Psychometric Testing of a PACU Discharge Scoring System

Laurie Ecoff, PhD, RN, NEA-BC

Sharp Memorial Hospital

STTI 24th International

Nursing Research Congress

July 22, 2013

About Our Hospital

- **Part of integrated healthcare system**
- **368 beds**
- **Baldrige winner, 2007**
- **Magnet designated, 2008, 2013**
- **Planetree designated, 2012**
- **Most beautiful, 2012 (Soliant Health)**
- **Most wired, 2012 (Hospitals and Healthnetworks Magazine)**

SHARP® Memorial Hospital

Research Team

- Jeanne Palomo, BSN, PACU Manager
- Kristen Vacinek, BSN, PACU Clinical Nurse
- Jaynelle F. Stichler, DNS, RN, NEA-BC, FACHE, FAAN, Academic Research Consultant

Learning Objectives

At the completion of this session, the learner will be able to:

1. Describe a systematic process to evaluate practice and determine opportunities for improvement

2. Discuss the steps in developing and psychometrically testing a Post-Anesthesia Care Unit (PACU) discharge scoring system

Purpose and Background

- The purpose of the study was to develop and psychometrically test a PACU discharge scoring system

- Currently, the PACU uses the REACT (Respiration, Energy, Alertness, Circulation, and Temperature) scoring system, but it does not accurately predict readiness for discharge from the PACU

Clinical Issues with REACT

- Although a patient may score the maximum points (10) using the REACT system, pain and nausea tend to prolong the PACU stay

- Additionally, anecdotal reports from receiving units indicate patients are not recovered fully from anesthesia and require a close observation

Review of the Literature and Community Standard

- REACT
- Modified Aldrete
- The American Society of Peri-Anesthesia Nurses (ASPAN) recommendation
- Magnet Research Listserv Query

Limitations of Scoring Systems

- REACT
  - The REACT system does not assess oxygenation, hypertension, pain, nausea, and resolution of spinal anesthesia.

- Modified Aldrete
  - The original system was developed in 1970 and modified in 1992 to include oximetry.
  - Like the REACT system, the Modified Aldrete does not address pain and nausea. It also does not address temperature.

ASPAN Recommendation

- The American Society of Peri-Anesthesia Nurses (ASPAN) standards. These standards are evidence-based, but do not commit to a specific tool.

Magnet Listserv Query

- A majority of the respondents indicated they used either the Modified Aldrete System or the ASPAN standards

- Most identified similar gaps in the Modified Aldrete System and indicated interest in development of a comprehensive, reliable, and valid system

Methods

- A 10-item tool was developed from other published tools and recommendations for discharge criteria described by:
  - American Society of Anesthesiologists
  - American Society of Peri-Anesthesia Nurses

Methods: Content Validity

- Experts in the field of the PACU setting, including nurses and anesthesiologists, assisted in establishing content and face validity

- Each expert reviewed and evaluated the discharge assessment items and the proposed criterion

Methods: Content Validity

- Experts scored the items and criterion with their level of agreement on a 4-point Likert Scale

- Content Validity Index (CVI) was calculated as a ratio of the aggregated mean score compared against a maximum possible score

- The CVI for the list of assessment items and the accompanying criteria was .80

Item	Criterion	Y	N
Activity	Voluntary movement of all 4 extremities or similar to preoperative assessment		
Respirations	12-20 breaths/min or within 10% of pre-op rate		
Pulse	60-100 beats/min or within 10% of pre-op rate		
BP	Systolic BP between 100 & 160 Hg or pre-op level with 2 consecutive BPs 15 minutes apart		
Temperature	Between 36.0 C/96.8 F & 38.0 C/100.4 F orally		
O_2 Saturation	>95% on room air or with supplemental O_2 via nasal cannula		
Consciousness	Accurately answers orientation questions or unchanged from pre-op status		
Pain	Minimal discomfort or acceptable/tolerable to patient		
Nausea	None/mild nausea with no active vomiting		
Surgical Bleeding	Minimal/no dressing changes or consistent with procedure		

Methods: Inter-rater Reliability

- Established inter-rater reliability using physical assessment data recorded on the patient's medical record:

  o Two nurses scored the patient's readiness for discharge independently and indicated with a yes or no that the patient met the criteria for discharge

  o Examined the level of agreement between the two nurses' independent scores to establish inter-rater reliability

Methods: PACU Length of Stay

- Recorded the time that the patient met the discharge criteria and was determined to be ready for discharge using the REACT tool and the new tool

- Compared differences in readiness for discharge using REACT and the new tool

Results: Inter-rater Reliability

- There was 100% agreement among nurses for 202 patients scored using the new system

SHARP Memorial Hospital

Results: PACU Length of Stay

- There was a mean (average) difference of 27 minutes (over 122 cases) between the discharge times using the REACT data set as compared to the new tool

- The new tool did not result in statistically significant increase or decrease of time spent in the PACU compared with REACT

Post Hoc Assessment of the Efficacy of the Tool

- Rapid Response Team (RRT) calls decreased by 50% from 6% to 3% (overall RRT calls, prior PACU stay)

- The decrease in RRT calls may be a byproduct of the study; the result of increased knowledge and skill in assessing the patient's readiness for discharge (Hawthorne Effect)

Next Steps

- Obtain Anesthesia Supervisory Committee approvals at 5 hospitals

- Revise standardized procedure (interdependent practice in California)

- Perform competency assessment for all PACU nurses

- Update system in electronic medical record

Conclusion

- The new discharge scoring system:
  - is valid and reliable
  - accurately predicts patient readiness for discharge from the PACU setting
  - Increases patient safety

SHARP. Memorial Hospital

Questions?

References

- Brown I. et al (2006). Use of post-anesthesia discharge criteria to reduce delays for inpatients in the post anesthesia care unit. *Journal of Clinical Anesthesia*, 20, 175-179.

- Fraulini, K. (1984). R.E.A.C.T. A new system for measuring post anesthesia recovery. *Nursing 84*. April, 101-102.

- Thompson: Mosby's Clinical Nursing, 5th ed., Copyright @2002 Mosby, Inc. Chapter 3. Cardiovascular System, Normal Findings.

SHARP. Memorial Hospital

Contact Information

Laurie Ecoff, PhD, RN, NEA-BC

Sharp Memorial Hospital

San Diego, California, USA

laurie.ecoff@sharp.com

858-939-3508