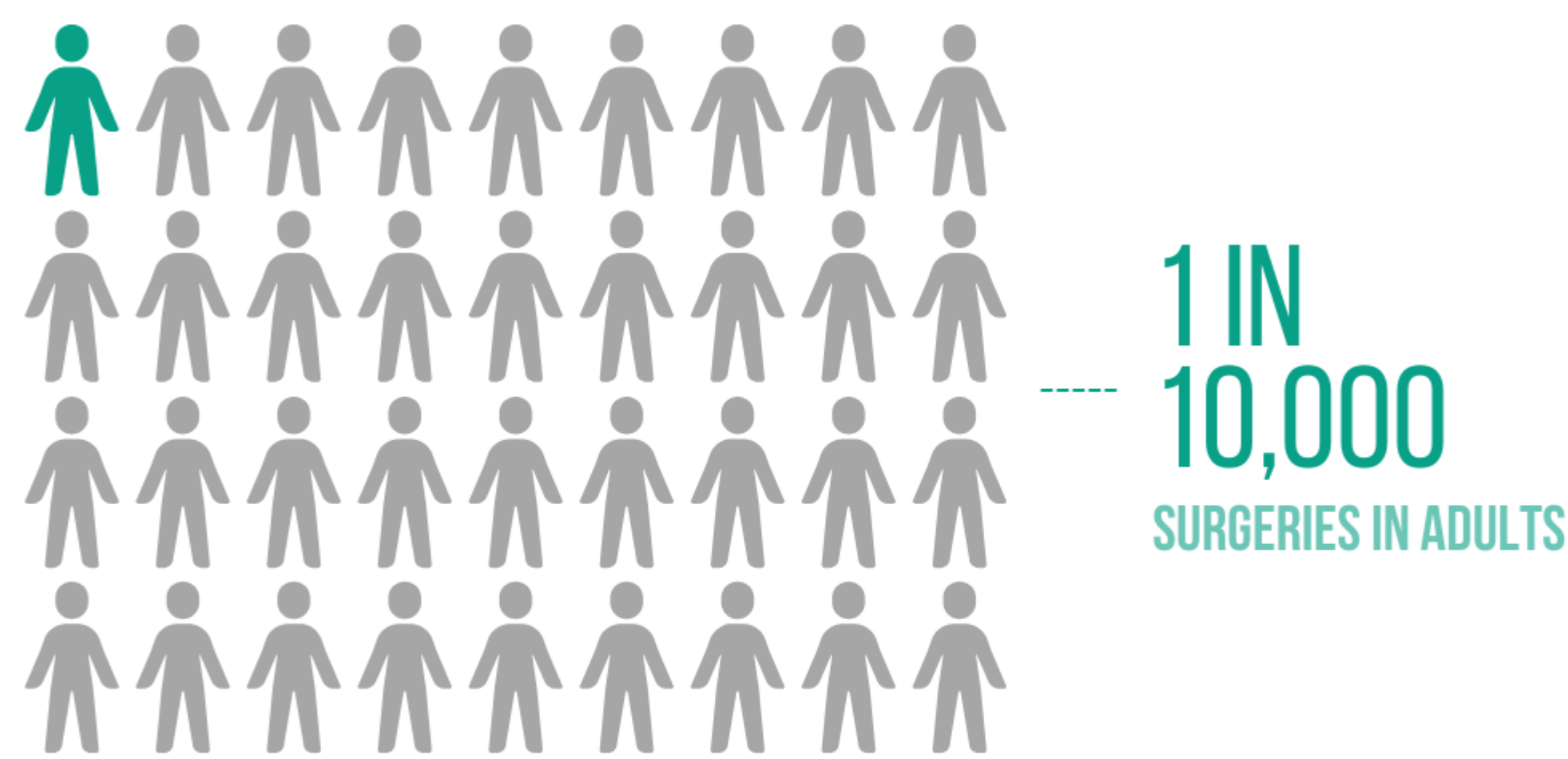


## Background/Introduction

**Malignant hyperthermia (MH)** occurs in 1 of 10,000 to 250,000 anesthetized patients, leading to severe complications or death if not promptly managed.

– Key literature review findings show that the prompt administration of dantrolene, along with effective complication management strategies, reduces patient mortality and morbidity.

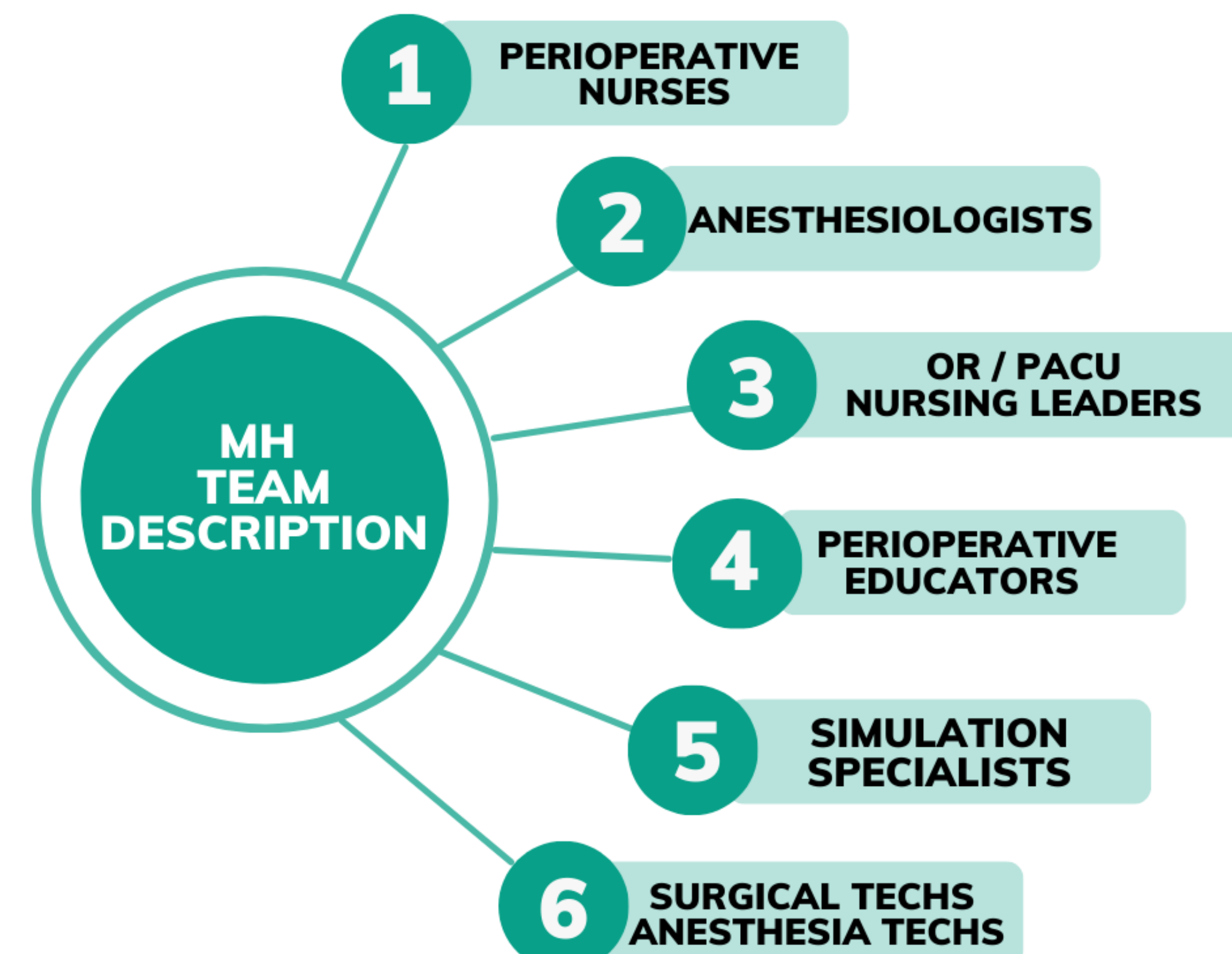


## About Us

Located in the heart of the Texas Medical Center in Houston, Texas, Houston Methodist Hospital is a renowned academic medical center. With over 65 operating rooms and 1,350 inpatient beds, we provide exceptional patient care and leading advancements in medical education and research.

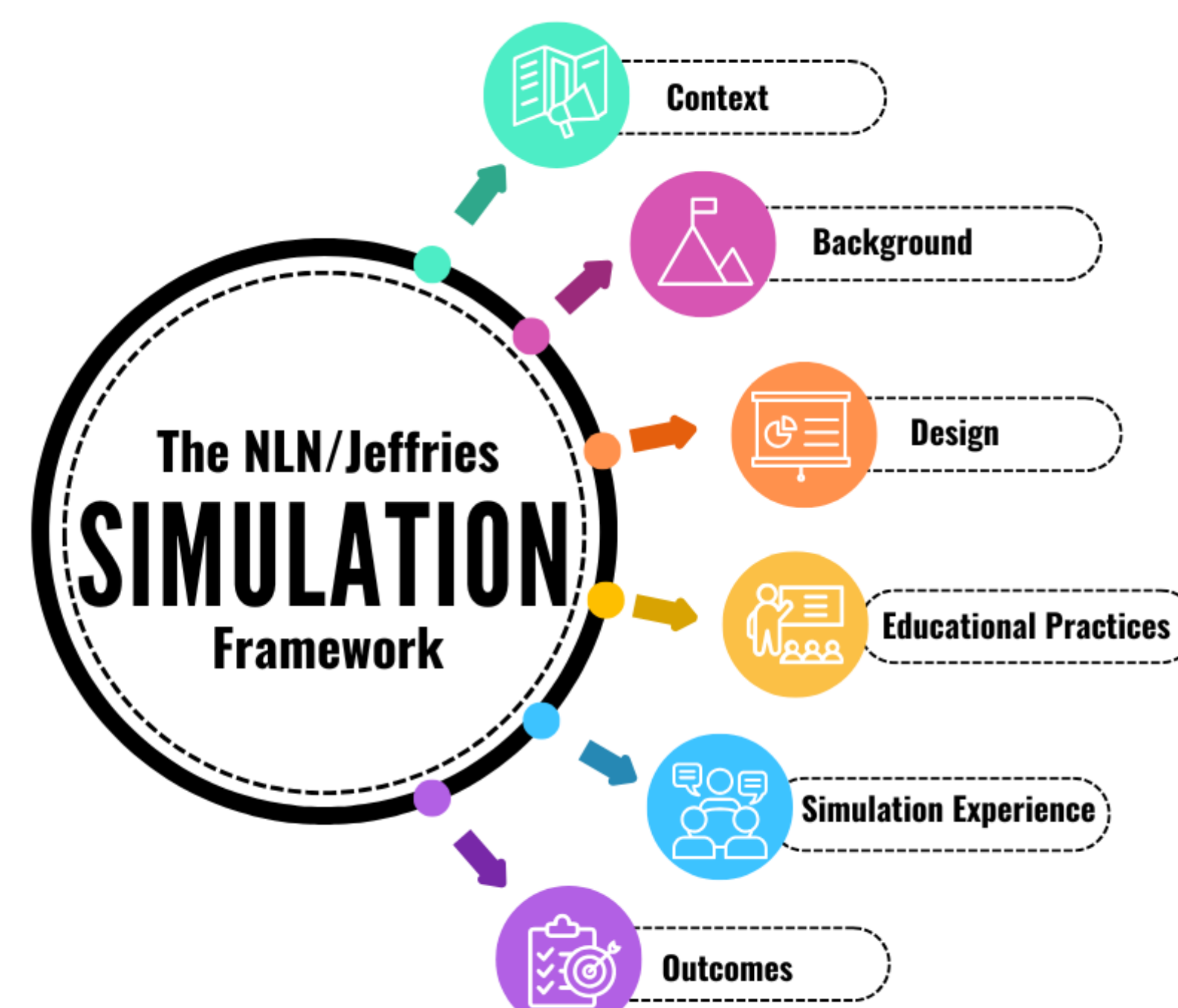


## Description of Team



## Preparation and Planning

- **Conducted baseline in-situ MH drills** to assess current practices and staff familiarity with the protocol.
- **Critical deficiencies identified:**
  - Delayed symptom recognition (>10 minutes)
  - MH emergency cart arrival time exceeded 13 minutes
- **Findings:** Limited staff familiarity with MH protocols, low confidence in responding to MH events, and unclear team roles.
- **Reviewed institutional MH policy** against MHAUS guidelines; identified gaps and revised policy,
- **Developed targeted training** objectives and service-line specific simulation scenarios based on the NLN/Jeffries Simulation framework.

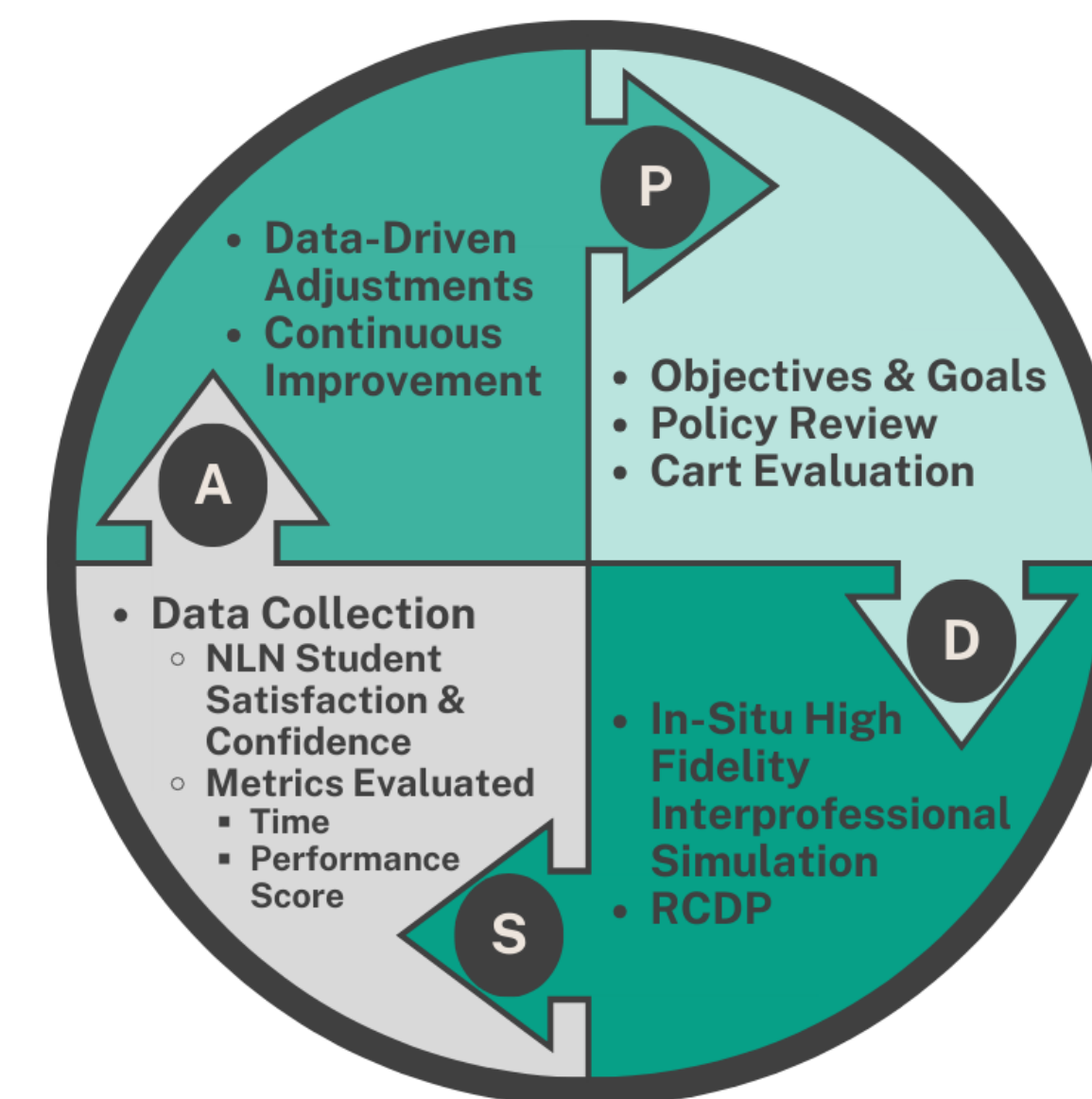


- **Simulation scenarios** were evaluated using SSET
- **Created drill-specific performance metrics** aligned with protocol adherence.

- **Trained faculty for simulation** facilitation,
- **Secured leadership and staff support** for implementation

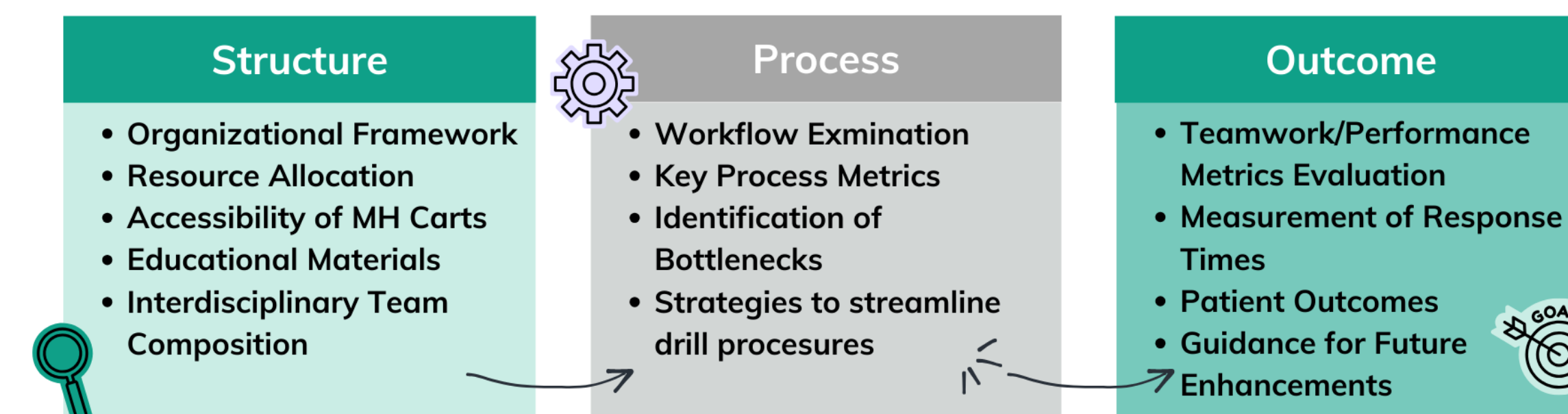
## Implementation

Applied the **Institute for Healthcare Improvement Model for Improvement and Plan-Do-Study-Act (PDSA)** cycles, integrated with **Rapid Cycle Deliberate Practice (RCDP)** for iterative learning.



Guided by:

- **Donabedian Model** for quality evaluation
- **NLN Jeffries Simulation Theory** for simulation design



**Conducted five high-fidelity, in-situ simulations over two months.**



**Performance measured** using a 32-item MH protocol checklist.

## Facilitation and Evaluation:

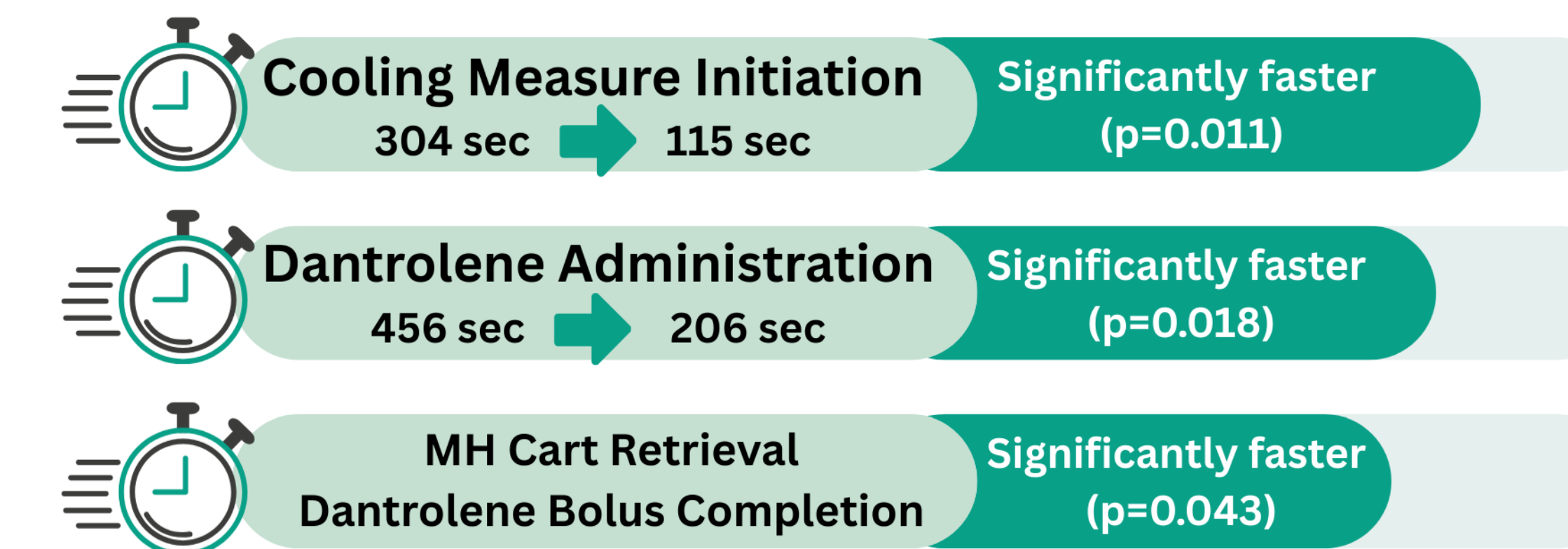
- Two facilitators provided real-time evaluation and debriefing during drills.
- Two independent evaluators reviewed recordings to ensure interrater reliability.

## Outcomes

**Overall team performance score on a 32-item checklist improved significantly (p < 0.001, d=4.53)**



**Statistically significant decreases in intervention response times**



## Implications for Perioperative Nursing

This project highlights the impact of combining simulation-based training with policy and process improvement. RCDP promoted rapid skill acquisition, improved communication, and increased role clarity. Perioperative nurses played a vital role in leading and sustaining this work. Annual MH simulations, ongoing education, and expanded participation from key stakeholders can strengthen institutional readiness and enhance patient safety during high-risk, time-sensitive perioperative emergencies.

## References

