ICU teams and implementation science: Where the rubber meets the road

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1. ICU teams are foundational to evidence-based implementation

2. What are the components of effective teams that foster effective implementation?

3. Developing effective interprofessional teams takes time and attention to team dynamics
ICU EBP is full of complexity

- Multi-component complex interventions are ubiquitous

Rhodes et al., 2017; Barrier, 2018; Fan et al., 2017; Brochard et al., 2010; Devlin et al., 2018; www.iculiberation.org
Assess for Sedation and Delirium
Nurse driven

A. Perform daily spontaneous awakening trial (SAT)
Nurse driven

B. Perform daily spontaneous breathing trial (SBT)
Respiratory therapist driven

C. Consider and coordinate extubation
Team-based decision (respiratory therapist, nurse, physician)

D & E. Continue delirium monitoring and Exercise/Early Mobility
Nurse and Physical therapist driven

If unsuccessful at A, B or C:
1. Reduce sedation to ½ current dose and titrate as needed
2. Start process from the beginning and continue sedation and delirium monitoring
3. Continually evaluate and implement exercise/mobility – passive/active range of motion; sitting at edge of bed, out of bed to chair or ambulating

Steps of ABCDE delivery

Pass SAT/SBT

Pass SAT?

Fail SAT/SBT

Passed SBT?

Adapted from Vasilevsksis et al., (2010)
Complex interventions demand interprofessional team interaction.

4 kinds of barriers to ABCDE delivery in ICU:

- **Patient**
- **Protocol**
- **Clinician**
- **ICU context**

Systematic review of >1900 articles from 10 years.

Costa et al., *CHEST*. April 2017
Interprofessional team as one key barrier

ICU context

Poor interprofessional collaboration

Lack of leadership

Costa et al., CHEST. April 2017

Patient Protocol Clinician ICU context

Systematic review of >1900 articles from 10 years
So…

• ICU care demands interprofessional team for delivery

• Care is challenging because of interprofessional teams dynamics

• By focusing on improving ICU teams, we can also improve ICU evidence-based implementation
Implementation science is…

the study of behavior change

Weiss et al., AJRCCM, 2017
1. ICU teams are foundational to evidence-based implementation

2. What are the components of effective teams that foster effective implementation?

3. Developing effective interprofessional teams takes time and attention to team dynamics
1. Diverse teams are more effective

- Unpacks various forms of diversity
- How they are beneficial for complex tasks and processes
To determine whether diverse interprofessional team involvement is associated with routine ABCDE implementation.
ICU team composition and its association with ABCDE implementation in a quality collaborative☆

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• MHA Keystone ICU survey 2015

• Exposure: clinician involvement in bundle components (mostly/occasionally/never)

• Outcome: ABCDE delivery (routine/not routine) in every patient’s care

• Multivariate logistic regression
  – Adjusted for ICU type, direct care provider and clustered for hospital
Variation in team member composition

Delirium Assessment

- Nurse
- Physician
- Respiratory Therapist
- Nurse Practitioner
- Nursing Assistant
- Physical Therapist

Early Mobility

- Nurse
- Physician
- Respiratory Therapist
- Nurse Practitioner
- Nursing Assistant
- Physical Therapist
With RN involvement frequent, MDs and NAs involved in early mobility associated with increase likelihood of routine ABCDE

Suggesting that a diverse interprofessional team is associated with routine complex ICU care delivery
2. Predicting behavior among team members supports implementation

- Team members are on the same page
- Aware of roles and responsibilities
- Can predict behavior
  - Implicit coordination

Rouse et al., IEEE, 1992; McComb & Simpson, JAN, 2014; DeChurch, Journal of Applied Psychology, 2010
Is the ability to predict team members’ behavior associated with implementation?

- MHA Keystone 2016 survey

- Exposure: Validated Team survey with shared mental models items
  - One on ability to predict team members behavior

- Outcomes: Routine ABCDE implementation

Emily Boltey, BSN RN, PhD student
Predicting team member behavior is associated with routine implementation

Clinicians were 74% less likely to report ABCDE as routine if they agreed that they found it difficult to predict team members’ behavior.

Boltey et al, under review
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So, how can we develop effective interprofessional teams?

- Time
- Attention to team dynamics
Building teams takes time

Pulling Together and Pushing Apart: Tides of Tension in the ICU Team

LAURA A. HAWRYLUCK, SHERRY L. ESPIN, KIM C. GARWOOD, CATHY A. EVANS, and LORELEI A. LINGARD

• Qualitative study in 2 urban teaching hospital ICUs

• Found that ICU teams are not “rigidly defined but continually shifting entities”

• Understanding who is “us” vs. ”them” takes time

Hawryluck et al, Academic Medicine, 2002
Time spent working together is crucial

“By and large, I know pretty much what everybody, all the attendings...what their positions are on controversial areas. So I’ll know whether to bring something up or not. I can tell you the individuals in the unit who are largely by the book with respect to evidence-based medicine. And those that are less so and might be willing to you know, go out on a limb in trying some things...” (Pharmacist, site B)
Team dynamics

- Professional
- Cognitive
- Functional
Disrupted Routines: Team Learning and New Technology Implementation in Hospitals

Amy C. Edmondson
Richard M. Bohmer
Gary P. Pisano
Harvard University

This paper reports on a qualitative field study of 16 hospitals implementing an innovative technology for cardiac surgery. We examine how new routines are developed in organizations in which existing routines are reinforced by the technological and organizational context. All hospitals studied had top-tier cardiac surgery departments with excellent reputations and patient outcomes yet exhibited striking differences in the extent to which they were able to implement a new technology that required substantial changes in the operating-room-team work routine. Successful implementers underwent a qualitatively different team learning process than those who were unsuccessful. Analysis of qualitative data suggests that implementation involved four process steps: enrollment, preparation, trials, and reflection. Successful implementers used enrollment to motivate the team, designed preparatory practice sessions and early trials to create psychological safety and encourage new behaviors, and promoted shared meaning and process improvement through reflective practices. By illuminating the collective learning process across these units, they provided a framework for technology implementation and organizational change.
If you want to improve evidence-based ICU implementation…

• Focus your time on developing effective interprofessional teams
  – Spend time getting to know each other and each other’s roles
  – Work up to developing shared mental models and predicting behavior
But always remember…

What if Everyone (including us) Is Doing the Best They Can?

Brene Brown
Thank you!

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