Implications of Team Theory and Science for Nurse Credentialing Research

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“...It has become necessary to develop medicine as a cooperative science;...clinicians, specialists, laboratory workers uniting for the good of the patient, each assisting in elucidation of the problem at hand, and each dependent upon the other for support.”

–William J. Mayo, Commencement speech at Rush Medical College 1910
Table 2. Patient Safety Strategies Ready for Adoption Now

**Strongly encouraged**
- Preoperative checklists and anesthesia checklists to prevent operative and postoperative events
- Bundles that include checklists to prevent central line–associated bloodstream infections
- Interventions to reduce urinary catheter use, including catheter reminders, stop orders, or nurse-initiated removal protocols
- Bundles that include head-of-bed elevation, sedation vacations, oral care with chlorhexidine, and subglottic suctioning entodacheal tubes to prevent ventilator-associated pneumonia
- Hand hygiene
- The do-not-use list for hazardous abbreviations
- Multicomponent interventions to reduce pressure ulcers
- Barrier precautions to prevent health care–associated infections
- Use of real-time ultrasonography for central line placement
- Interventions to improve prophylaxis for venous thromboembolisms

**Encouraged**
- Multicomponent interventions to reduce falls
- Use of clinical pharmacists to reduce adverse drug events
- Documentation of patient preferences for life-sustaining treatment
- Obtaining informed consent to improve patients' understanding of the potential risks of procedures
- **Team training**
- Medication reconciliation
- Practices to reduce radiation exposure from fluoroscopy and CT
- The use of surgical outcome measurements and report cards, such as those from ACS NSQIP
- Rapid-response systems
- Use of complementary methods for detecting adverse events or medical errors to monitor for patient safety problems
- Computerized provider order entry
- Use of simulation exercises in patient safety efforts

ACS = American College of Surgeons; CT = computed tomography; NSQIP = National Surgical Quality Improvement Program.
Beware of illusory correlation: “…if relevant actors accept the need to adopt a particular practice, implementation should occur unproblematically” (Gondo, 2012)

Diffusion of intensity-modulated radiation therapy (IMRT) among a sample of patients receiving radiation therapy for prostate cancer

Undoubtedly healthcare has been recognized as a team endeavor...
Teamwork & leadership impacts clinical outcomes, care quality, and patient safety

- **Lack of communication** = most frequently occurring ‘behavioral failure’ in a review of closed claims *(Griffen et al., 2008)*

- Teamwork failures show a strong correlation with technical clinical errors \( (r = .57 - .67) \) *(El Bardissi et al., 2008; Weigmann et al., 2007)*
  - Sub-optimal teamwork \( \rightarrow 11\% \) of missed nursing care *(Kalisch & Lee, 2010)*

- Systematic efforts to improve teamwork (e.g., team-training) linked with significant improvement in acute and outpatient settings:
  - 60% reduction in med-surg fall rates *(Spiva et al., 2013)*
  - 93% reduction in missing orders in outpatient oncology *(Brunnell et al., 2013)*
  - Reduction of 0.5deaths/1000procedures per each quarter teamwork intervention in place *(Neily et al., 2010; Young-Xu et al., 2011)*
What do we know about high-performing teams from over 5 decades of research?

(Salas et al. 2004; Weaver, Wildman, & Salas, 2008)

Teams that perform well:

• Hold shared mental models
  • About the team, system, strategies, processes, goals
• Have clear roles and responsibilities
• Have clear, valued, and shared vision
• Optimize resources
• Have strong team leadership
• Engage in a regular discipline of feedback
• Develop a strong sense of collective trust and confidence
• Create mechanisms to cooperate and coordinate
• Manage and optimize performance outcomes
Many of the competencies underlying effective teamwork have been articulated (& adopted) (Salas, Wipf et al., 2008)

- Teamwork
  - Cooperation
    - Attitudinal/Motivational Components
      - Collective/Team Orientation
      - Collective Efficacy
      - Team Cohesion
      - Psychological Safety
      - Trust
    - Behavioral Strategies
      - Back-up Behavior
      - Cross-monitoring & cue-association strategies
      - Adaptation
      - Task-related assertiveness
      - Conflict management
      - Boundary spanning
      - Reflection & team-self correction
  - Coordination
  - Communication
    - Information Exchanges & Protocols
      - Briefings
      - Debriefings
      - Closed-loop Communication
      - Brief, clear, timely
How do we know this?
(Weaver et al., 2013)

• Theories & studies of team effectiveness
  ▪ Subjective evaluative judgment regarding results of performance
• Theories & studies of team performance
  ▪ What teams do
• Theories & studies of team composition & development
  ▪ How teams form, ebb, and flow over time
  ▪ Team training
• Theories & studies of multi-team systems
  ▪ Teams or networks of teams
These competencies can be developed through systematic team training.
Strongest evidence for bundled team-training interventions (Weaver, Dy, Rosen, 2013)

- Organizational interventions: Structure for success
- Structured tools: Standardize critical interactions
- Training & Coaching interventions: Improve teamwork interaction / processes

- Optimize transfer of training and generalization by coupling learning activities & practice opportunities with org. support and structured teamwork tools
- Examples include:
  - TeamSTEPPS
  - VA Medical Team Training
  - Many adaptations of crew/crisis resource management (CRM)
Measuring teamwork processes is possible and psychometrically sound measures are available.

Table 9.3 Summary of Best Practices for Team Performance Measurement Systems

<table>
<thead>
<tr>
<th>Component of Team Performance Measurement System</th>
<th>Best Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose: Why measure team performance?</td>
<td>#1: Develop a clearly articulated purpose statement, including who will be using the data and what types of decisions will be made using the performance measurement data</td>
</tr>
<tr>
<td>Content: What do you measure?</td>
<td>#2: Root measurement in theoretically based competency models of effective teamwork</td>
</tr>
<tr>
<td></td>
<td>#3: Align content of measurement with training and development program objectives</td>
</tr>
<tr>
<td></td>
<td>#4: Capture multiple levels of evaluation data</td>
</tr>
<tr>
<td>Location: Where do you measure?</td>
<td>#5: Measure teamwork across a variety of contexts to capture both typical and maximal performance</td>
</tr>
<tr>
<td></td>
<td>#6: Measure teamwork in simulated environments to provide standardized opportunities to capture multiple aspects of teamwork and indicators of maximal team performance</td>
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<tr>
<td></td>
<td>#7: Measure teamwork in the clinical environment to capture measures of typical performance, reinforce team learning, and to ensure transfer of teamwork competencies to the daily care environment</td>
</tr>
<tr>
<td>Timing: When should you measure?</td>
<td>#8: Measure team performance longitudinally</td>
</tr>
<tr>
<td>Method: How do you measure?</td>
<td>#9: Match the methods of measurement to the purposes of measurement</td>
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<td>#10: Use multiple measures from multiple sources to balance strengths and weaknesses of different measurement methods</td>
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<td></td>
<td>#11: Use observation for capturing observable aspects of teamwork (i.e., behaviors)</td>
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<td>#12: Use structured observational protocols and provide comprehensive rater training to ensure reliable and valid ratings</td>
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<tr>
<td></td>
<td>#13: Use self-report methods for aspects of teamwork not directly observable (e.g., attitudes, beliefs)</td>
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<td>#14: Select observers with clinical and teamwork expertise</td>
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<td>#15: Train observers to standards and monitor reliability over time</td>
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<td>#16: Support observers with job aids and continuing training</td>
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<td></td>
<td>#17: Train coaches to make use of the data collected</td>
</tr>
<tr>
<td></td>
<td>#18: Train teams to use tools for self-assessments</td>
</tr>
</tbody>
</table>

- Behavioral marker systems & observational tools:
  - NOTECHS, OTAS, TENTS...many

- Surveys (Valentine et al. 2011)
  - 36 distinct scales
  - 12 --> relationships to non-self-reported outcomes

- Situational judgment tests (Lievens, Buyse, & Sackett, 2005)

- However...
  - Quantifying individual team member contribution to team outcomes less clear
  - Measures of multi-team system performance evolving
Meaningful movement toward care integration, however, is a team-of-teams endeavor.
Important conceptual questions remain

Particularly within a multi-team system context…

- Sequencing, timing, and synchronization (entrainment)
- Staging and integration
- Transdisciplinary decision making processes
- Role (or goal) confusion or conflict
- “Pro-acting”: Anticipation, self-correction, back-up behavior
- Boundary spanning
- Transactive memory systems
  - Who knows who knows what and how do they know?
- What emergent conditions/states are most important for well coordinated, high quality care? Which have we not considered?
  - Trust, cohesion, efficacy, justice
- Network characteristics of effective care, education, and scientific research multi-team systems
  - Patterns of communication, coordination
Important design, methods, and measurement issues to consider

- Multi-level/random effects models
- Network & pattern analysis
- Quasi experimental & comparative effectiveness designs
- Assessment methods
  - Survey measures exist (e.g., TeamSTEPPS Teamwork Attitudes Questionnaire)
  - Simulation: In-situ, center based, & low fidelity
  - Assessment centers are common in industry for teamwork competency assessment & leadership selection
  - Situational judgment tests (SJT)
- Measuring team performance in multi-team systems
Reflection, discussion, questions

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References

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Additional slides as needed
QSEN Teamwork KSAs

**TEAMWORK AND COLLABORATION**

**Definition:** Function effectively within nursing and inter-professional teams, fostering open communication, mutual respect, and shared decision-making to achieve quality patient care.

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Analyze differences in communication style preferences among patients and families, nurses and other members of the health team</th>
<th>Communicate with team members, adapting own style of communicating to needs of the team and situation</th>
<th>Value teamwork and the relationships upon which it is based</th>
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<tbody>
<tr>
<td></td>
<td>Describe impact of own communication style on others</td>
<td>Demonstrate commitment to team goals</td>
<td>Value different styles of communication used by patients, families and health care providers</td>
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<td></td>
<td>Discuss effective strategies for communicating and resolving conflict</td>
<td>Solicit input from other team members to improve individual, as well as team, performance</td>
<td>Contribute to resolution of conflict and disagreement</td>
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<tr>
<td></td>
<td>Describe examples of the impact of team functioning on safety and quality of care</td>
<td>Initiate actions to resolve conflict</td>
<td>Appreciate the risks associated with handoffs among providers and across transitions in care</td>
</tr>
<tr>
<td></td>
<td>Explain how authority gradients influence teamwork and patient safety</td>
<td>Follow communication practices that minimize risks associated with handoffs among providers and across transitions in care</td>
<td>Value the influence of system solutions in achieving effective team functioning</td>
</tr>
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<td></td>
<td>Identify system barriers and facilitators of effective team functioning</td>
<td>Participate in designing systems that support effective teamwork</td>
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<tr>
<td></td>
<td>Examine strategies for improving systems to support team functioning</td>
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</tbody>
</table>

(Additional rows may be present but are not fully visible in the image.)
### REVISED NOTECHS SCALE

Please follow the key below and circle the number corresponding to the Scrub Nurse’s performance.

<table>
<thead>
<tr>
<th>NA-not applicable</th>
<th>1 Not done/</th>
<th>2 Not done well</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6 Done very well</th>
</tr>
</thead>
</table>

#### CATEGORY ELEMENT

**COMMUNICATION AND INTERACTION**
- (a) Instructions to runner clear and polite
- (b) Waited for acknowledgment from the runner
- (c) Instructions to Surgeon clear and polite
- (d) Waited for acknowledgement from the surgeon

**VIGILANCE/SITUATION AWARENESS**
- (a) Monitored steps of the procedure
- (b) Awareness of Surgeon
- (c) Awareness of runner
- (d) Anticipates equipment needs during the crisis periods

**TEAM SKILLS**
- (a) Maintains a positive rapport with the whole team
- (b) Open to opinions from other team members
- (c) Acknowledges the contribution made by other team members
- (d) Supportive of other team members
- (e) Conflict handling – eg. concentrates on what is right rather than who is right

**LEADERSHIP AND MANAGEMENT SKILLS**
- (a) Adherence to best practise during the procedure – eg. does not permit corner cutting by self or team
- (b) Time management – eg. Appropriate time allocation without being too slow or rushing team members
- (c) Resource utilisation – i.e. appropriate task-load distribution and delegation of responsibilities
- (d) Authority/assertiveness

**DECISION MAKING–Surgical CRISIS**
- (a) Prompt identification of the problem
- (b) Informed runner promptly and clearly
- (c) Outlines strategy/institutes a plan – i.e. asks runner for suction, vascular tray
- (d) Anticipates potential problems and prepares a contingency plan – eg. informs Surgeon of availability of suction or vascular clamps
- (e) Option generation- takes the help of the team (seeks team opinion)