PACE

Pharmaceutical Assistance
Contract for the Elderly

Alosa Health

Bringing unbiased evidence
to clinical care

Clearing the air

Evidence-based management of respiratory infections in older adults

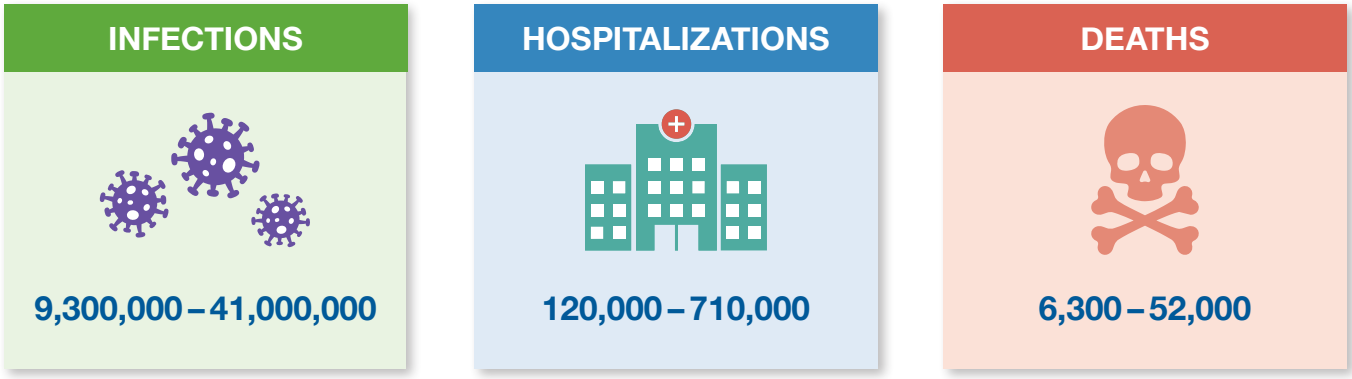
Respiratory infections are common in older patients and can pose major risks

ABOUT 14 MILLION

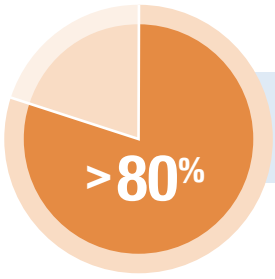
Number of office visits for adults over age 65 due to upper and lower respiratory infections, cough, and sore throat in 2019[1]

Complications can range from minor to life-threatening.

FIGURE 1. Each year, influenza accounts for significant morbidity and mortality.[2,*]



*Ranges reflect lowest and highest annual activity in the 2011-2024 seasons; excludes 2020/2021 season (Oct–Sept).



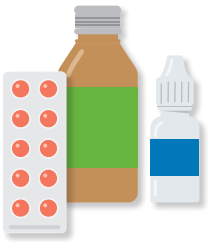
Older adults account for over 80% of pneumonia deaths.[3]

This module covers the most common respiratory infections in older adults:

- **Generalized viral illnesses:** Pages 5-6
- **Sinusitis:** Page 7
- **Bronchitis:** Page 7
- **Community-acquired pneumonia:** Page 8

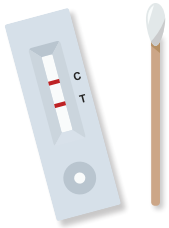
Approach to diagnosis and management

What works best for symptom management?



Many over-the-counter (OTC) medications have little or no proven benefit and may confer risks. Rely on evidence-based treatments, whether OTC or by prescription.

When is testing for specific pathogens needed?



Use rapid antigen testing when the result will change management.

Nucleic acid amplification tests (PCR) are helpful only if antigen testing is negative and confirmation of a specific infection is needed to guide treatment.

Is an antiviral or antibacterial medication appropriate?

- **Most acute respiratory infections are viral,** so it is best to avoid antibiotics if the most likely cause of the illness is not bacterial.
- **Timing of administration is critical:**
  - Too early: antibiotics may not be needed (e.g., acute sinusitis).
  - Too late: antiviral therapy may be ineffective (e.g., oseltamivir for influenza), or bacterial infections may progress (e.g., pneumonia).

Red flag symptoms may require acute care, especially if there are underlying health conditions.

- high fever
- hypoxemia (SpO_2 < 94% on room air)
- tachycardia
- hypotension
- dehydration (poor oral intake, decreased urine output)

Symptomatic relief

TABLE 1. Some commonly used prescription and OTC medications are ineffective and may carry risks, while others are proven to be effective.

Congestion

Effective options:

- **Pseudoephedrine:** OTC, behind the pharmacy counter
- **Sterile saline nasal washes,** saline nasal sprays, or saline nasal gel[4]
- **Nasal sprays** (oxymetazoline, fluticasone, mometasone)
- **Select antihistamines** (cetirizine, fexofenadine, loratadine)[5]

Avoid OTC combination products that include:

- Phenylephrine, which works no better than placebo
- 1st generation antihistamines (e.g., diphenhydramine, doxylamine, brompheniramine, promethazine), which can cause sedation, dizziness, and confusion in older adults

Cough

Effective options:

- **Honey:** 1 tablespoon 2-3 times daily; soothes throat, reduces irritation[6]
- **Lozenges with menthol** (particularly those with honey)
- Products containing **dextromethorphan**[7] and/or **guaifenesin**[5]

Avoid codeine, given limited benefit and risk of opioid-related harms

Sore throat

Effective options:

- **Honey**[6]
- **Lozenges with menthol** (particularly those with honey)
- **Acetaminophen or ibuprofen**

Aches and/or fever

Effective options:

- **Acetaminophen**
- **NSAIDs** (e.g., ibuprofen, naproxen) if not contraindicated

Hydration is critical for older adults (especially those taking diuretics) to prevent dehydration and its consequences and to help mobilize secretions.

Influenza

Use influenza testing only if it will change management.

A positive rapid antigen test can provide high confidence that influenza is present (specificity > 95%).

Up to 45% of patients with influenza may have a negative antigen test (sensitivity 55-85%).[8] Retest if necessary with PCR or a second antigen test.

Prescribe an antiviral medication for older adults.

- **Empirical treatment based on symptoms is reasonable during influenza season.**
- Recommend for adults ≥ 65 and patients with chronic conditions or immunocompromise.[9,10]
- Either baloxavir or oseltamivir are preferred, balancing side effects and cost.
- Start soon after symptom onset, **ideally < 48 hours.**

TABLE 2. Summary table of influenza antivirals vs. placebo[11-15]

Antiviral	Symptom improvement	Hospitalization	Mortality	Adverse effects
Baloxavir (Xofluza)	1 day reduction	**50% relative reduction** among high-risk patients	no reduction	nausea—more common in older adults (6%) than younger (1%)
Oseltamivir (Tamiflu, generics)	½ day reduction	**63% relative reduction** in patients with laboratory confirmed influenza	**may reduce mortality if started < 48 hours** for patients requiring hospitalization	nausea, vomiting, headache
Zanamivir (Relenza)	½ day reduction	no data	no reduction	

Green = effective

- Oseltamivir may reduce the risk of secondary respiratory infection requiring antibiotics by 38%.[12]
- Amantadine no longer has a role in the treatment of influenza due to high levels of resistance.[9]

COVID-19

Use COVID-19 testing only if it will change management.

Positive antigen tests give high confidence that COVID-19 is present (specificity > 90%).

Negative antigen tests can occur in up to 40% of patients who have COVID-19 (sensitivity 60-85%). Retest if necessary with PCR or a second antigen test.

Prescribe antivirals in patients at high risk.

- Those most likely to benefit from treatment include adults ≥ 65, patients with chronic conditions or immunocompromise, and those not current with recommended vaccines against COVID-19.
- Start treatment within 5 days of symptom onset.
- Choose molnupiravir over nirmatrelvir-ritonavir when serious drug-drug interactions are a concern.

TABLE 3. Summary table of antivirals for COVID-19 vs. placebo[16-19]

Antiviral	Symptom resolution	Hospitalization or death		Adverse effects	Drug-drug interactions
		Vaccinated*	Unvaccinated†		
Molnupiravir (Lagevrio)	2 day reduction	no reduction	**31% relative reduction**	no difference	—
Nirmatrelvir-ritonavir (Paxlovid)	no reduction	no reduction	**88% relative reduction**	changes in taste, nausea, vomiting, diarrhea	⚠ **many** *(see COVID-19 interactions checker below)*

Green = effective; Red = warning. These medications are no longer covered by federal programs. Patient assistance programs may be available to help.

*Vaccinated patients refers to patients current with recommended COVID-19 vaccines. †Unvaccinated patients are not current with recommendations, even if they have received one or more vaccines in the past.

Nirmatrelvir-ritonavir use limited by drug-drug interactions in some patients.

COVID19-drug interactions.org/checker

Weighing whether antibiotics are needed

Is the acute sinusitis bacterial?

ACUTE SINUSITIS		BACTERIAL SINUSITIS
• Congestion, headache, and sinus pressure • Improves or resolves in 10 days with symptom management • Likely to be caused by a **virus or allergies** • **No antibiotics required**	**VS.**	• Congestion, headache, and sinus pressure • Persists or worsens over 10 days despite symptom management • Caused by **bacteria** • **Antibiotics required**

Treatment for bacterial sinusitis[26,27]

- Preferred treatment is **amoxicillin** (with clavulanate when needed based on resistance patterns). Alternative options include doxycycline, levofloxacin, or moxifloxacin.
- Duration of treatment is typically 5-7 days, though shorter therapy may also be effective.[22]

Differentiate bronchitis from community-acquired pneumonia (CAP).

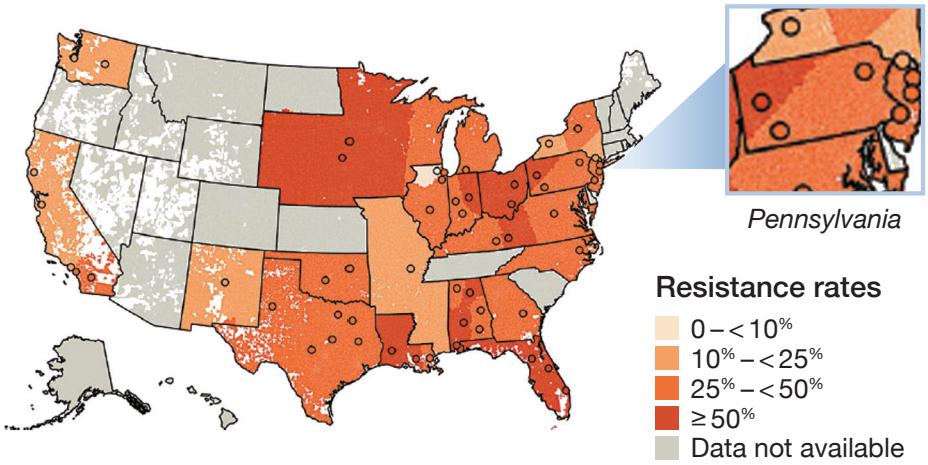
BRONCHITIS		PNEUMONIA
• Nearly all causes are **viral** • Inflammation of the airway that is bothersome • **Chest x-ray does not show infiltrate or consolidation** • **No antibiotics required**	**VS.**	• Most causes are viral, but **can be bacterial** • Decreased breath sounds and rales may be present • **Chest x-ray usually shows infiltrate or consolidation** • **Antibiotics required**

Don't forget about pertussis. Whooping cough worsens over the first 1-2 weeks. The whoop may be absent, presenting as paroxysmal coughing that may be accompanied by vomiting or apnea.[23] Use PCR to diagnose and prescribe azithromycin when appropriate to treat and prevent the spread to others.

Selecting the most effective antibiotics

Avoid azithromycin to treat *Streptococcus pneumoniae*.

FIGURE 2. A common cause of CAP, pneumococcal resistance to azithromycin limits its use.[24]



When *S. pneumoniae* resistance rates are above 25%, azithromycin should not be used as monotherapy.

Choose the right first-line antibiotic.

FIGURE 3. Select the best CAP treatment from these recommendations[25]

If no comorbidities or risk factors for resistant infections:*

Choose one: amoxicillin **or** doxycycline

If there are comorbidities or risk factors for resistant infections:

Choose one from each group

Beta lactam

- amoxicillin–clavulanate **or**
- cefpodoxime **or**
- cefuroxime

+

Agent for atypical infections†

- azithromycin **or**
- clarithromycin **or**
- doxycycline

For most patients, a 5-day course of antibiotics is all that is required.[26]

* recent respiratory infection or recent hospitalization with receipt of parenteral antibiotics in prior 90 days

† Azithromycin resistance is generally not seen for atypical bacteria such as *M. pneumoniae* and *Legionella*.

Avoid corticosteroids for outpatient management of lower respiratory infections, unless the patient has another indication such as asthma or COPD exacerbation.

Educate patients about prudent antibiotic use

Discuss the risks of using antibiotics.

▲ Side effects in older adults:

- **Penicillins and beta-lactams:** nephrotoxicity, neurotoxicity (e.g., delirium), diarrhea, rash
- **Macrolides** (e.g., azithromycin): cardiac arrhythmia[27]
- **Fluoroquinolones** (e.g., levofloxacin, moxifloxacin):
  - tendinopathy, retinal detachment, aortic aneurysm[28,29]
  - hypoglycemia (esp. if using insulin or sulfonylureas)[30,31]

▲ Drug interactions with other medications:

e.g., QT-prolonging medications and fluoroquinolones or azithromycin

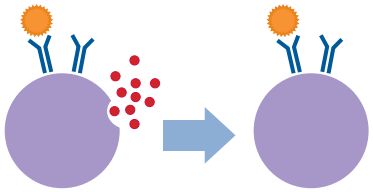
Antibiotics are needed in specific cases

- community-acquired pneumonia
- prolonged sinusitis > 10 days (likely bacterial)
- streptococcal pharyngitis

▲ Can lead to persistent diarrhea caused by C. difficile infection

Address penicillin allergy.

- **90 to 95%** of patients with a documented penicillin allergy can tolerate a penicillin rechallenge.[32]
- **Antibody-mediated (Ig-E) reactions wane over time,** with < 1% of patients remaining reactive after 20 years.[32]
- **The PEN-FAST tool** can assess the risk of true penicillin allergy.
  - Ask patients about the specific reaction they experienced.
  - Quantify the timeframe since reaction (e.g., 10 or 20 years ago).



Ig-E reactions to penicillin can wane over time.

PEN-FAST tool

Cephalosporins are often safe unless there's a history of life-threatening penicillin reaction. Third- and fourth-generation (e.g., cefdinir, cefixime, cefpodoxime) are generally safe for patients without an IgE-mediated reaction in the prior 10 years.[33]

Talking to patients when antibiotics aren't needed

"Antibiotics won't treat viruses and can cause side effects such as rash, diarrhea, and thrush."

"Good news: You don't have pneumonia. Let's talk about how to help with your symptoms."

"Taking antibiotics when not required can reduce their effectiveness when they are truly needed."

Prevent infection and transmission

Vaccination is a powerful tool.

For patients ≥ 65, specific vaccinations remain very effective in preventing severe disease:

- **Influenza:** recommended annually
- **COVID-19:** recommended at least annually
- **Respiratory syncytial virus (RSV):** one dose for all adults ≥ 75 and in high-risk patients ≥ 60
- **Pneumococcus:** at least one dose; more if risk factors
- **Pertussis (in Tdap):** every 10 years

Handwashing is one of the most effective ways to prevent infection.

Masking may prevent pathogen spread through droplets.

Over-the-counter options have little benefit.

Gargling tap water 3 times daily may reduce the risk of getting a common cold.[34]

Zinc supplementation has not been adequately studied in adults (only children). It can cause side effects such as nausea and irreversible loss of smell.

Vitamins C, D, and E have been studied and are not proven to be effective.

PROPHYLACTIC ANTIVIRALS

Influenza: Antivirals approved to treat influenza can be used to prevent infection if there is confirmed exposure to influenza.

- Encourage prophylaxis in high-risk patients, especially if unable to be vaccinated. Discuss prophylaxis with vaccinated high-risk patients (or those with high-risk contacts).
- Start within 48 hours of exposure.[35,36]

COVID-19: Post-exposure prophylaxis is not recommended.[37]

Key points

- Counsel your patients to avoid OTC combination products with phenylephrine and/or 1st generation antihistamines that can pose unnecessary risks for older adults.
- For symptomatic relief, honey improves cough and sore throat, and pseudoephedrine is safe to use in patients with hypertension.
- *S. pneumoniae* resistance to azithromycin is rising. When resistance in your area is > 25%, do not prescribe azithromycin alone for pneumonia.
- Do not prescribe antibiotics for most patients with bronchitis or acute sinusitis.
- Use the PEN-FAST tool to guide treatment of those with a history of penicillin allergy.
- Prevent infections and reduce transmission with prophylactic antiviral treatment for influenza, hand washing, and vaccines.

For links to these and other resources, visit AlosaHealth.org/RespInfect

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About this publication

These are general recommendations only; specific clinical decisions should be made by the treating clinician based on an individual patient's clinical condition. More detailed information on this topic is provided in a longer evidence document at AlosaHealth.org.

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