# Quality Assessment: A Novel Interdisciplinary Patient Safety and Quality Care Simulation Program in Labor and Delivery

THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER

Dillon Froass<sup>1</sup>, Yuyan Liu, MD<sup>2</sup>, Yiying Wu, MD, MPH<sup>3</sup>, Qi Rong, MD<sup>4</sup>, Yue Yu, MAS<sup>5</sup>, Bryan Mahoney, MD<sup>6</sup>, Ling-Qun Hu, MD<sup>7</sup> 1. College of Medicine, The Ohio State University, Columbus, OH; 2. Department of Anesthesiology, Raritan Bay and Old Bridge Medical Centers at Hackensack Meridian HealthPerth Amboy, NJ; 3. Department of Obstetrics & Gynecology, Geisinger Medical Center, Danville, PA; 4. Department of Neonatology, MedStar Georgetown University Hospital, Washington, DC; 5. Center for Biostatistics, College of Medicine, The Ohio State University Wexner Medical Center, Columbus, OH; 6. Department of Anesthesiology at Mount Sinai St. Luke's and Mount Sinai West, New York, NY; 7. Department of Anesthesiology, The Ohio State University Wexner Medical Center, Columbus, OH

#### Background

- Maternal and neonatal outcomes are key healthcare quality metrics
- Team-based training in labor & delivery (L&D) improves patient safety
- Simulation training enhances teamwork, but **low-fidelity models** in resource-limited settings face challenges:
- Limited anesthesiologist coverage
- Underdeveloped local simulation resources
- Unstructured residency training curricula
- The **No Pain Labor & Delivery-Global Health Initiative (NPLD-GHI)** previously focused on low-fidelity training

#### Hypothesis

• The **TeaM-L&DSim** program improves interdisciplinary teamwork, decision-making, and technical skills in labor and delivery (L&D) teams

# **Study Design & Methods**

### **Study Design**

- TeaM-L&DSim: A structured, high-fidelity L&D simulation program
- Timeline:
  - Monthly simulations (March–September 2024)
- Final contest in October 2024 with 9 teams from 10 hospitals
- Teams Included:
- Obstetrician, anesthesiologist, neonatologist, nurse/midwife, and administrator

### Methods

• 27 simulation scenarios based on the Interdisciplinary Clinical Handbook of the Modern Delivery Rooms (2023)

- Focus areas: Communication & teamwork, Decision-making, Technical skills
- Evaluation Criteria:
  - Judge assessments (70%) + audience evaluations (30%)
  - Scores adjusted by difficulty coefficients for fairness







# Results

## **Key Findings**

- •Performance variations in:
- TeamSTEPPS components
- Decision-making speed & accuracy
- Technical skills execution
- •Strong correlation between judge and audience scores (Pearson r
- = **0.8682**, **p** = **0.01**).
- Limited sample size prevented further statistical modeling

### Observations

- Some teams excelled in communication but struggled with technical skills
- Others demonstrated strong clinical execution but lacked coordination
- Audience engagement suggests high interest in team-based simulation training



THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER

# **Conclusion & Discussion**

### Conclusion

- TeaM-L&DSim improves team collaboration, decision-making, and technical skills
- The program provides a **scalable simulation model** for resource-limited hospitals
- A combined **expert-audience scoring system** allows objective performance assessment

#### **Future Directions**

- Expand the program to more hospitals and regions
- Develop refined assessment tools for better performance tracking
- Conduct long-term studies to evaluate real-world impact on maternal outcomes



