Factors Influencing Registered Nurses' Adoption of Video Monitoring (VMT) to Improve Patient Safety

SCHOOL OF NURSING
VANDERBILT UNIVERSITY

Mary E. Dowling, MSN, RN, CENP; Richard Watters, PhD, RN; Debra Arnow, DNP, RN, NEA-BC, Jay Morrison, MSN, RN, CPPS, Vanderbilt University Medical Center
Vanderbilt University School of Nursing

Problem Statement

Despite the availability of VMT, some RNs continue to use traditional standards of care, e.g., frequent rounding, sitters, and bed alarms.

Purpose and Objectives

Purpose:

- To survey inpatient registered nurses (RNs) on four inpatient units to identify factors that influence their adoption of video monitoring technology (VMT) to improve patient safety

Objectives:

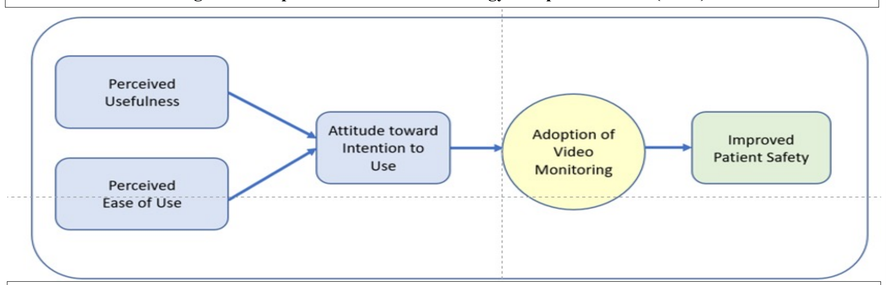
- Obtain permission from Barnett et al. (2020) to adapt the Remote Video Monitoring Acceptance Tool (RVMAT) to survey Vanderbilt University Medical Center (VUMC) RNs
- Distribute the adapted 2021 VUMC vSitter Registered Nurse Survey to 135 registered nurses (RNs) on four units at VUMC
- Analyze the data and conduct descriptive statistical analysis
- Submit a summary of project's findings to VUMC leadership

Background

- Self-harm events, especially patient falls, continue to increase despite quality improvement and research (Quigley, Votruba, & Kaminski, 2019)
  - Millions of dollars spent annually for sitters (Centers for Disease Control and Prevention, 2016; Greeley et al. 2020; Lang, 2014; Shekelle, 2019).
  - Sitters to prevent patient self-harm is widespread, ineffective, and costly (Harding, 2010)
  - Urgency exists for evidence-based, cost-effective, and scalable interventions (Barnett et al. 2020)
- VMT decreases fall rates and sitter costs (Burtson & Vento, 2015; Cournan, Fusco-Gessick, & Wright, 2018; Sand-Jecklin, Johnson, & Tylka, 2016; Votruba, Graham, Wisinski, & Syed, 2016)
- RNs demonstrate reluctance with adopting VMT (Burtson & Vento, 2015; Davis & Carter-Templeton, 2021; deVeer, Fleuren, Bekkma, & Francke, 2011; Grol & Wessing, 2020; Webster, 2019)

Framework

Figure 1. Adaptation of Davis's Technology Acceptance Model (TAM)



Adapted from King, W.R. & He, J. (2006)

- Davis (1989) found three constructs determines adoption of technology
  - Perceived usefulness
  - Perceived ease of use
  - Intention to use (attitude towards technology)

Synthesis of Evidence

PICOT Question: In caring for adult inpatients, what factors influence nurses to select a video monitoring intervention versus the traditional standard of care to improve patient safety?

- Few studies due to newness of VMT in acute care
- Several studies demonstrate significant reduction in fall rates using VMT (Cournan, Fusco-Gessick, & Wright, 2018; Votruba, Graham, Wisinski, & Syed, 2016; Sand-Jecklin, Johnson, & Tylka, 2016; Westle , Burkert, & Paulus, 2019)
- Davis, Kutash, & Whyte (2017) demonstrated a significant reduction in sitters using VMT
- The Remote Video Monitoring Acceptance Tool (RVMAT) (Cronbach = 0.98) is valid and reliable to survey RNs on factors influencing adoption of VMT.

Methods/Data Collection

Project design:

- Needs assessment as a quality improvement project
- Setting: Vanderbilt University Medical Center in Nashville, TN
- Participants: 135 RNs on four inpatient units

Intervention:

- Adapted RVMAT via electronic survey (REDCap®) over 10 days
- Likert scale 1-5 (1 = strongly disagree, 5 = strongly agree)
- 22 closed ended items within 5 subscales
  1. *Intention to use VMT*
  2. *Attitude towards using VMT*
  3. *Perceived usefulness of VMT*
  4. *Perceived ease of use of VMT*
  5. *VMT and patient safety*
- Voluntary, anonymous
- Includes two free-text questions on facilitators and barriers to using VMT

Results

- N = 24, response rate = 17.8%
- Strong endorsement of VMT M 3.99 / SD 0.66 (n=24)
- Highest scoring item:
  "Assuming I have access to VMT, I intend to use it" M 4.38 / SD 0.58 (100% agree)
- Lowest scoring item:
  "I believe monitoring is continuous with VMT" M 3.25 / SD 1.03 (41.67% agree)

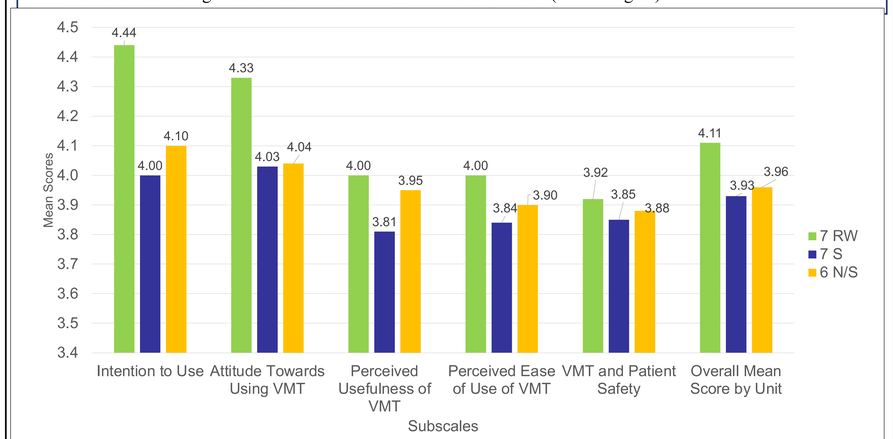


Figure 2. Subscales: Mean Scores by Unit (n=24)

	Formal vSitter education	Informal vSitter education only	No vSitter education
6 NS	90% (9)	10% (1)	0% (0)
7 RW	67% (4)	0%	33% (2)
7 S	63% (5)	0%	38% (3)

Figure 3. Types of Education by Unit (n=24)
No Education = 20.83%

Results (*continued*)

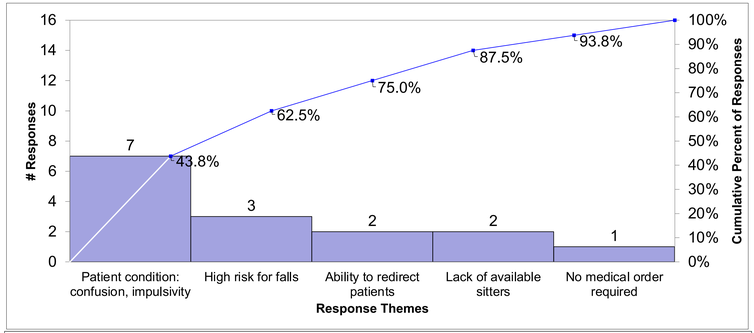


Figure 4. .Facilitators to Using Video Monitoring (n = 13)

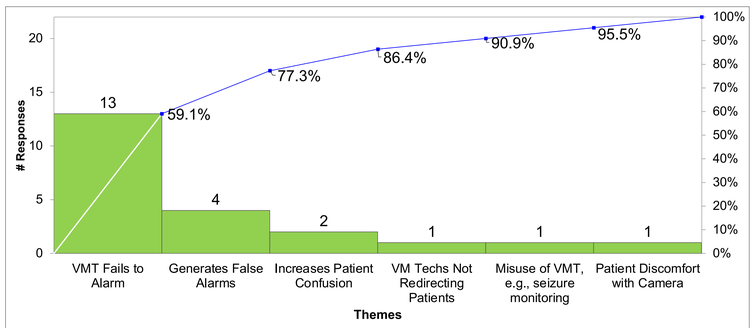


Figure 5. Barriers to Using Video Monitoring (n= 15)

Discussion

- **Implications and Next Steps**
  - Evidence supports the use of VMT to reduce falls and sitter costs
  - Strong endorsement by RNs to use VMT at VUMC
  - Examine VMT processes to reduce alarm failure and false alarms
  - Improve formal education
  - More surveys needed to understand facilitators and barriers
- **Strengths**
  - Survey tool valid and reliable (Cronbach = 0.98)
  - Cost effectiveness
  - Use of REDCap for electronic, mobile data collection
- **Limitations**
  - Small sample size and only one site
  - Potential self selection bias

Conclusions

- Self-harm events continue to increase in hospitalized patients
- Lack of evidence-based interventions to prevent self-harm events
- Despite RN reluctance, VMT reduces falls and sitter use
- RVMAT is valid tool to ascertain factors influencing RNs adoption of VMT
- Nurse leaders should ensure VMT procedures enhance alarm detection and reduce false alarms
- Education of staff should be prioritized
- Nurse leaders using RVMAT can plan, develop, and implement strategies to optimize VMT utilization