Preparing for Respiratory Season: Vaccines, Therapeutics and Indoor Air Quality

December 9, 2022

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Introducing the White House Coordinator of COVID-19 Response

Ashish Jha, MD, MPH

A practicing physician, Ashish K. Jha, M.D. was appointed as Coordinator of the COVID-19 Response by President Biden. In his former role, he served as dean of the School of Public Health at Brown University. He is recognized globally as an expert on pandemic preparedness and response as well as on domestic and global health policy. Jha has led groundbreaking research around Ebola and has been a trusted voice on the COVID-19 response, leading national and international analysis of key issues and advising state and federal policy makers.

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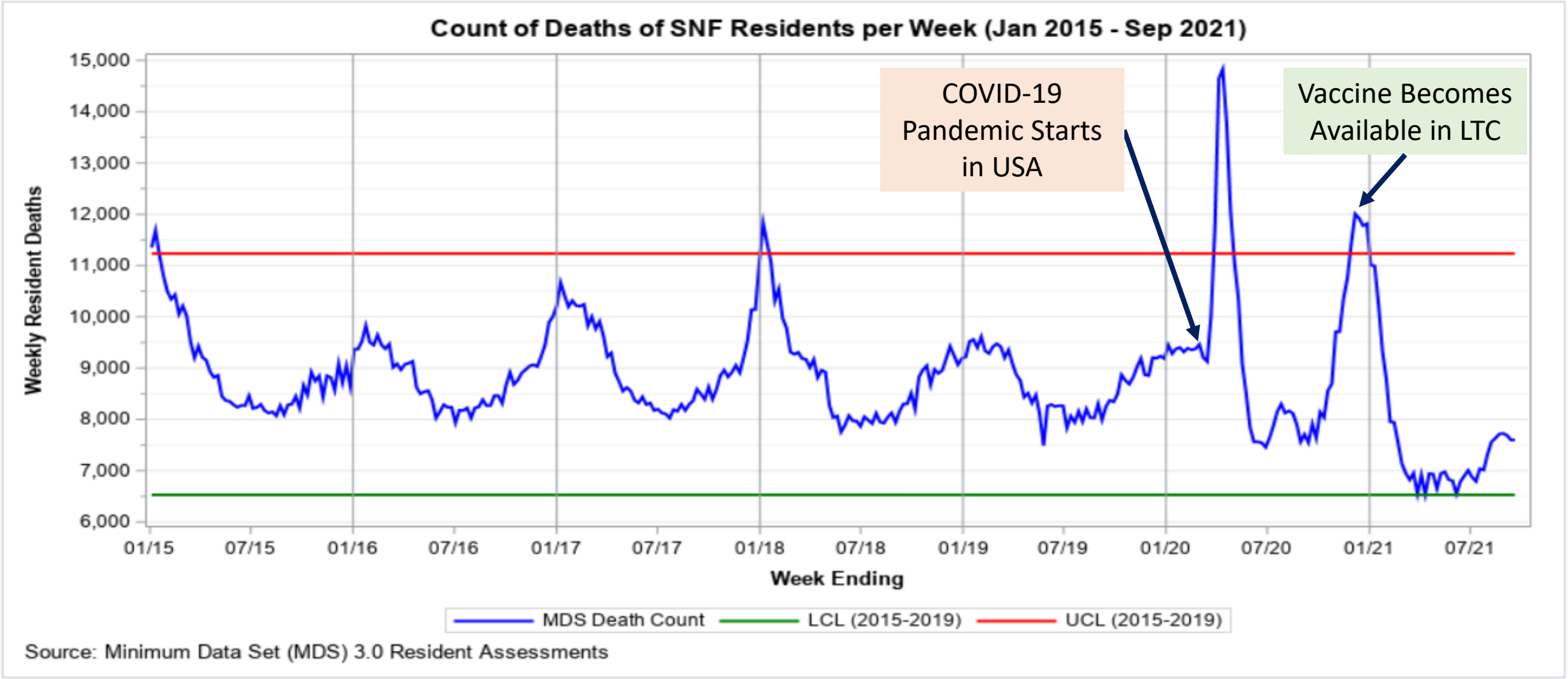
Reducing Respiratory Viral Infections in Long Term Care

All Cause Deaths in LTC increase during respiratory virus winter seasons



Source: Minimum Data Set (MDS) 3.0 Resident Assessments

Five Simple Steps to Reduce Respiratory Viral Infections

1. Get your flu shot and bivalent vaccine
2. Start antiviral treatment as soon as symptoms develop
3. Stay home if you are sick
4. Follow CDC guidance on infection control for respiratory viruses
5. Maintain airflow in your building

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Get Vaccinated & Boosted

Bivalent Vaccine

- On September 2, FDA/CDC approved a new “bivalent” COVID-19 booster
- The “bivalent” vaccine allows the body to fight off the symptoms Omicron strains of COVID-19 more effectively
- This changes the definition of “up to date.” Individuals are up to date if they meet ONE the following criteria:
  - Received a bivalent booster dose OR
  - Received their last booster dose less than 2 months ago, or
  - Completed their primary series less than 2 months ago
- This definition is the same regardless of immunocompromised status

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Effectiveness of the Bivalent Vaccine

- CDC real-world study on the bivalent vaccine against Omicron shows protection against symptomatic infection compared to fully vaccinated:
  - Adults 18-49 are 56% less likely to get symptomatic infection
  - Adults 50-64 are 48% less likely to get symptomatic infection
  - Adults 65+ are 43% less likely to get symptomatic infection

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Influenza Vaccine

- Influenza has a significant impact on the LTC population
- Flu vaccination is especially important for the LTC population
- Flu vaccination reduces the risk of flu getting serious symptoms or hospitalizations by 40%-60%
- While some people who get a flu vaccine still get sick, vaccination can make their illness less severe
  - Recent studies among hospitalized flu patients showed that flu vaccination reduced ICU admissions and duration of hospitalization

Get the facts about the flu vaccine

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Influenza Vaccines - ACIP Update

- CDC/ACIP recommends in 2022 that adults aged ≥65 years preferentially receive any one of the following higher dose or adjuvanted influenza vaccines:
  - Fluzone HD™ (HD-IIV4),
  - Flublok™ (RIV4), or
  - Fluad™ (aIIV4).
- If none of these three vaccines is available at an opportunity for vaccine administration, then any other age-appropriate influenza vaccine should be administered

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Increasing Vaccination Rates – What's Working?

- Find a champion whose opinion is respected by the residents
- Enlist resident's clinicians to encourage vaccination
- Utilize standing orders for flu and covid vaccine when they want it
- Schedule a vaccine clinic and monitor for completion
  - Reach out to LTC pharmacy, FQHC, or local health departments to help with vaccine clinics
- Bundle the offering of COVID and Influenza vaccines

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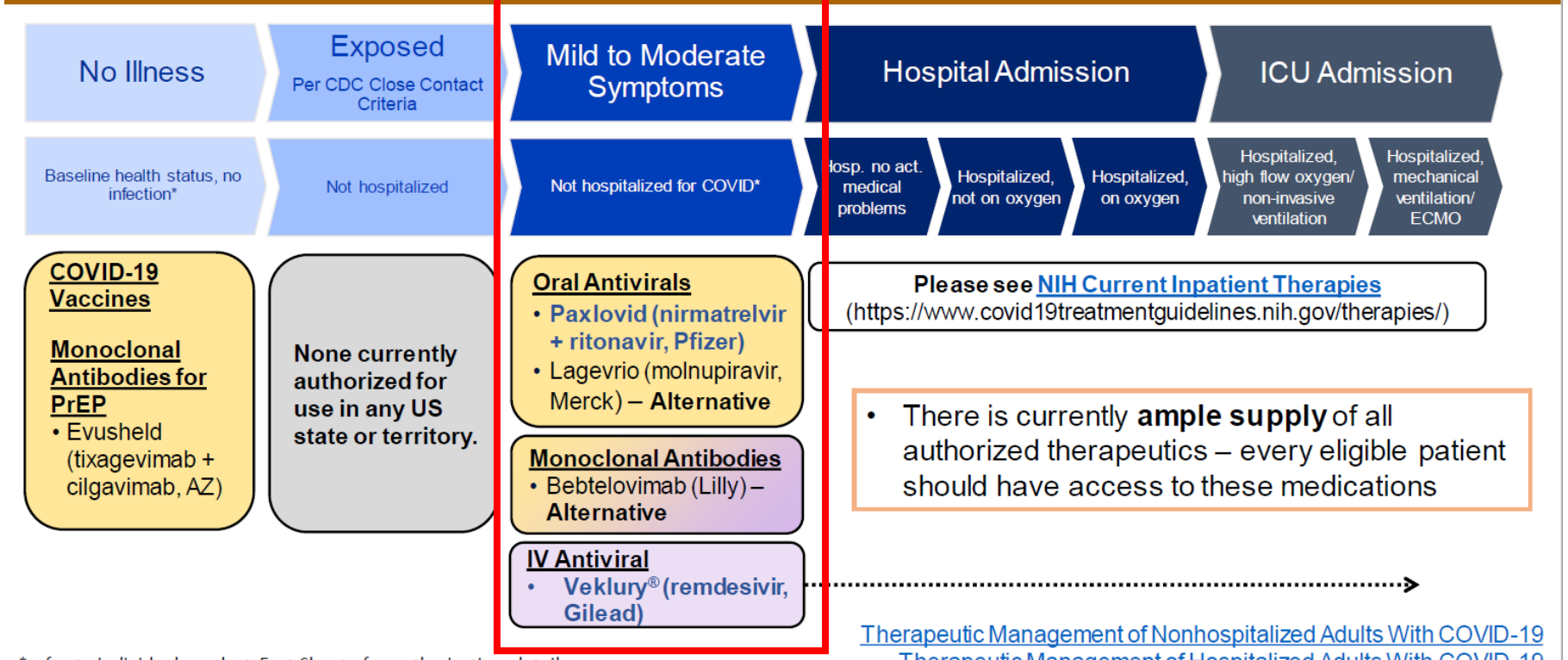
Treatments

Summary of COVID-19 Preventative Agents & Treatments



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COVID-19 Therapeutics & Treatments

- Residents who test positive for COVID-19 can access treatment to reduce their chances of hospitalization and death
- Don’t delay! Treatment must be started within days of symptom-onset

Therapeutic	Type of treatment	Start time after symptoms first appear
Paxlovid	Oral antiviral (pills)	As soon as possible and up to **5 days**
Lagevrio (molnupiravir)	Oral antiviral (pills)	As soon as possible and up to **5 days**
Veklury® (remdesivir)	IV infusion antiviral	As soon as possible and up to **7 days**
Evusheld	Long-acting antibody combination (injection)	Preventative, **before exposure**

See NIH and CDC sites on antivirals:

- Antivirals, Including Antibody Products | COVID-19 Treatment Guidelines (nih.gov)
- Nonhospitalized Adults: Therapeutic Management | COVID-19 Treatment Guidelines (nih.gov)

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Paxlovid Effectiveness

- Paxlovid reduces hospitalizations
  - Among vaccinated with a booster hospitalizations were
    - 50% less likely for all ages
    - 47% less likely for >65 years old

Source: [Paxlovid Associated with Decreased Hospitalization Rate Among Adults with COVID-19 — United States, April–September 2022 | MMWR (cdc.gov)]

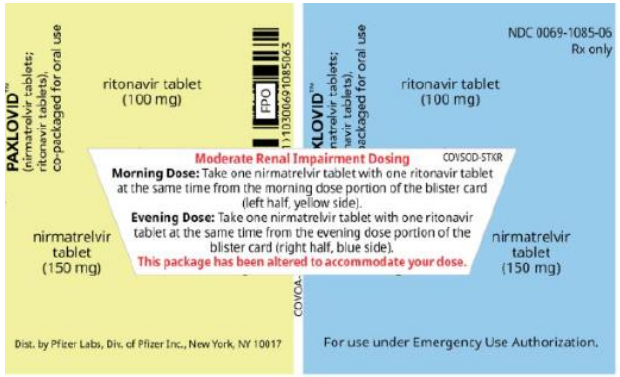
Paxlovid – Clinical Pearls

- Should be initiated as soon as possible after diagnosis of COVID-19 AND within 5 days of symptom onset and must be prescribed individually
  - 5 day treatment course, 88% RR reduction
- Plentiful interactions due to ritonavir component
- Renal Dose Adjustment – eGFR based
  - Paxlovid 300 - eGFR ≥ 60 mL/min
  - Paxlovid 150 - eGFR ≥ 30 mL/min to <60 mL/min

[PAXLOVID Patient Eligibility Screening Checklist Tool for Prescribers]

Renal Dose Pack Presentation

Original Presentation Altered by Pharmacy



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Drug Interactions with Paxlovid

- Among the top 100 prescribed drugs, only two have interactions so severe that Paxlovid should be avoided altogether: rivaroxaban and salmeterol

Concomitant Medication	Nirmatrelvir/ Ritonavir Effect on Drug Level	Possible Effect	Recommendation During Nirmatrelvir/Ritonavir Treatment
Rivaroxaban	↑	Increased bleeding	Avoid nirmatrelvir/ritonavir
Salmeterol	↑	Increased cardiac effects	Avoid nirmatrelvir/ritonavir

- Additional interactions are listed at IDSA and NIH sites:
  - Management of Drug Interactions With Nirmatrelvir/Ritonavir (Paxlovid®): Resource for Clinicians (idsociety.org)
  - Paxlovid Drug-Drug Interactions | COVID-19 Treatment Guidelines (nih.gov)

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COVID-19 Rebound after Paxlovid

- The Centers for Disease Control and Prevention (CDC) is issuing this Health Alert Network (HAN) Health Advisory to update healthcare providers, public health departments, and the public on the potential for recurrence of COVID-19 or "COVID-19 rebound."

- **Paxlovid continues to be recommended for early-stage treatment of mild to moderate COVID-19 among persons at high risk for progression to severe disease**.
- Paxlovid treatment helps prevent hospitalization and death due to COVID-19. COVID-19 rebound has been reported to occur between 2 and 8 days after initial recovery and is characterized by a recurrence of COVID-19 symptoms or a new positive viral test after having tested negative.
- **A brief return of symptoms may be part of the natural history of SARS-CoV-2 (the virus that causes COVID-19) infection in some persons, independent of treatment with Paxlovid and regardless of vaccination status**.
- Limited information currently available from case reports suggests that persons treated with Paxlovid who experience COVID-19 rebound have had mild illness; there are no reports of severe disease.

COVID-19 Rebound After Paxlovid Treatment (cdc.gov)

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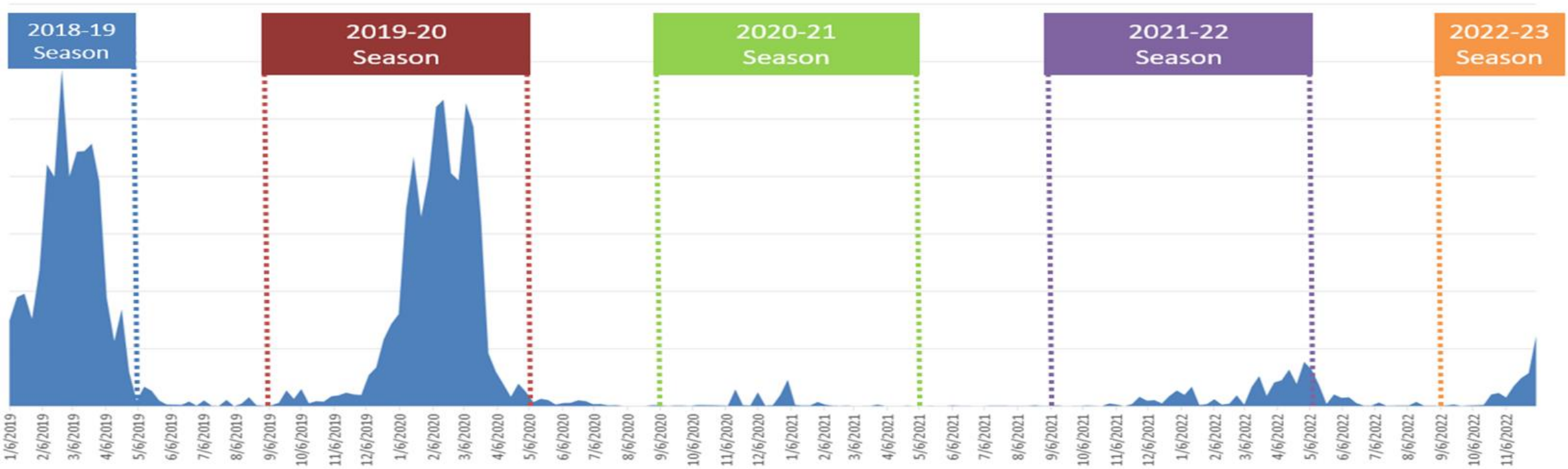
Historical Influenza Treatment Utilization



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Tamiflu (oseltamivir) – Clinical Pearls

- Treatment
  - Usual dose: 75mg twice daily for 5 days initiated within 48 hours of illness onset
- Prophylaxis (outpatient/institutionalized)
  - Usual dose: 75mg once daily for 1 to 2 weeks with 48 hours of confirmed exposure
- Renal Dose Adjustment
  - Necessary beginning at **CrCl** <60 mL/min
- Available(ish) in capsule or liquid formulations

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Xofluza (baloxavir) – Clinical Pearls

- Treatment & Prophylaxis (outpatient)
  - Single dose within 48 hours of symptom onset/confirmed exposure
- Weight-based Dose Adjustment
  - < 80 kg: 40 mg as a single dose
  - ≥ 80 kg: 80 mg as a single dose
- Available(ish) in tablet form
- Currently no data for baloxavir as chemoprophylaxis in outbreak scenario in LTC setting

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Maintain Good Airflow in your Building

Indoor Air Quality (IAQ)- Why it Matters

- Infectious diseases, like COVID-19 and other respiratory viruses, can spread through the inhalation of airborne particles and aerosols
- There is emerging research that improving IAQ can have a significant impact on reducing the spread of respiratory viruses

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Common HVAC

- **Central units**
  - Today most facilities rely on older equipment and the two most important things to remember are:
    - Annual preventative maintenance per manufacture should be completed
    - Change filters per manufacturer
  - Keep outside units clean for maximum efficiency
    - Inspect duct work as needed and have cleaned when there is a significant buildup of dirt and dust

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Window units/ P-TACs

- Keep outside evaporators clean and filters and fins inside clean
- Introduces very little outdoor air and mixes with indoor air
- Limited filtration choices and should be maintained by housekeeping to clean

Air Movement…What to Look For

- Where does outside air come in?
- Where does air go out?
- How much is controlled by ducts?
- Where is the opening in a room what is the direction of air flow?
- Is air recirculating from one area to another, attic, outside?
- Can you open windows?
- Have there been any changes to your system relative to fans, filters, ducts, intakes or exhausts?

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Air Quality Choices ….

- Dry Air – Most supportive of Infection spread - Ideal humidity 40 – 60%
- Recirculated Air
- Demand Control Ventilation – improve air quality
- Open windows/ doors for 30 min 2x day
- Natural continuous ventilation
- Dedicated outdoor air - 6 total air changes per hour

- CO2 level < 600PPM is recommended
- MERV 8 Filters, MERV13, MERV 16…
- HEPA Filters
- UVC germicidal UV/ ultraviolet germicidal irradiation (UVGI)

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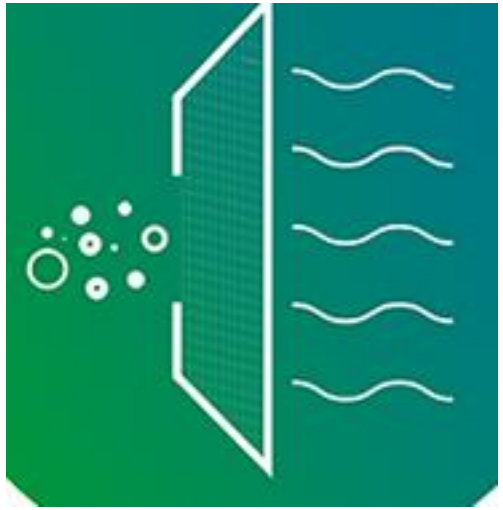
Indoor Air Quality

- All buildings are different and there a several low-cost impactful actions you can take to improve air quality and reduce the spread of viruses
- Two simplest are:
  1. Maintain your furnaces and change filters
  2. Introduce more outdoor or fresh air into your facility – brainstorm on ways to do this in your facility



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Tips to Improve Indoor Air Quality

- Portable fan placed close to an open window could enable ventilation
- Activate resident restroom exhaust fans whenever visitors are present
- Consider opening windows, even slightly, if practical and will not introduce other hazards
- The use of ceiling fans at low velocity and potentially in the reverse-flow direction (so that air is pulled up toward the ceiling), especially when windows are closed
- Where possible, avoid adding on to old systems vs. redesigning or balanced

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Resources

- CMP Funds
  - Facilities may request the use of Civil Money Penalty (CMP) Reinvestment funds to purchase portable fans and portable room air cleaners with HEPA filters to increase or improve air quality at a maximum of $3,000

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Appendix-A: Other treatments for COVID-19 & Influenza

Lagevrio – Clinical Pearls

- Should be initiated as soon as possible after diagnosis of COVID-19 AND within 5 days of symptom onset and must be prescribed individually
  - Consider when alternative treatment options are not available, feasible to use, or clinically appropriate
  - 5 day treatment course, 31% RR reduction
- No contraindications or drug interactions have been identified based on the limited available data for EUA.
  - It is not known if COVID-19 rebound occurs yet

Molnupiravir Checklist Tool for Prescribers

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Veklury – Clinical Pearls

- Treatment of COVID-19 in Non-Hospitalized Patients at high risk of progression to severe COVID-19
  - Remdesivir 200 mg IV on Day 1, followed by Remdesivir 100 mg IV daily on Days 2 and 3, initiated as soon as possible and within 7 days of symptom onset
  - VEKLURY is not recommended in patients with eGFR less than 30 mL/min.
- Warnings/Precautions: Cardiac, hepatic, and infusion-related effects
- Commercially available

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Monoclonal Antibodies – Clinical Pearls

Treatment

- 11/09/20 – ~~**Eli Lilly's bamlanivimab monotherapy**~~
  - **[*EUA not currently authorized*]**
- 11/21/20 – ~~**Regeneron's combination REGEN-COV: casirivimab + imdevimab**~~
  - **[*EUA not currently authorized*]**
- 02/09/21 – ~~**Eli Lilly's combination bamlanivimab + etesevimab**~~
  - **[*EUA not currently authorized*]**
- 05/26/21 – ~~**GSK's sotrovimab monotherapy**~~
  - **[*EUA not currently authorized*]**
- 02/11/22 – ~~**Eli Lilly's bebtelovimab monotherapy**~~
  - **[*EUA not currently authorized*]**

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Other Influenza Treatment Options

Relenza (zanimivir)

- Inhaled dosage form
  - Caution in patients with underlying respiratory disease such as COPD/asthma
- Treatment and Prophylaxis
  - Including institutional prophylaxis

Rapivab (peramivir)

- IV dosage form
- Treatment only, single dose
  - Renal dose adjustment beginning at CrCl <50 mL/min

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