

Lessons and Insights from the Implementation of the Cohort Model for a Pediatric Intensive Care Unit: An Integrated Mixed Method Research

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BACKGROUND

A new cohort model for different subspecialty patients is envisioned as the future for pediatric intensive care units (ICUs) in a quaternary care hospital. This model creates smaller diagnosis pools, allowing concentration of expertise and collaboration of ICU physicians with subspecialists and nurses. We implemented the cohort model with surgical, neurology, pulmonary and oncology ICUs.

PURPOSE

We sought to examine the perception of ICU staff and subspecialists regarding the new model and to assess how the organizational change affected the working environment.

METHODS

- Integrated mixed methods research (IMMR) consisting of pre and post cohort surveys, operational observations and semi-structured interviews of ICU staff
- Systematic approach to develop a survey using Eduardo Salas' 7 C's of effective teams as theoretical framework to derive a 29-item 5 point Likert Scale questionnaire
- Friedman's test used to determine differences in participants' perceptions across ICU cohorts
- An independent intensivist conducted a thematic analysis from the field notes and interviews, sensitized by the frameworks and quantitative survey data
- IMMR findings presented to 8 ICU staff and subspecialists for member checking

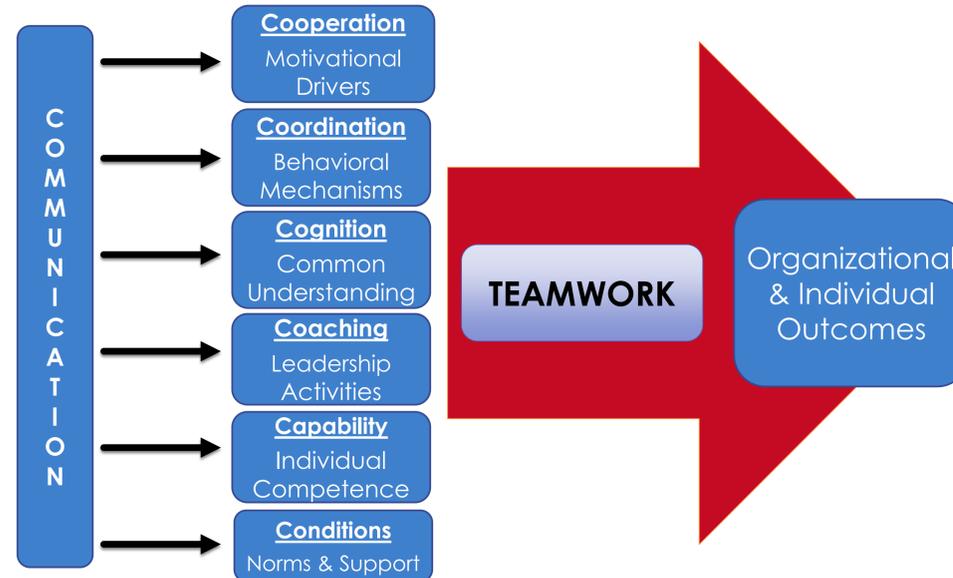


Fig 1: Eduardo Salas' 7 C's of Effective Teams Framework

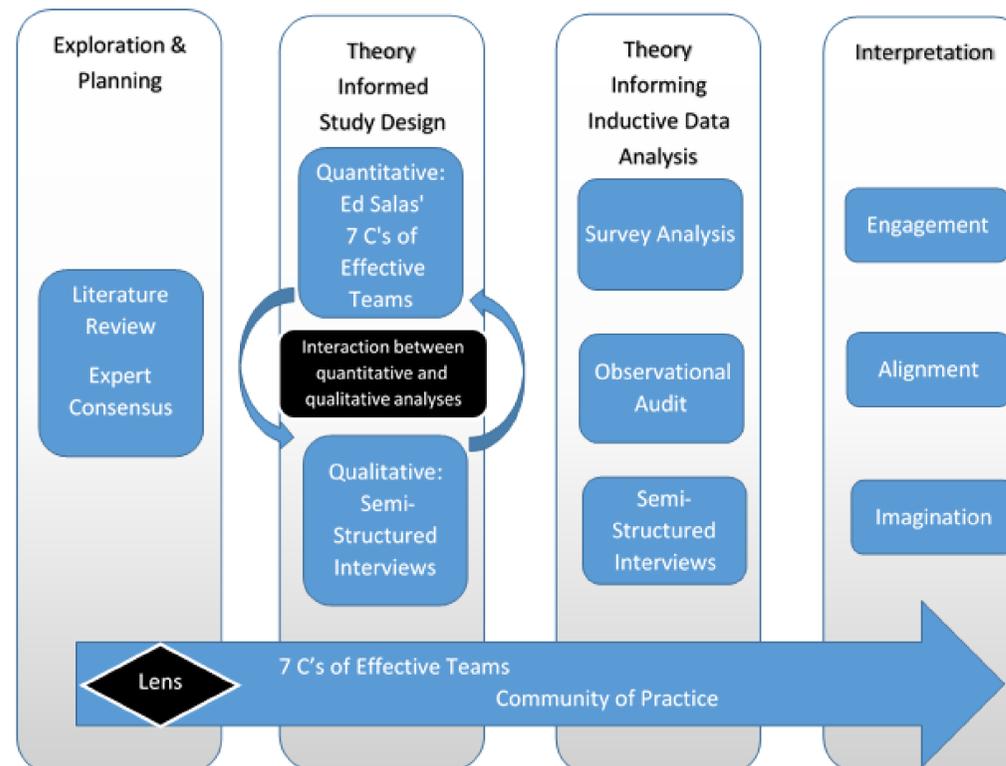


Fig 2: Flow of project depicting interaction of between our quantitative results to inform and target our qualitative analysis via semi-structured interviews and observational audit. Our theoretical framework lens shifted during our theory informing inductive data analysis to better guide the rich understanding of this complex domain.

RESULTS

	ICU Providers		ICU Nursing	
	Percentage of Positive Results			
	Pre	Post	Pre	Post
Coordination	36.28%	47.26%	49.90%	47.28%
Conditions	57.34%	62.63%	52.83%	50.14%
Coaching	76.36%	77.60%	79.35%	85.56%
Cooperation	70.55%	81.18%	73.41%	76.57%
Communication	62.17%	69.50%	45.64%	46.27%
Capability	63.85%	77.21%	81.61%	84.21%
Cognition	75.82%	87.06%	89.43%	85.15%

Initial survey results did not show any statistically significant differences between descriptive data in the seven C's of effective teams. However, these data provided lens for further in depth discovery and exploration during observational and interview components of the study.

Five themes were discovered from analysis of the survey data in concert with observational audit and semi-structured interviews:

- Community-from disruption to redistribution
- Transforming identity-expert and generalist
- Vision for advancing the field
- Expansive learning from focused practice
- Subspecialists embracing super-specialization

Community of Practice Framework

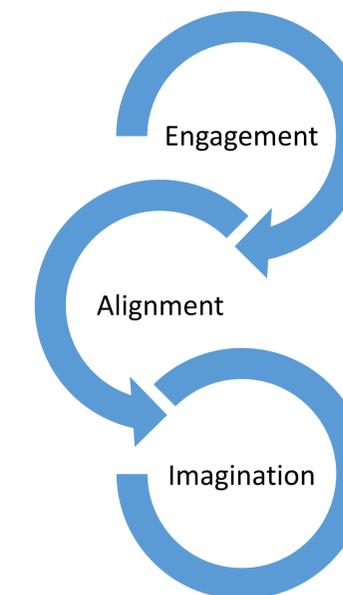


Fig 3: Wenger's Community of Practice Framework

CONCLUSION

Our experience brought to light many insightful experiences during the organizational transition to the new cohort model. As many quaternary pediatric centers also consider making similar changes, our findings may help inform their process to mitigate potential pitfalls. Identification of multiple domains and their evolution during the time preceding and following our new cohort implementation illustrate how existing communities were disrupted and new communities emerge slowly. Anticipation of this known chaos which is expected with large organizational shifts can allow integration of systems to ease turmoil (in personal identity, skills and work processes) among affected parties in the new system to aid in transitioning.

REFERENCES

1. Wegner E. Communities of Practice and Social Learning Systems. *Organization Articles* 2000; 7: 225-246.
2. Salas E et al. Understanding and Improving Teamwork in Organizations: A Scientifically Based Practical Guide. *Human Resource Management* 2014; 1-24.
3. NIH Office of Behavioral and Social Sciences. (2018). Best practices for mixed methods research in the health sciences (2nd ed). Bethesda: National Institutes of Health.