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# Prevention of Hospital-Acquired Pneumonia: An Integrative Review

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# Preventing Hospital-Acquired Pneumonia: An Integrative Review

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## PATIENT CARE ISSUE

### Background & Significance:

- 1 in 25 patients have or will acquire a Healthcare Acquired Infection (HAI)<sup>4</sup>.
- In 2011, there were approximately 721,800 cases of HAI in the United States, and 75,000 HAI patients died while in the hospital. Pneumonia alone accounted for an estimated 157,000 of the HAI cases<sup>4</sup>.
- Hospitals are responsible for the cost of treatment: \$28.4-\$33.8 billion dollars per year<sup>7</sup>.
- The costs of pneumonia on the patients and families include: wages, morbidity, mortality, and time lost to frequent hospital visits.
- No current requirement exists for preventing Non-Ventilator Hospital Acquired Pneumonia (NV-HAP)<sup>5</sup>.
- Current research of NV-HAP is inadequate.

## EVIDENCE-BASED PRACTICE QUESTION

**Question:** In hospitalized patients, what interventions are most effective in preventing Non-Ventilator Hospital-Acquired Pneumonia?

**P:** Hospitalized patients

**I:** Oral care, early mobility, incentive spirometry, or isolation rooms

**C:** Standard nursing care

**O:** Preventing NV-HAP

## REGISTERED NURSE INTERVIEW

Interviewed a local RN at Springfield Regional Hospital:

- No protocol specifically addressed NV-HAP prevention.
  - Protocol for Ventilator Hospital Acquired Pneumonia (V-HAP) prevention included oral hygiene, mobility, cough and deep breathing, and incentive spirometry flowmeter
- (A. Gillaugh, personal communication, November 10, 2014).

## METHODS

### Databases used:

CDC, CINAHL, Cochrane Register of Controlled Trials, Google Scholar, MEDLINE, PubMed, OneSearch

### Inclusion Criteria:

Articles published between 2009-2014, non-ventilator hospital-acquired pneumonia (NV-HAP)

### Exclusion Criteria:

Articles published before 2009, community-acquired pneumonia, ventilator-acquired pneumonia (VAP)

### Keywords:

Prevention, hospital-acquired, pneumonia, deep breathing, nosocomial, pulmonary function, incentive spirometry, oral care

## RESULTS

### Oral care:

- Four studies found that oral care significantly reduced the occurrence of NV-HAP. The rates of reduction included 75%<sup>6</sup>, 59%<sup>8</sup> and 35%<sup>5</sup>.

### Early Mobility:

- Patients who did not receive treatment consisting of early mobility and counting steps had an NV-HAP occurrence rate of 10.0% while those that received early mobility treatment had a NV-HAP rate of 3.6%<sup>10</sup>.
- Physical therapy decreased the occurrence of postoperative pulmonary complications (PPCs) in surgical patients<sup>9</sup>.

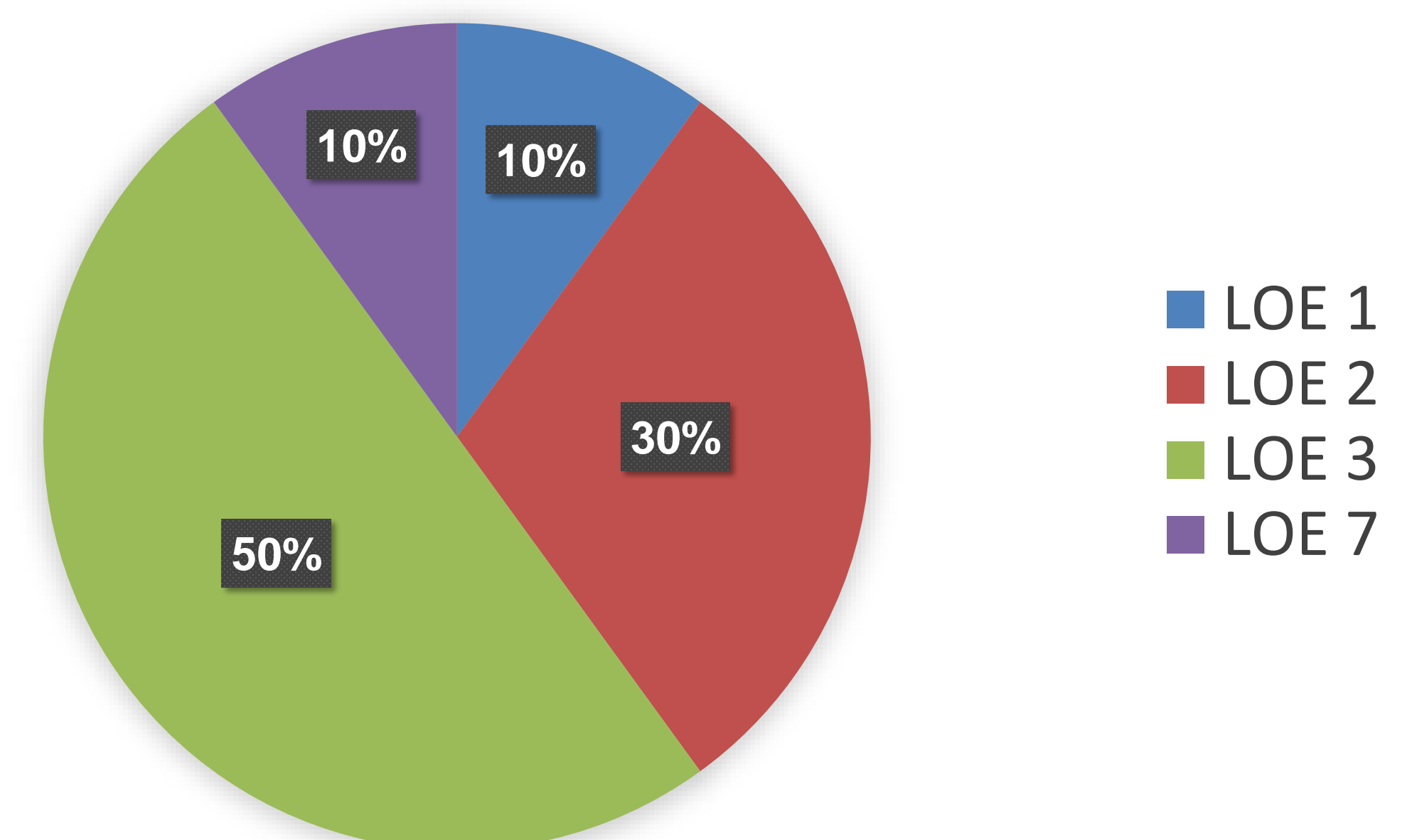
### Incentive spirometry:

- Two studies suggest that the device does not play a significant role in reducing NV-HAP<sup>2,3</sup>.

### Isolation rooms:

- NV-HAP decreased from 22.9% of patients to 17.4% when patients with or suspected to have pneumonia were isolated from the patient population<sup>11</sup>.

Level of Evidence (LOE) of Articles Cited



## SYNTHESIS OF EVIDENCE

- Oral care, early mobility, and isolation rooms were found to be effective interventions in significantly reducing NV-HAP.
- Incentive spirometry was not found to produce a reduction in NV-HAP.

## LIMITATIONS

There is a lack of sufficient research to make a strong recommendation about the effectiveness of incentive spirometry and isolation rooms on the reduction of NV-HAP.

## EVIDENCE-BASED PRACTICE RECOMMENDATIONS

- Enhanced oral care and early mobility are strongly recommend as interventions for the prevention of NV-HAP.
- Incentive spirometry and isolation rooms are recommended as interventions until more research has been done to suggest otherwise.

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