A 75-year-old woman with known chronic obstructive pulmonary disease (COPD) is admitted to hospital with a two-day history of worsening breathlessness, cough and sputum production. On admission her arterial blood gases breathing air show:

- pH 7.31 [7.35-7.45]
- PaCO₂ 62 mmHg [35-45]
- PaO₂ 42 mmHg [>75]

Which of the following interventions is most likely to reduce her risk of intubation and ventilation?

A. Antibiotics.
B. Non-invasive continuous positive airway pressure.
C. Oral corticosteroids.
D. Non-invasive positive pressure ventilation.
E. Nebulised bronchodilators.

**Issues:**

- Treatment of acute exacerbation of COAD
- Hypercapnic respiratory failure

**Precipitants**

1) Infection (50-60%)
   - a. Bacterial
   - b. Viral
2) Environment
   - a. Pollution (10%)
   - b. Temperature
3) Unknown (30%)

**Treatment for acute exacerbations of COAD**

1) Beta-adrenergic agonist
2) Anticholinergic agents
3) Corticosteroid
   - reduced 30 and 90 day treatment failure rate
   - reduced hospital stay
   - improve lung function
4) Limited spectrum Ab
   - reduced mortality
   - reduced treatment failure rate
   - accelerate improvement of peak exp flow rates
5) Mechanical ventilation
   NIPPV (Non invasive positive pressure ventilation)
   Consist of CPAP and BIPAP

**Indications for NIPPV**

- acute exacerbations of COPD
- acute cardiogenic pulmonary edema
- hypoxemic respiratory failure

**Benefits**

- use of NPPV associated with fewer intubations, decreased mortality and shortened ICU admissions
- comparing medical care to NPPV + medical care → risk of death lower in NPPV group
- reduction in nosocomial infection (line sepsis, reduced stay in ICU)
- failure of NPPV to prevent intubation was ass with higher mortality in patients with respiratory failure

**Treatments that don’t work**
Year 2005 Paper two: Questions supplied by Ilynn

1) Methylxantines ex aminophylline or theophylline
   - not recommended
   - failed to show efficacy compared to bronchodilators

2) Mucokinetic regimens
   - little evidence
   - worsen bronchospasms
   - use of mechanical techniques such as chest physio, directed coughing provokes bronchoconstriction

Answer: D. Only NIPV reduces the risk of intubation and ventilation. Did not specify whether it is CPAP or BIPAP.