Nursing Home Respiratory Infections in the Post-COVID Era

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Topics to Be Covered

1. General Principles of geriatric medicine relevant to respiratory infection
2. How The COVID-19 Pandemic Has Changed the Way We Think and Should Act Regarding Respiratory Infections
3. Common Respiratory Infections to Know and Understand
   – Presentation and Treatment
   – Common Questions and Controversies

Basic Principles of Geriatric Medicine of Importance in Understanding, Diagnosing, and Managing Respiratory Infection

Concern About Antibiotic Overuse

Between 25-75% of antibiotic prescriptions in long term care do not meet evidence-based clinical guidelines

Prescribing antibiotics “just in case” was accepted in the past, but now antibiotics should be given after careful, evidence-based consideration of risks and necessity.

Normal Temperature is NOT 98.6, and the Fever Threshold is Less Than 100.4°

Mobile Chest-X-ray Limitations

- Inability of frail older persons to maintain stable, upright sitting position
- Poor quality of portable radiography techniques
- Lack of previous films for comparison
- Radiologists disagree frequently on
  - the presence or absence of infiltrates (K = 0.54)
  - pleural effusions (K = 0.8)
  - hilar lymphadenopathy (K = 0.54)
  - mediastinal lymphadenopathy (K = 0.49)

**Uncertain CXR Report Usually Leads to Antibiotic**

![Graph showing the number of patients with pneumonia confirmed, undetermined, and unlikely, with a treatment for pneumonia rate of 79% and CXR finding rate of 71% for pneumonia confirmed.]

**Aspiration Happens Frequently**

- Up to 68% of NH residents aspirate
- Sign: cough after swallowing
- Usually clears without developing pneumonia
- But...
- Aspiration pneumonia is common in NH

**Can Aspiration Prevented?**

- Thickened liquids do not reduce aspiration or pneumonia
- Posture adjustment (e.g., chin tuck) – limited benefit
- Diet modification leads to poor intake and greater use of supplements

Bottom line: Individualize, but do not torture patient with measures that may not work

**Bad Teeth Linked to Pneumonia**

- Poor oral health → bacterial pathogens
- Bacteria get inhaled → aspiration pneumonia

**Mouth Care Without a Battle ©**

* Individualized Mouth Care
  for Persons with Cognitive and Physical Impairment

* Module 1: Basic Techniques
* Module 2: Managing Behavioral Challenges
* Module 3: Nurse Supervisor Training
* Module 4: Short Overview for Administrators / Advocates
* Continuing education credit available

More information: mouthcarewithoutabattle.org

**Cough Scares Nurses, Providers, and Families, Leading to Overtreatment**

Research Result: Cough Alone Increases 3x the likelihood of a LTC Patient Getting Antibiotics
But.....Cough Occurs in All Respiratory Infections

<table>
<thead>
<tr>
<th>Infection Type</th>
<th>Common Cause</th>
<th>Common Symptoms</th>
<th>Distinguishing Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Cold Virus</td>
<td>Nose</td>
<td>Nasal congestion/sneezing</td>
<td>Nasal symptoms</td>
</tr>
<tr>
<td></td>
<td>Sore throat</td>
<td></td>
<td>Normal vitals (+/- fever)</td>
</tr>
<tr>
<td></td>
<td>Dry cough</td>
<td></td>
<td>Unchanged lung exam</td>
</tr>
<tr>
<td>Acute bronchitis</td>
<td>Virus</td>
<td>Cough (+/- sputum)</td>
<td>Normal chest X-ray</td>
</tr>
<tr>
<td></td>
<td>N/ Fever</td>
<td></td>
<td>Normal vitals (+/- fever)</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>Bacteria</td>
<td>Cough (+ sputum)</td>
<td>Abnormal vital signs</td>
</tr>
<tr>
<td></td>
<td>or Virus</td>
<td>Fever</td>
<td>Abnormal lung exam</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Infiltrate on chest X-ray</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mental status changes</td>
</tr>
<tr>
<td>Influenza-like illness</td>
<td>Virus</td>
<td>Sore throat</td>
<td>Chills, Body aches, Malaise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dry cough</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fever</td>
<td></td>
</tr>
<tr>
<td>COPD exacerbation</td>
<td>Virus or bacterial</td>
<td>Cough (+/- sputum)</td>
<td>Normal chest X-ray</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N/ Fever</td>
<td>Normal vitals (+/- fever)</td>
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</tbody>
</table>

What We Learned about Respiratory Viruses from COVID-19

A Nursing Home is Like a Cruise Ship

- High population density
- Lots of contact with others and the environment
- Many are old and high risk

Implications
- Infection control very important
- Resistant organisms can spread quickly

The Coughing Cruise Ship Nightmare

How Common Viruses Spread

<table>
<thead>
<tr>
<th>Infection</th>
<th>How It Spreads</th>
<th>Key to Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>Cough -&gt; Droplets</td>
<td>- Droplet precautions</td>
</tr>
<tr>
<td>Cold Viruses</td>
<td>Face -&gt; Hand -&gt; Surface; Sneeze -&gt; Droplets</td>
<td>- Hand washing, surgical mask</td>
</tr>
<tr>
<td>Norovirus</td>
<td>Butt -&gt; Hand -&gt; Surface</td>
<td>- Hand washing</td>
</tr>
<tr>
<td>COVID-19</td>
<td>Breath -&gt; Microdroplets</td>
<td>- Airborne precautions</td>
</tr>
</tbody>
</table>

Choir practice attended by 61 persons. One with "cold" symptoms, and infected 52 with COVID-19.

The R₀ of an Infection Matters

<table>
<thead>
<tr>
<th>Contagiousness (R₀)</th>
<th>Common Cold</th>
<th>Influenza</th>
<th>COVID-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deadliness (Mortality)</td>
<td>0%</td>
<td>0.05%</td>
<td>Around 0.5%</td>
</tr>
</tbody>
</table>
We Can Treat COVID-19 in the Nursing Home

- Diagnose, monitor and support all patients with COVID-19 illness
- NIH panel recommended on 2/23/21 that OUTPATIENTS with mild to moderate COVID-19 who are at high risk for progression to severe disease and/or hospitalization should be treated with monoclonal antibodies (bamlanivimab 700 mg plus etesevimab 1,400 mg)
- Prophylactic anticoagulation (e.g., with enoxaparin [Lovenox]) is recommended for hospitalized patients with COVID-19 but not for outpatients.
- Indications for hospitalization
  - Oxygen requirement increasing (typically beyond 6 L/min)
  - Testing needed that is not available in the NH

The Incredible Impact of Vaccination

New COVID-19 Cases Among Nursing Home Residents
May 2020 – February 2021

The Amazing Disappearing Flu Season - 1

The Amazing Disappearing Flu Season - 2

COVID-19 is a Virus, but Most Patients Got Antibiotics

Possible Lessons from COVID to Apply in the Future

- Because we kept flu and other viruses out this year:
  1. Have all staff wear masks as soon as flu or COVID is present in your community
  2. Screen visitor for symptoms and temperature
- Because antibiotics continue to be overprescribed:
  Work harder with medical staff to develop and use prescribing guidelines
- Because rapid COVID testing has been helpful:
  Have rapid COVID and Flu testing capacity in the future
- Because of the negative impact of visitor restriction this past year:
  Try to avoid complete visitor lockdowns in the future
Common Respiratory Infections

Acute Respiratory Tract Infections
- Syndromes caused primarily by viruses
- Syndromes caused primarily by bacteria

Upper respiratory tract infections
- 90% due to viruses
- ~70% due to bacteria

Lower respiratory tract infections

A Typical Case of Acute Bronchitis
- 76 year old non-smoker
- 5 days of illness
- Began with nasal congestion, sore throat
- Soon cough became main symptom, worse at night
- Small amount of sputum
- Decreased appetite, more tired but up and about

Vital Signs
- Temperature: 99.4°F
- Blood Pressure: 130/75
- Respiratory rate: 18
- Pulse: 75
- Pulse ox: 97%
- Mental status: Baseline
- Lung exam: Scattered wheezes

- Antibiotics are NOT indicated but are often prescribed for acute bronchitis.
- 2d most common reason for inappropriate antibiotic prescribing in NHs

What is Mr. Leonard’s Diagnosis?
- Nasal congestion
- Sore throat
- Sneezing
- Cough
- Low grade fever
- Normal other vital signs/non-focal lung exam (often with expiratory wheezes)

There is Plenty You CAN Do for Acute Bronchitis
- Order Set for Acute Bronchitis
  - Obtain COVID test
  - Airborne isolation until COVID test is back
  - Reassure patient and/or family
  - Monitor vital signs and worsening signs or symptoms
  - Encourage fluids and rest
  - Acetaminophen or NSAIDS for fever/pain
  - Nasal saline spray/humidified air for congestion
  - Cough medicine or inhaled bronchodilator

Could this be COVID-19?
“...But the Family Expects an Antibiotic”

Studies show:
• Patient/family expectations for antibiotics are overestimated
• Satisfaction is not severely impacted when antibiotics not given
• Communication and education are key

Nursing staff have the opportunity to educate and reassure

How To Talk To Patients And Families About Viral Illness

• Inform that resident is ill and staff is helping them – by providing symptom relief and monitoring
• Advise on illness course
  • Colds: up to 1.5 weeks
  • Bronchitis: up to 3 weeks
• Respond to concerns
• Reassure that antibiotics not needed
  • explain risks
  • explain that you will monitor

What Could You Say to Concerned Family?

Advise on illness course:
“His cough might last several more days to several weeks, and it may take him a while to feel better.”

Respond to concerns about symptoms:
“We’re going to help him feel more comfortable so his body can fight this virus. He’ll need plenty of fluids and rest. Also, we’ll give medicine for his fever and cough, and keep an eye on him.”

If the Family Asks Specifically About Antibiotics

“His chest cold is caused by a virus, and antibiotics won’t help viruses. Giving him antibiotics when they aren’t needed can cause side effects and make it so that antibiotics won’t work when he really needs them. We will monitor him closely for any change in condition that might indicate a need for antibiotics.”

A Typical Case of COPD Exacerbation

• 78-year-old, smoker, COPD, on oxygen (2 L/min)
• 5 days of productive cough
• Increased dyspnea
• Pulse ox 93% (normal 93-95%)
• Temperature 100.0 °F
• Exam: rhinorrhea, nasal congestion, anterior wheezes.
• X-ray: no acute changes

Are Antibiotics Indicated for COPD Exacerbations?

• Cochrane systematic review:
  — large beneficial effects patients admitted to an ICU
  — For outpatients and inpatients, results inconsistent
• Guidelines for COPD exacerbation:
  — Mild disease: start with inhaled bronchodilator, consider oral steroids. If inadequate relief, consider antibiotic
  — Moderate / severe disease → inhaled bronchodilator, oral steroids, and antibiotics
  — Monitor for signs of pneumonia
**Influenza**

- Starts suddenly
- Fever and chills
- Dry cough
- Mild or moderate sore throat
- Fatigue and muscle aches
- Probability increases in “flu season”

RED = best to distinguish flu from other respiratory viruses.

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**When and Whom to Test for Flu**

“Influenza testing should occur when any resident has signs and symptoms of influenza-like illness.”

CDC defines influenza-like condition as an unexplained illness characterized by:

- Fever > 100°F, 37.8°C
- PLUS
- cough and/or sore throat

for details on lab testing, check CDC website

http://www.cdc.gov/flu/professionals/infectioncontrol/flc-facility-guidance.htm

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**Flu Shot Effectiveness Is Mediocre - But It’s the Best We Have**

![Percent Effectiveness of Flu Vaccines over the Past 15 Years](http://www.cdc.gov/flu/professionals/immuno/vaccines/flu-vaccine-effectiveness.htm)


**There Are Other Viruses than Flu and COVID-19**

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**Pneumonia Signs and Symptoms in NH Residents**

- Abnormal vital signs
  - Fever
  - Respiratory rate > 25 (90% sensitive, 90% specific)
  - Tachycardia
- Pulse ox drop of >3% (about 75% sensitive and 75% specific)
- New localized rales on physical exam
- WBC ≥ 14,000 or left shift
Three Main Types of Pneumonia

- **Aspiration pneumonia**
  - Most common type of pneumonia in NH patients
  - Affects 300,000 – 600,000 Americans annually
  - Oral bacteria predominate

- **Other bacterial pneumonia**
  - Often spontaneous, can follow viral infection
  - Variety of organisms

- **Viral pneumonia**
  - Common Causes: Flu and COVID-19
  - Develops more slowly

Aspiration Pneumonitis vs Pneumonia

- Controversial area
  - When to diagnose?
  - When to treat?
  - How to prevent?
  - How best to treat?

- **Pneumonitis** – inflammation without infection
- **Pneumonia** – infection by a microorganism

When Antibiotics May Not Be Needed in Pneumonia

1. Chemical pneumonitis due to aspiration
   - Symptoms and abnormal CXR usually resolve within 24 hours
   - Antibiotics indicated if CXR changes fail to resolve in 48 hours
2. Viral pneumonia/bronchitis
3. Palliative care (e.g. end-stage dementia)
   - William Osler: Pneumonia as “old man’s friend”
   - Dyspnea is problem, treatment is oxygen, sedatives, opiates

To Sum it Up

“In some ways we feel we are as confused as ever, but we believe we are confused on a higher level and about more important things.”

Earl C. Kelley, Professor of Secondary Education, Wayne State University.