

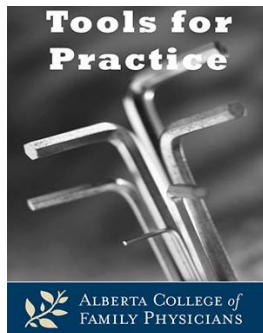
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**Reviewed: August 27, 2018**

**Evidence Updated: Slight change to first systematic review's population and vaccine subtypes**

**Bottom Line: No Change**

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## **Pneumonia Vaccine for Adults: Is the efficacy as effective as the effort?**

**Clinical Question: How effective is the pneumococcal vaccine in preventing pneumonia or other clinically important outcomes in adults?**

**Bottom Line: At best, pneumococcal vaccines may prevent pneumonia for an additional 1 in 55 adults and 1 in 20 COPD patients, and COPD exacerbations for 1 in 8, over ~3 years. Pneumococcal 23 polysaccharide vaccine (PPV23) prevents pneumonia for 1 in 13 long-term care residents. Pneumococcal 13 conjugate vaccine (PCV13) does not decrease pneumonia. No systematic review of randomized controlled trials (RCTs) or high-quality RCTs found a reduction in mortality.**

### **Evidence:**

- Any pneumococcal vaccine:
  - Systematic review of 18 RCTs, 64,901 heterogeneous patients and eight different vaccine serotypes:<sup>1</sup>
    - Pneumonia (at 2-3 years): Vaccine 4.3%, placebo 6.2%, Number Needed to Vaccinate (NNV)=55.
  - Systematic review of 12 RCTs, 2,171 community-dwelling COPD patients, up to 32 months:<sup>2</sup>
    - Pneumonia: Vaccine 9.4%, control 14.3%, NNV=20.
    - COPD exacerbations: Vaccine 48.2%, control 60.8%, NNV=8.
    - Hospital admissions: No difference.
  - Vaccine effectiveness appears to show greater benefit in:<sup>3</sup>
    - Miners, soldiers, and patients from developing countries.
    - Lower quality (example non-blinded) studies.
- PPV23 highest quality RCTs at 2-3 years of:
  - Long-term care: 1,006 Japanese residents.<sup>4</sup>
    - Pneumonia: Vaccine 12.6%, placebo 20.6%, NNV=13.
  - ≥65 years: 778 Japanese patients.<sup>5</sup>

- Pneumonia: Vaccine 17.1%, control 20.9%, not statistically different.
- COPD: 596 Spanish patients.<sup>6</sup>
  - Pneumonia: Vaccine 12.4%, control 13.1%, not statistically different.
- Previous pneumonia: 691 Swedish patients.<sup>7</sup>
  - Pneumonia: Vaccine 18.6%, placebo 16.2%, not statistically different.
    - Study stopped for fertility.
- PCV13 RCT of 84,492 healthy Dutch patients ≥65 years at four years:<sup>8</sup>
  - Pneumonia: Vaccine 1.8%, placebo 1.9%, not statistically different.
- No systematic review of RCTs or high-quality RCTs demonstrated mortality reduction.

### Context:

- Guidelines recommend:<sup>9,10</sup>
  - PPV23 for:
    - Adults ≥65 years.
    - Long-term care residents.
  - PPV23 booster (after five years) if:
    - PPV23 given before 65 years.
    - “High risk” for pneumococcal disease: Example chronic kidney/liver disease or immunocompromised.
  - PCV13 (in addition to PPV23):
    - Canada: Only if immunocompromised.<sup>9</sup>
    - US: For all ≥65 years.<sup>10</sup>

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### Disclosure:

Authors do not have any conflicts of interest to declare.

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