What Gets in the Way of Nurses Accepting and Embracing Technology

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Donna Y Schmidt, RN, MS, FACHE
SueEllen Pinkerton, PhD, RN, FAAN

Objectives

Learning Objective 1	• **Discuss the impact of complexity compression on quality and safety outcomes, staff safety and the cognitive complexity of the work of nursing**
Leaning Objective 2:	• **Describe the complexity compression indicators that are related to health care technologies**
Learning Objective 3:	• **Identify how health care technology can be designed and implemented to reduce the impact of complexity compression**

Complexity Compression: What is it?

What nurses experience when expected to assume additional, unexpected responsibilities while simultaneously conducting their usual, multiple responsibilities during a work shift.

*Krichbaum , K., Diemert, C., Jacox, L., Jones, A., Koenig, P., Mueller, C., & Disch, J. (2007)

The Work Environment

- **Continuing nursing shortage**
- **Significant changes for nurses and patients**
- **Patients are more critical and the care being delivered is more intense**
- **Nurses spend up to 40% of their workday responding to organizational demands (such as documentation)**
- **Leads to a compression of the complexity nurses deal with in their day to day work situations**

Krichbaum et al. (2007)

Review of Literature

- **Factors impacting RN performance in hospitals**
  - Pattern of work complexity
  - Patterns of cognitive factors driving performance and decision making
- **Factors related to complexity compression indicators describe**
  - Workplace factors
  - Complexities of modern life
  - Physical toll of the competing demands

Ebright, Patterson, Chalko and Render (2003)

Research Methodology

- **Survey Instrument**
  - Factors influencing staffing needs (Pinkerton & Rivers, 2001)
  - Healthy Work Environment Standards (AACN, 2005)
- **Study population**
  - RNs working at Magnet hospital
  - RNs working at non-Magnet hospital
  - RNs working at a hospital “On the Journey” towards Magnet status

Findings

High Impact and High Frequency Complexity Compression Indicators

1. Effectiveness of communications
2. Bed turnover
3. Number of unit-based support staff
4. Teamwork/unit cohesiveness
5. Documentation expectation*
6. Organizational skills of the nurse
7. Medication delivery system
8. Adequacy of support services
9. Quality of relationship with physician*
10. Technology development at bedside

*Significant difference in reported impact between hospitals, p < .05

Findings

Predictors* of high impact and high frequency complexity compression indicators

Predictors of High Impact, High Frequency Complexity Compression Indicators	Predictors of Low Impact, Low Frequency Complexity Compression Indicators
Bed turnover **5 to 10 yrs as RN**	Bed turnover **0 to 5 yrs as RN**
Medication delivery system **5 to 10 yrs as RN**	Effectiveness of communications **Non-nursing degrees**
Adequacy of support services **5 to 10 yrs in position 7p-7a shift**	Medication delivery system **11 to 20 yrs as RN**
Technology development at bedside **CN and staff nurses**	Adequacy of support services **0 to 5 yrs as RN**
	Technology development at bedside **Working < 24 hrs per week**

* $p < .05$ from logistic regression

Findings

Top five high impact and high frequency CC indicators by facility

	MAGNET	ON THE JOURNEY	NON-MAGNET
1	Effectiveness of communications	Effectiveness of communications	Documentation expectation*
2	Number of unit-based support staff	Bed turnover	Number of unit-based support staff
3	Medication delivery system	Teamwork/unit cohesiveness	Teamwork/ unit cohesiveness
4	Bed turnover	Quality of relationship with physician*	Bed turnover
5	Organizational skills of the nurse	Documentation expectation*	Information systems -order entry*

*Significant difference in reported impact between hospitals, p < .05

Findings

Predictors* of low impact and low frequency complexity compression indicators

- Impact of academics/students
- Productivity of aging workforce
- Generational differences
- Staff turnover

* $p < .05$ from logistic regression

Conclusions

Study Conclusions

- Nurses at the Magnet hospital were impacted less by complexity compression indicators than the nurses at "On the Journey" and Non-Magnet hospitals
- Nurses at the "On the Journey" hospital were impacted less than the nurses at the Non-Magnet hospital
- Non-deferrable tasks and processes (documentation and medication delivery system) impact complexity compression indicators

Conclusions

*"Automation of clinical, financial and administrative transactions is essential to improving quality, preventing errors, enhancing consumer confidence and improving efficiency."**

*** IOM, Crossing the Quality Chasm, 2001**

Automation without adoption will not accomplish these goals

What Gets in the Way of Nursing Adoption of Technology

- Not defining benefits to the user
- Inadequate clinical and executive leadership and commitment
- Not engaging clinical users in selection, design and implementation decisions
- Focus on technology implementation, not the people and processes
- Not improving clinical and operational processes with technology implementation
- Work arounds - Nurses can find ways to adapt to stressors, but the adaptations may have limitations

How to Increase Adoption of Technology: Managing Change

- Define benefits of technology for the clinical user
- Demonstrate leadership engagement and commitment
- Involve users in technology selection, design and implementation decisions
- Design improved processes
- Never underestimate the value of communication during the project life cycle
- Explore technology solutions such as improved medication delivery systems to provide greater amount of time for deferrable tasks