



Infection Management and Antibiotic Stewardship

Hot Topic:

Treatment of Viral Infections

January 24, 2024

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Today's Speaker

- ▶ Adrian Austin, MD, MSCR - Geriatric Pulmonary and Critical Care expert, UNC School of Medicine



Session Objectives

1. Review Abx in COPD exacerbations
2. Discuss Abx usage in viral bronchitis
3. Discuss Influenza and COVID-specific therapies
4. Provide a one-pager for QI and staff education



COPD Exacerbation

GLOBAL Initiative for Chronic Lung Disease (GOLD) Guidelines

Definition:

Acute event (Worsens over ≤ 14 days):

- Increased dyspnea and/or
- Increased cough and sputum production

May be accompanied by tachypnea or tachycardia

Agusti, et al. Eur Resp Journal, 2023

Outpatient Approach

- Mild disease (outpatient management): start with inhaled bronchodilators (albuterol), consider oral steroids. If inadequate relief, consider antibiotics
- Mild disease=
 - <3 cardinal symptoms (dyspnea, productive cough, purulent sputum)
 - No purulent sputum

Agusti, et al. Eur Resp Journal, 2023

Antibiotic Selection

Safety Announcement

[05-12-2016] The U.S. Food and Drug Administration is advising that the serious side effects associated with fluoroquinolone antibacterial drugs generally outweigh the benefits for patients with acute sinusitis, acute bronchitis, and uncomplicated urinary tract infections who have other treatment options. For patients with these conditions, fluoroquinolones should be reserved for those who do not have alternative treatment options.

[FDA Drug Safety Communication: FDA advises restricting fluoroquinolone antibiotic use for certain uncomplicated infections; warns about disabling side effects that can occur together | FDA. Accessed 10.20.23](#)

Antibiotic Selection

- 1st line: Macrolide (azithromycin) OR Second or third generation cephalosporin (eg, cefuroxime, cefpodoxime, cefdinir)
- If history of Pseudomonas colonization, consider ciprofloxacin (RARE EXCEPTION)

Agusti, et al. Eur Resp Journal, 2023

Acute Bronchitis, “Chest cold”

- Lower respiratory tract infection involving the large airways (bronchi), without evidence of pneumonia, that occurs in the absence of chronic obstructive pulmonary disease
- Typically self-limited (1-3 weeks)
- Cough is a frequent symptom and can last on average 3 weeks. (REFERENCE NEEDED)

Kinkade, et al. Am Fam Physician, 2016

Table 3

Organisms detected in patients with LRTI and controls

	Patients(N=80)	Controls(N=49)	p value
Viral detection rate	49 (63%)	6 (12%)	<0.001
No of viruses detected	57	6	<0.001
Rhinoviruses	26 (33%)	1	<0.001
Influenza viruses	19 (24%)	3	0.019
Coronaviruses	5	2	0.873
Parainfluenza viruses	3	0	0.441
RSV	2	0	0.691
Enteroviruses	2	0	0.691

Creer, et. al. *Thorax*; 2006.

High-Value Care Advice 3:

Clinicians should reserve antibiotic treatment for acute rhinosinusitis for patients with persistent symptoms for more than 10 days, onset of severe symptoms or signs of high fever (>39 °C) and purulent nasal discharge or facial pain lasting for at least 3 consecutive days, or onset of worsening symptoms following a typical viral illness that lasted 5 days that was initially improving (double sickening).

High-Value Care Advice 4:

Clinicians should not prescribe antibiotics for patients with the common cold.

Harris, et. al. Annals Int Med; 2016.

Influenza

- Can cause serious illness and mortality in older adults
- Fatigue, myalgias, nausea, or weakness may be predominant symptom
- During flu season, **test** older adults that present with influenza-like illness, or nonspecific respiratory illness (eg, cough without fever) or nonspecific generalized complaints

Uyeki, et. al., Clin Infect Dis; 2019.

Influenza Treatment

- I recommend antiviral treatment for older adults at risk for complications from flu.
- Can treat even if >48hrs since symptom onset
- Reduces duration of symptoms, risk of hospitalization and risk of transmission to other residents
- Prophylaxis may be indicated in nursing homes with “outbreaks”

Venkatesan, Clin Infect Dis. 2017;64(10):1328.

Influenza Treatment

- Oral options are oseltamivir or baloxavir
- Oseltamivir associated with decreased time to clinical symptom alleviation, less lower respiratory tract complications, and decreased hospitalization
- May increase the occurrence of nausea/vomiting and delirium.
- Reduces duration of symptoms, risk of hospitalization and risk of transmission to other residents.

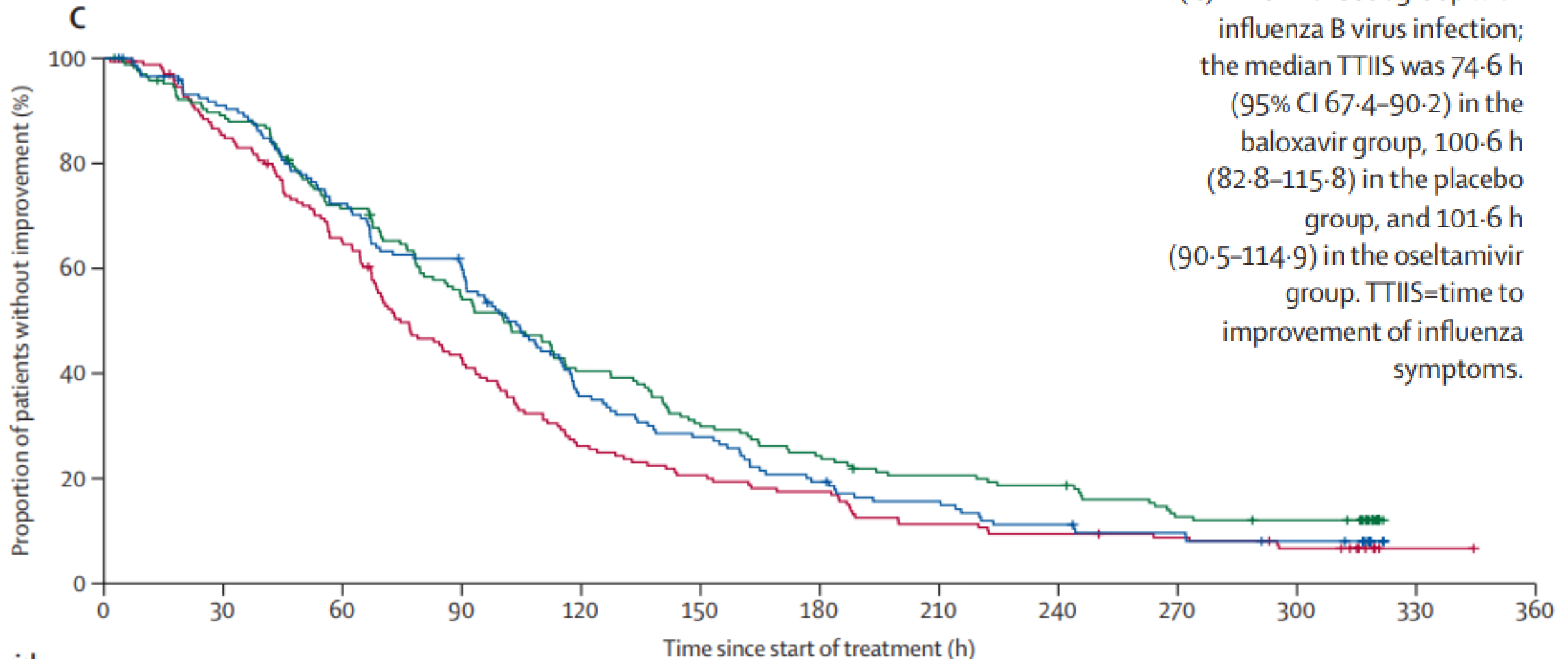
Dobson et.al, Lancet; 2015.

Influenza Treatment

- CAPSTONE II trial demonstrated that baloxavir may be more effective against influenza B.
- My practice is to use oseltamivir for A and baloxavir for B (if available)

Ison et.al, Lancet Infect Disease ; 2020.

Influenza Treatment



Ison et.al, Lancet Infect Disease ; 2020.

Influenza Treatment Dosing

- Oseltamivir: 75mg BID x 5 days.
- Baloxavir: If <80kg, one dose of 40mg oral. If >80kg, one dose of 80mg oral.
- Note that for baloxavir FDA approval is only for usage within first 48 hours.

COVID-19

- Risk for COVID-19 hospitalization and death is highest in older adults
- Mortality driven by age!!!

Centers for Disease Control and Prevention. Risk for COVID-19 infection, hospitalization, and death by age group. Available at: <https://stacks.cdc.gov/view/cdc/116835> (Accessed on January 18, 2024).

Risk for COVID-19 Infection, Hospitalization, and Death By Age Group

Updated Apr. 29, 2022

Rate compared to 18-29 years old ¹	0-4 years old	5-17 years old	18-29 years old	30-39 years old	40-49 years old	50-64 years old	65-74 years old	75-84 years old	85+ years old
Cases²	<1x	1x	Reference group	1x	1x	1x	1x	1x	1x
Hospitalization³	1x	<1x	Reference group	2x	2x	3x	5x	8x	10x
Death⁴	<1x	<1x	Reference group	4x	10x	25x	65x	140x	330x

Centers for Disease Control and Prevention. Risk for COVID-19 infection, hospitalization, and death by age group. Available at: <https://stacks.cdc.gov/view/cdc/116835> (Accessed on January 18, 2024).

COVID-19

- Nirmatrelvir and ritonavir is preferred agent (Paxlovid)
- Initiate within 5 days of symptom onset
- 300/100 BID x 5 days
- EGFR 30-60mL/min: 150/100 BID x 5 days
- EGFR <30: Not recommended

Arbel et. al., NEJM 2022

COVID-19

- **Ritonavir is strong CYP3A inhibitor!!!!**
- Have to check drug interactions
- Work with clinical pharmacist
- Utilize Liverpool Guide: <https://www.covid19-druginteractions.org/checker>

Downloadable One-Pager for Staff Education and Quality Improvement

Treating Viral Infections in Older Adults

Antibiotics needed? Probably not.



Avoid fluoroquinolones in general, and especially for acute sinusitis and acute bronchitis: they cause serious side effects and likely won't help, as these illnesses are caused by viruses the majority of the time.



More than 80% of COPD exacerbations can be managed in the nursing home with an inhaler. Steroids may be considered. No antibiotics needed in most cases.



Antibiotics are never needed for the common cold.



Consider antibiotics for acute rhinosinusitis in patients with:

- symptoms for >10 days OR
- onset of severe symptoms OR
- high fever, purulent nasal discharge or facial pain 3+ days
- Onset of worsening symptoms following a viral illness that lasted 5 days that was improving.

COVID: Mortality increases with age



Test older adults with flu-like symptoms.

Nirmatrelvir and ritonavir is preferred treatment.

Initiate within 5 days of symptom onset.

Flu: A serious threat



Test older adults with flu-like symptoms or nonspecific general complaints.



Oseltamivir or baloxavir recommended for older adults. Consider prophylactic use during nursing home outbreaks.

Questions and Discussion



- ▶ Find session slides at <https://spice.unc.edu> → ncclasp
→ nursing homes