# PACU Stroke Screening Process Improvement Project

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## Background

- The Adult Post Anesthesia Care Unit (PACU) at UMMC recovers variety of post-operative patients each day.
- Within a 12 month period, 2 patients exhibited signs of stroke that were not recognized in a timely manner.
- Incidence of perioperative stroke for non-cardiac, non-neurological surgery patients: 1 per 1000 cases, 8 fold increase in mortality
- Stroke symptoms can be easily masked due to confounding factors of anesthesia and frequent opioid administration.
- Identification of increased risk for perioperative stroke can alert the nurse to escalate neurological monitoring post-operatively
- Early detection of stroke allows for intervention. IV TPA contraindicated in post-surgical patients, but endovascular clot retrieval is an available and effective treatment in this population.
- No screening tool for perioperative stroke has been found in the literature.

## Plan

- Assembled multi-disciplinary team: PACU, Neurology, the Brain Attack Team, Quality Improvement
- Completed a literature review.
- Purpose: Create a screening tool for increased risk for perioperative stroke to escalate neurological monitoring while in PACU.
- Decrease time to intervention for strokes in PACU:  time= brain
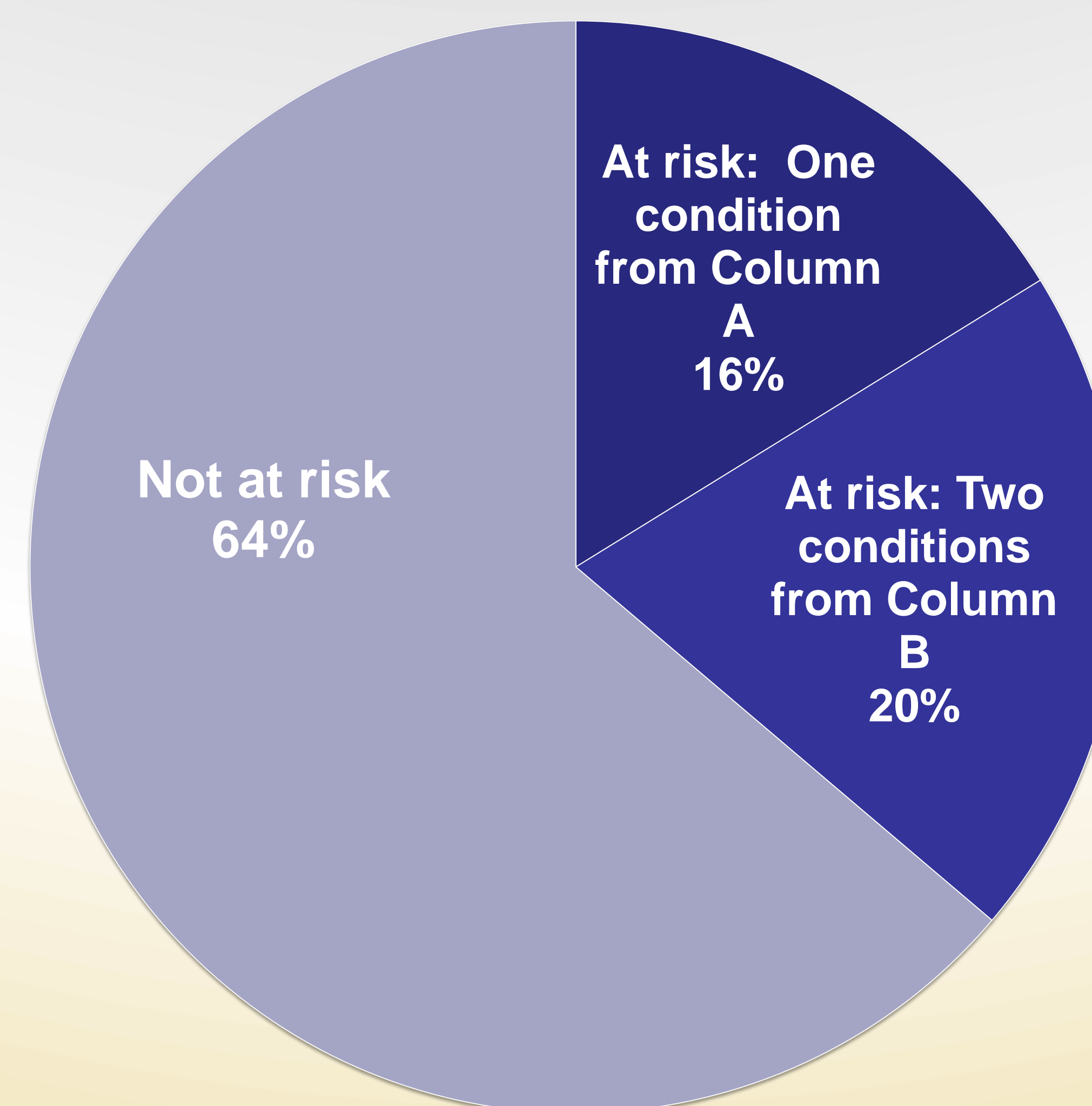- Based on the literature the following screening tool was developed:

| Column A
If a patient has one of the below: consider at increased risk | Column B
If a patient has two of the below: consider at increased risk |
|---|---|
| MI within the past 6 months | Hypertension on medication |
| H/o stroke or TIA | Diabetes |
| Afib | H/o PVD or previous vascular surgery |
| On dialysis | Current smoker or history of COPD |

## Do

- Created a screening tool to determine increased risk for perioperative stroke
- Collected pre-data to determine prevalence in UMMC surgical population
- Pilot: July 6, 2015 to October 2, 2015, Screened patients in PACU from the operating room
- Escalated neuro assessments and monitoring for patients at risk on arrival to the PACU and every two hours until transfer or 24 hours post-operatively

## Study

- 895  patients were screened  for perioperative stroke risk
- 324 met screening criteria to be considered  at risk
- Initial neurological assessments were completed in 68.5%
- Change in neurological exams noted in 1.2%
- Post operative imaging was completed in 1.9%
- Two patients (0.6%) had a stroke
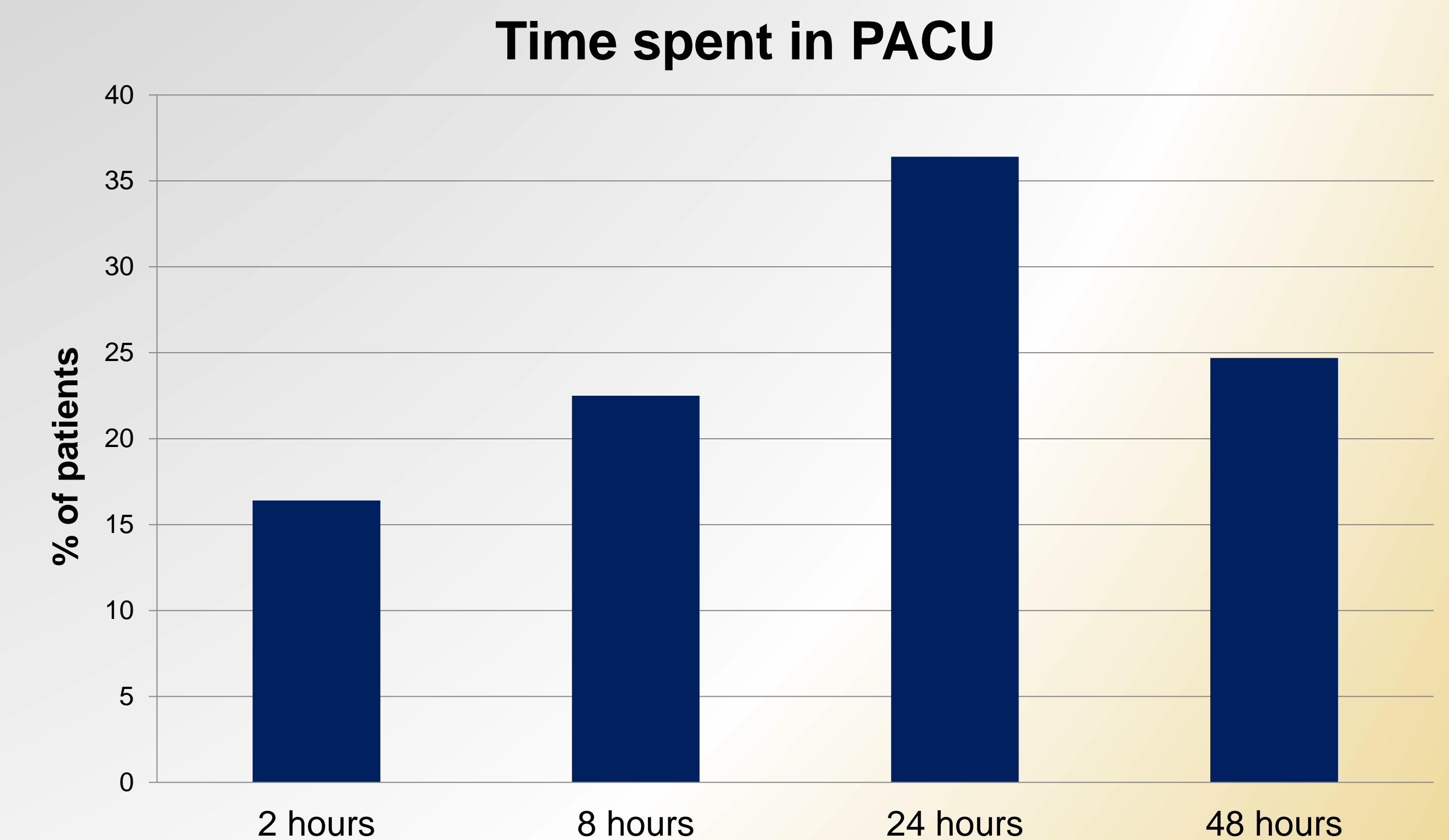- Over 60% of at-risk patients stayed in the PACU at least 24 hours

|  | N (%) |
|---|---|
| Increased Risk | 324 (36%) |
| Change in Neuro Status Detected | 4 (1.2%) |
| Confirmed Stroke | 2 (0.6%) |

Time spent in PACU

Pie chart:
- Not at risk 64%
- At risk: One condition from Column A 16%
- At risk: Two conditions from Column B 20%

## Act

- Pilot protocol resulted in the timely recognition of two patients with perioperative stroke, which is critical if the patient is to be considered for endovascular clot retrieval
- Ideally, identification of increased risk would occur pre-operatively
- Future planning: Consider leveraging the electronic health record to screen patients and alert providers for at risk patients akin to STOP-BANG for sleep apnea
- Future planning: Implement PACU protocols for at risk patients to increase neurological monitoring
- Future planning: Collaborate with surgical in-patient units to consider continuous neurological assessments for the first 24 hours

### Acknowledgements
The Adult PACU Nursing Staff

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### References
Mashour GA, et al. (2014). *J Neurosurg Anesthesiol*, 26, 273-285.
Mashour GA, et al. (2011).  *Anesthesiology*, 114, 1289-1296