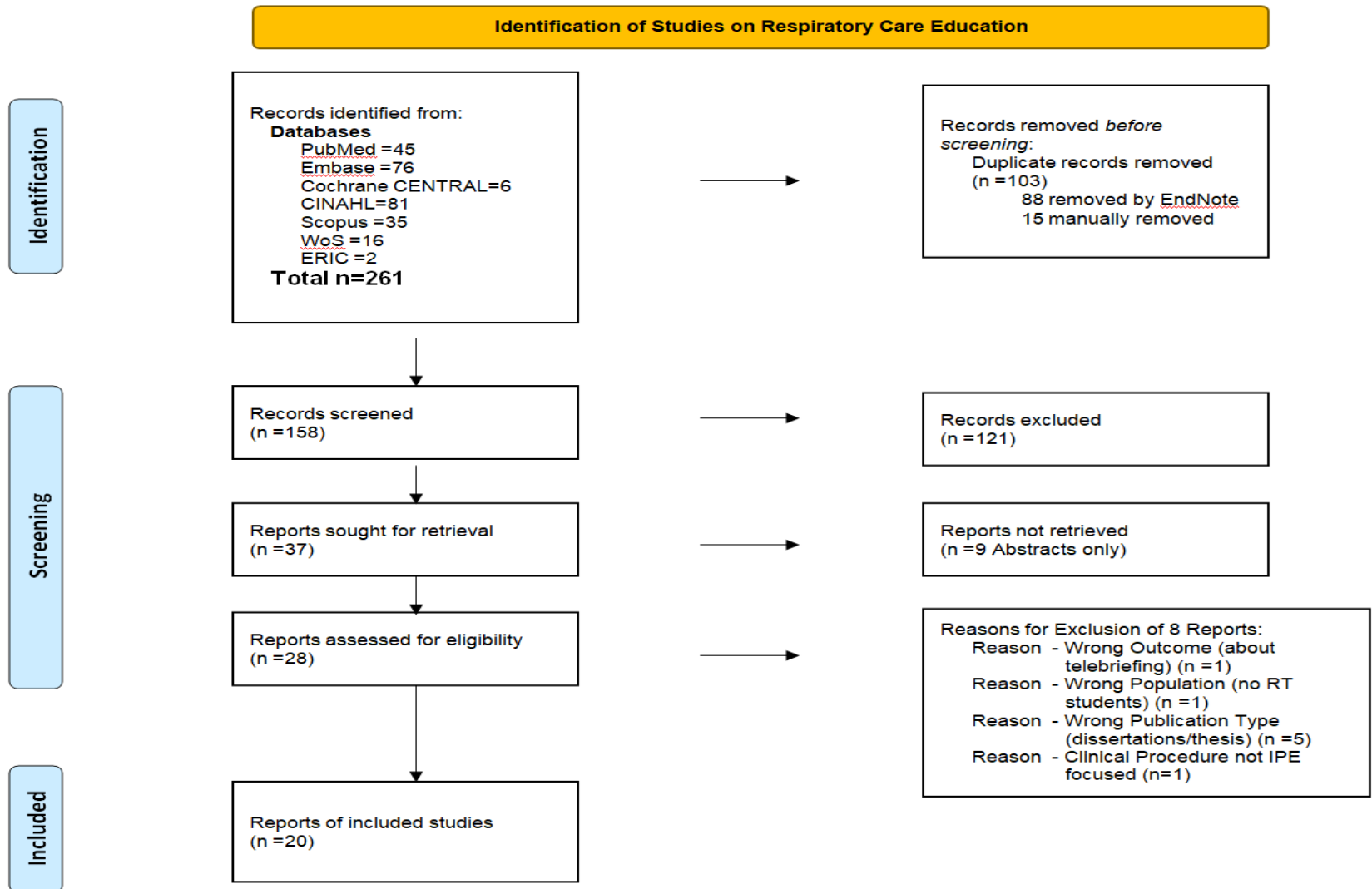
Our Study to Review Published Work in Sim-IPE in Respiratory Care

- General Motivation: How can SIM-IPE be best used to achieve meaningful change and enhance care.
- How and under what conditions can any benefit be sustained.
- Took about 2 years to complete.
- Currently in review with a peer-reviewed journal.
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Methods

- To Investigate the Potential Value of SBE in RT education, - Conducted a Systematic Review of the Literature
 - Guided by PRISMA 2020 standards.
 - Inclusion: Peer-reviewed studies (2012–2023)
- Databases: PubMed, Embase, CINAHL, Scopus, Cochrane Library, Web of Science, ERIC.
- Medical Subject Headings (MeSH) terms related to respiratory therapy education, interprofessional education and simulation education training
- 261 results → 20 studies included after screening.
 - **103 duplicates** were removed, leaving **158 studies** for title and abstract screening.
 - **37 studies** underwent full-text review

PRISMA Screening Flowchart



Research Questions

- In IPC involving RT students:
 - What are the different forms of SBE and levels of fidelity being used?
 - What, if any, conditions influence SBE's impact?
 - What types and levels of learning outcomes are targeted and achieved in this area?
 - What is the strength of the literature and how can it be enhanced?

Results - Level of Fidelity

- **Fidelity** refers to how accurately a simulation replicates real-world clinical settings and scenarios.
- **85% (n=17)** of studies used **high-fidelity** simulations, emphasizing realism and immersion.
- **10% (n=2)** used **medium-fidelity** simulations with less realism.
- **5% (n=1)** did **not specify** fidelity level or provided insufficient details.

Results - Professions Included

- **Nursing students** were included in **95% (n=19)** being the prevalent healthcare profession.
- **Physicians** participated in **50%** of studies.
- **Occupational therapy (OT)** appeared in **25% (n=5)**.
- **Pharmacy and physical therapy (PT)** students were included in **20% (n=4)** of studies.
- Radiology Tech, Medical dietetics, Social work and Speech pathology participated in 3 or fewer.

Results - Outcome Measures

- **70% (n=14)** of studies used **standardized (Validated) survey tools** to assess IPE outcomes.
 - **10% (n=2)** specifically used the **RIPLS** instrument.
 - Others: **KidSIM ATTITUDES, Team Performance Scale**, enhancing credibility.
- **30% (n=6)** used **custom tools (home-made)** developed by the study teams.

Results - Highest Learning Outcome Achieved

- The **Kirkpatrick Model** Describes Four Levels of Learning Outcomes: 1. Reaction, 2. Learning, 3. Behavior, and 4. Results.
- **35% (n=7)** of studies achieved **Level 2a (Attitudes)**.
- **65% (n=13)** achieved **Level 2b (Knowledge)**.
- **No studies** reached **Level 3 (Behavior)** or **Level 4 (Results)**.
- Students gained positive perceptions and knowledge, but ability to apply them was not shown.

Results - Degree of Achievement

- **50% (n=10)** of studies reported a **high degree of targeted outcome success**.
- High success was supported by *short-term*, **quantitative gains** (e.g., significant pre-post improvements) and **positive debriefing feedback**.
- **However**, the targeted aims tended to be short term, lower degree of difficulty.
- **40% (n=8)** of studies showed a **moderate degree of success**, with more limited or mixed outcomes.

Results - Risk of Bias & Other Study Design Issues

- **Risk of Bias (ROB)** was assessed by two blinded reviewers using **Cochrane criteria**; discrepancies were resolved in an unblinded review.
 - **All but two studies** were rated as **high risk of bias**.
 - **Controlled trials** had issues with **randomization, blinded allocation, and group equivalence**.
 - **Before/After studies** faced concerns with **unclear eligibility** and use of **volunteer participants**, leading to potential bias.
- Overall, **design flaws and reporting gaps** limit confidence in the reported outcomes.

Discussion

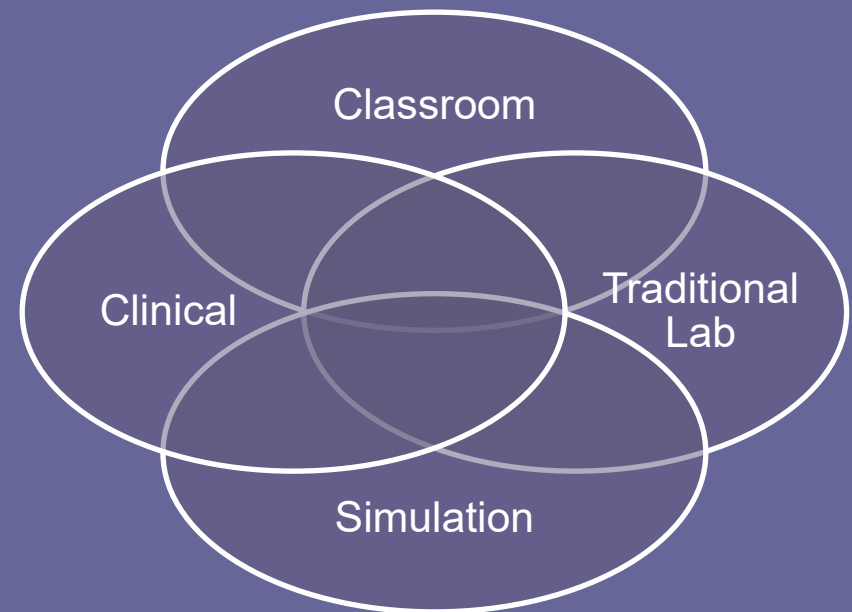
- Most targeted outcomes were achieved to a notable extent.
- RT students gained **confidence, role clarity, and openness** to collaboration, aligning with trends seen in other health disciplines.
- However, they were at a lower learning outcome level.
 - **Kirkpatrick Level 2** (attitudes and knowledge)
 - No studies reached Levels 3 or 4 (behavior change or impact on outcomes).
- The elements of this project may (or may not be) be **generalizable across disciplines**, particularly to nursing.
- **Limitations** include:
 - Targeting of Low-Level, short-term outcomes.
 - Weak study designs/high ROB.
- Hence, need projects with stronger study designs & higher-level learning outcomes

Project Conclusion

- **Interprofessional collaboration** is essential quality care.
- **Simulation-based education (SBE)** shows promise in impacting RT students' **attitudes and confidence**.
- However, SBE impact on clinical practice was not shown.
- Meaningful impact requires protracted effort in classroom, lab and clinical settings.
- The field is **under-researched**, and most studies employed **rudimentary study designs**
- Hence, findings should be interpreted cautiously.
- **Future research** should:
 - Employ more robust study designs.
 - Target higher level outcomes related to Inter Professional Practice

Practical Implication of Collective Research and Practice

- Sim-IPE seems to have a role
- Should be integrated with traditional classroom, lab and clinical elements of education.
- Sequence matters
- Increasing complexity



Effective IPC Case Study 1: COPD Readmission Reduction

- Short-Term Readmissions are bad for all stakeholders
 - Patient well-being
 - Hospital penalties from the HRRP
- Collaborative discharge planning should involve multiple disciplines (acute & homecare RT, nurse, physician)
 - Address barriers and rigorous patient follow-up.
- Reduced readmissions = Better Outcomes and patient well-being and ↓ HRRP \$ penalties

Effective IPC Case Study 2: Mechanical Ventilation Liberation

- Few would argue that protracted mechanical ventilation is bad.
- Liberation protocols include:
 - At least daily SBTs.
 - Collaboration among RTs, nurses and physicians to:
 - Ensure reversal of reason(s) for MV
 - Ensure weaning order & lightening of sedation
 - SBT conducted and repeated.
- **Early liberation** = Better quality outcomes & patient well-being

Concluding Thoughts

- Enhanced IPC is obtainable, but it is not automatic.
- Strategies:
 - Garnering **leadership buy-in** and involvement
 - Meaningful and **sustained curricular integration**.
 - Targeting **higher-level** learning outcomes
 - Enhanced patient care
 - Improved outcomes—shorter LOS
- **More research** to determine what works best.
- Increased **integration of AI** and digital tools.

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