

# Outcomes of Admission Screening for Obstructive Sleep Apnea in Hospitalized Patients with Cardiovascular Disease

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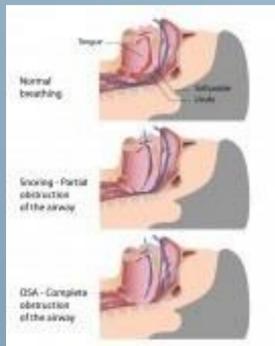
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## BACKGROUND

- Obstructive sleep apnea (OSA) increases the risk of cardiovascular disease (CVD).
- Chronic intermittent hypoxia in OSA leads to endothelial dysfunction, oxidative stress, and inflammation, which, in turn have been implicated in the development of CVD.
- Prevalence rates for previously undiagnosed OSA in patients hospitalized with acute coronary syndrome (ACS) are as high as 65.7%, and 62.5% in acute decompensated heart failure (ADHF).
- While the literature is replete with research on OSA in general, research on the impact of undiagnosed and untreated OSA in patients hospitalized with cardiovascular conditions is lacking.

## PURPOSE

The purpose of this review was to assess the prevalence and impact of previously undiagnosed OSA in patients hospitalized with ACS, atrial fibrillation (AF), and heart failure (HF), and to determine if the research findings support use of an OSA screening tool in this patient population.



## METHODS

- A literature search was conducted using CINAHL, PROQUEST, and PUBMED electronic databases.
- Focus was on primary research studies describing factors related to hospital screening, in-patient diagnosis, or treatment of previously undiagnosed OSA.
- Key search terms used included: OSA screening, acute care, inpatient, hospital, in-hospital diagnosis, sleep disordered breathing, and cardiovascular.
- Search was restricted to articles published in English between 2008 and 2013. Ancestral readings cited in published studies were also retrieved.
- 733 articles were retrieved; 17 primary source articles were considered and 10 most relevant were retained and included in the review.

## ACKNOWLEDGEMENTS

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## RESULTS

- Overall prevalence rates for previously undiagnosed OSA ranged from 42% (Lee, 2011) to 65.7% (Lee, 2009). For studies utilizing the Berlin questionnaire, rates of patients at high risk for OSA were as high as 73.2% (Correia, 2012).
- Patients with OSA more often experienced nocturnal onset of ACS symptoms and ACS without ST-segment elevation (Arelas, 2012).
- OSA independently predicted CV events (acute myocardial infarction (AMI), refractory unstable angina, and death) in patients hospitalized with a non-ST-elevation MI (Correia, 2012).
- Diabetes mellitus was independently associated with OSA in patients with AMI (Lee, 2009).
- OSA was an independent positive predictor of systolic retrograde flow and ST-segment resolution < 50% in patients with a first ST-elevation MI (STEMI) (Nakashima, 2011).
- Severe OSA is associated with a lower event-free survival rate at 18 months in patients with STEMI (Lee, 2011).
- Treatment of OSA is associated with a lower rate of cardiac death in patients undergoing percutaneous coronary intervention (PCI) (Cassar, 2007).
- High risk of OSA is associated with higher failure rates of ablation for AF (Chilukuri, 2009).
- Post-operative AF (POAF) was more prevalent in patients at high risk for OSA undergoing coronary artery bypass graft (CABG) surgery (Mungan, 2013).
- In-hospital treatment of OSA can lead to improved systolic function in patients requiring hospitalization for ADHF (Khayat, 2009).

## DISCUSSION

### Conclusions:

- Alarming high rates of previously undiagnosed OSA in patients hospitalized with CVD continue to exist.
- Available evidence, based on this brief review, supports screening for OSA in patients admitted to acute care hospitals with a cardiovascular condition.

### Implications for Practice:

- Nurses can play a vital role in identifying patients at high risk for OSA by screening for OSA as part of the routine nursing admission assessment.
- Nurses are in a unique position to monitor and observe patients for signs of OSA and take appropriate steps for additional monitoring or treatment interventions.
- Nurses can be proactive in minimizing airway collapse in patients at high risk for OSA by ensuring proper patient positioning with head of bed elevation, reverse trendelenberg, or side-lying positions.
- Nurses can ensure sleep study is scheduled at discharge.

### Implications for Education:

- Nurses can provide education for patients identified as high risk for OSA about:
  - The basic mechanism leading to airway obstruction during sleep.
  - Potential consequences of untreated OSA.
  - The importance of following up with the primary care provider for ongoing assessment of OSA treatment plan.

### Implications for Policy:

- Patients at high risk for OSA:
  - Should be identified with a wrist band stating "OSA risk."
  - Should be monitored with continuous pulse oximetry.
- Patients screened as high risk for OSA who are readmitted within 30 days should receive a formal sleep study prior to discharge.

### Implications for Research:

- Studies are warranted to:
  - Corroborate findings presented in this review.
  - Evaluate the effect of OSA treatment interventions on clinical outcomes in patients hospitalized for ACS, catheter ablation for AF, and ADHF, and on POAF in patients undergoing CABG.
  - Further address the relationship between OSA and diabetes.
  - Assess the impact of previously undiagnosed and untreated OSA on healthcare costs.