Galway: GAPP - Galway Antimicrobial Prescribing Policy / Guidelines (GAPP): Respiratory System

Antivirals Guidance for Treatment and Prophylaxis of Influenza

Detailed guidance on the use of antiviral agents for the treatment and prophylaxis of influenza is available on the HSE/HPSC website
https://www.hpsc.ie/a-z/respiratory/influenza/seasonalinfluenza/guidance/antiviraltreatmentandprophylaxisguidance/Antivirals%20guidance%20for%20treatment%20

Antiviral treatment

- Antiviral treatment is recommended as early as possible for any patient with suspected or confirmed influenza who is hospitalised due to influenza
- Any patient who, while in hospital for other indication, develops influenza, should be assessed for risk from influenza complications (as below). Antiviral treatment is recommended as early as possible for those at higher risk from influenza complications.

Higher risk from influenza complications includes :

1. Age 65 years and over
2. Pregnancy (including up to two weeks post-partum)
3. Children aged <2 years of age
4. Chronic respiratory disease including those on medication for asthma
5. Chronic heart, kidney, liver or neurological disease
6. Diabetes mellitus
7. Haemoglobinopathies
8. Immunosuppression (whether due to treatment or disease e.g. HIV)
9. Morbid obesity (BMI ≥ 40)
10. Those with any condition that can compromise respiratory function (e.g cognitive dysfunction, spinal cord injury, seizure disorder, or other neuromuscular disorder), especially those attending special schools/day centres.
11. Those with Down Syndrome
12. Persons with moderate to severe neurodevelopmental disorders such as cerebral palsy and intellectual disability
13. Residents of nursing homes or Residential Care Facilities

- 1 st line antiviral treatment is generally PO/NG Oseltamivir 75mg BD for adult patients with normal renal function but:
- **Dose Adjustment is required in renal impairment** .
- Alternative therapy with Zanamivir may be indicated for patients with severe immunocompromise – please discuss with Microbiology/Infectious Diseases
- Treatment duration is generally 5 days.

There is limited evidence to support treating for longer duration in those with severe influenza (e.g critically ill in ICU) and in severely immunosuppressed patients. Discussion with Microbiology/Infectious Diseases is recommended.

Antiviral prophylaxis

Chemoprophylaxis (generally PO/NG Oseltamivir) may be considered for people at higher risk from influenza complications (as above, 1 to 13) who have had recent close contact with a person with influenza. Details on use of Oseltamivir for prophylaxis of high risk contacts, including dose, duration and dose adjustment in renal impairment are to be found in the HPSC/ HSE guidance

Community Acquired Pneumonia

Community Acquired Pneumonia (CAP)

1. Community acquired pneumonia is defined as infiltrate on CXR or CT scan with compatible symptoms.
2. Antibiotics are NOT usually recommended for exacerbation of **asthma or bronchitis** with normal chest X-ray or **aspiration with normal CXR** .
3. Nursing home patients presenting with pneumonia should be treated as CAP as outlined below and NOT automatically treated with piperacillin/tazobactam **unless** history of antibiotic resistant organisms or within 14 days of discharge from hospital.
4. The **CURB-65 score** , in conjunction with clinical judgement, is a severity assessment tool for Community Acquired Pneumonia.
5. Laboratory testing for respiratory viruses should be considered, including COVID-19, and, during relevant season, influenza and Respiratory Syncytial Virus (RSV). Appropriate treatment for COVID-19 or influenza should be initiated if positive.

Culture sputum and blood if severe infection **OR** risk factors for MRSA or Pseudomonas infections:

- ICU admission
- Hospitalised and/or IV antibiotics within past 90 days
- Previous Infection with MRSA or Pseudomonas

7. Give antibiotics as soon as possible, within 4 hours of presentation in the Emergency Department.

Empiric Antibiotics for Community Acquired Pneumonia (CAP)

Infection	1st Line Antibiotics	Penicillin allergy: delayed onset non-severe reaction See penicillin hypersensitivity section for further information	Penicillin allergy: immediate or severe delayed reaction	Comment
Community Acquired Pneumonia (including nursing home patients unless history of MDRO or within 14 days of discharge from hospital). See note on MDRO Signs and symptoms of LRTI AND new consolidation on chest X-ray	**Mild CURB-65 Score 0 or 1**			
	Amoxicillin PO 1g every 8 hours In younger patients **Add** atypical cover with Clarithromycin PO 500mg every 12 hours	Doxycycline PO 100mg every 12 hours Avoid Doxycycline in pregnancy or breast-feeding. Discuss with Microbiology or Infectious Diseases.		Duration 5 days (provided afebrile and clinically stable for 48 hours. Otherwise 7 days)
	Moderate CURB-65 Score 2			
	Non-smokers with no co-morbidities Amoxicillin PO/IV 1g every 8 hours + Clarithromycin PO (IV if NPO) 500mg every 12 hours **Patients who smoke and/or with co-morbidities** Co-amoxiclav PO 875/125mg every 8 hours/IV 1.2g every 8 hours + Clarithromycin PO (IV if NPO) 500mg every 12 hours	Levofloxacin PO (IV if NPO) 500mg every 12 hours Avoid Levofloxacin in pregnancy or breast-feeding. **Discuss with Micro/ID.** Caution if risks for prolonged QT interval		Duration 5 days (provided afebrile and clinically stable for 48 hours. Otherwise 7 days) Most patients can be treated with oral antibiotics
	Severe CURB-65 Score ≥ 3			
	Co-amoxiclav IV 1.2g every 8 hours + Clarithromycin PO (IV if NPO) 500mg every 12 hours	CefTRIAXone IV 2g every 24 hours + Clarithromycin PO (IV if NPO) 500mg every 12 hours	Levofloxacin PO (IV if NPO) 500mg every 12 hours Avoid levofloxacin in pregnancy or breastfeeding. **Discuss with Micro/ID.** Caution if risks for prolonged QT interval.	Duration 7 days Longer courses may be indicated according to clinical judgement e.g. if *Legionella pneumophila, Staphylococcus aureus* or *Gram-negative bacilli* suspected or confirmed. Consider addition of steroids for those requiring Non Invasive Ventilation (NIV)/ Mechanical Ventilation (MV) in consultation with Resp/ID.

Refs:

1. *Community-Acquired Pneumonia. The New England Journal of Medicine. 2023. 389:632-41.*
2. *Diagnosis and Treatment of Adults with Community-acquired Pneumonia. An Official Clinical Practice Guideline of the American Thoracic Society and Infectious Diseases Society of America. Am J Respir Crit Care 2019;200(7):e45–e67*
3. *Duration of Antibiotic Treatment in Community-Acquired Pneumonia: A Multicenter Randomized Clinical Trial. JAMA Intern Med 2016;176(9):1257-1265*
4. *British Thoracic Society Guidelines for the management of community acquired pneumonia in adults. Annotated CAP Guideline 2015.*

Chronic Obstructive Pulmonary Disease (COPD)

Empiric Antibiotics for COPD			
Infection	**1st Line Antibiotics**	**In penicillin allergy** See penicillin hypersensitivity section for further information	**Comment**
COPD Exacerbation ***without infiltrate***	Amoxicillin PO 1g every 8 hours **OR** If recent (<2/52) course of amoxicillin: Co-amoxiclav PO 625mg every 8 hours (Consider Co-amoxiclav PO 875/125mg every 8 hours for severe infection)	Clarithromycin PO 500mg every 12 hours **OR** Doxycycline PO 100mg every 12 hours Avoid doxycycline in pregnancy or breastfeeding.	Duration 5 days (provided afebrile and clinically stable for 48 hours. Otherwise 7 days)

Refs:

1. *HSE. Infective exacerbation of COPD. Antibiotic prescribing.ie Accessed April 2024*

Hospital Acquired Pneumonia

Hospital Acquired Pneumonia

1. Pneumonia should be treated as hospital acquired if onset from **5 days after hospital admission or within 14 days of discharge.**
2. Nursing home patients presenting for admission to hospital with pneumonia should be treated as CAP and NOT automatically treated with piperacillin/tazobactam unless history of antibiotic resistant organisms or within 14 days of discharge from hospital.
3. The regimens below may NOT cover Multi-drug Resistant Organisms (MDRO) in all cases. **See note on MDRO .**
4. **Intensive care and immunosuppressed patients** should be discussed with **Microbiology or Infectious Diseases.**

Empiric Antibiotics for Hospital Acquired Pneumonia				
Infection	**1st Line Antibiotics**	**Penicillin allergy: delayed onset non-severe reaction** **See penicillin hypersensitivity section for further information**	**Penicillin allergy: immediate or severe delayed reaction**	**Comment**
The regimens below may NOT cover Multi-drug Resistant Organisms (MDRO) in all cases. **See note on MDRO**				
Hospit al Acquired Pneumonia **Contact Microl ID for treatment of Pseudomonal infection**	**Moderate** Piperacillin/tazobactam IV 4.5g every 6 hours	**Moderate** CefTRIAXone IV 2g q24h NB. If history of Pseudomonas colonisation/infection, discuss alternative treatment with Micro/ID. **Add** Gentamicin IV **IF** sepsis . Give one dose per GAPP App calculator. See footnote* re further doses and monitoring.	**Moderate** Vancomycin IV infusion, dose per GAPP App calculator. See footnote* re monitoring. + Ciprofloxacin** IV 400mg every 12 hours **Add** Gentamicin IV **IF** sepsis . Give one dose per GAPP App calculator. See footnote* re further doses and monitoring. Discuss treatment at 48 hours with Micro/ID	Duration 7 days May need to be extended according to clinical judgement e.g. if Legionella pneumophila, Staphylococcus aureus or Gram-negative bacilli suspected or confirmed
	Severe (ICU assessment required) Piperacillin/tazobactam IV 4.5g every 6 hours + Vancomycin IV infusion, dose per GAPP App calculator. See footnote* re review and monitoring. Review at 24 - 48 hours and stop if MRSA not detected from clinical samples or MRSA screen **Add** Gentamicin IV **IF** sepsis . Give one dose per GAPP App calculator. See footnote* re further doses and monitoring	**Severe (ICU assessment required)** Vancomycin IV infusion, dose per GAPP App calculator. See footnote* re monitoring. + Ciprofloxacin** IV 400mg every 12 hours **Add** Gentamicin IV **IF** sepsis . Give one dose per GAPP App calculator. See footnote* re further doses and monitoring.		
	* Review need for ongoing Gentamicin and Vancomycin on a daily basis. Continue with **once daily Gentamicin** dosing ONLY if **Consultant/Specialist Registrar** recommended. For advice on monitoring see Aminoglycoside & Vancomycin Dosing & Monitoring section. **Switch from IV to oral Ciprofloxacin (500mg PO every 12 hours) as soon as possible.			

Refs:

1. *American Thoracic Society/Infectious Diseases Society of America. Management of adults with hospital-acquired and ventilator-associated pneumonia Clin Infect Dis 2016;63:e61-111*

Pneumocystis jirovecii pneumonia (PJP)

Pneumocystis jirovecii pneumonia (PJP)

1. **Discussion with Microbiology or Infectious Diseases** recommended.
2. Co-trimoxazole in high dosage is the treatment of choice for mild, moderate and severe PJP.
3. For **moderate to severe disease** (Pa02 ≤9kPa on room air), **high dose steroids** should be co-administered with anti-pneumocystis therapy and should be discontinued before anti-pneumocystis therapy is complete: Prednisolone 40mg PO twice daily for 5 days, then 40mg once daily for 5 days, then 20mg once daily to complete a total of 14 to 21 days (depending on duration of PJP treatment).

PJP Treatment

Infection	1 st Line	2 nd line	Comment
PJP	Co-trimoxazole* IV/PO 120mg/kg/ **day** divided into a 6 to 8 hourly dosing regimen e.g. 30mg/kg every 6 hours* e.g. 70kg patient: 70x120 = 8,400mg daily, dosing regimen would be 2,100mg every 6 hours (round dose to nearest 480mg=1920mg) In severe disease consider oral switch at same dose when clinically improving. In mild to moderate disease consider oral route from outset.	**Severe disease:** Pentamidine IV 4mg/kg once daily Only to be used if intolerant or unresponsive to co- trimoxazole. Risk of significant adverse events including severe hypotension and hypoglycaemia with administration. **Non-severe disease:** Atovaquone OR Dapsone + Trimethoprim OR Clindamycin + Primaquine Contact Microbiology or Infectious Diseases or Pharmacy for advice and dosing.	Duration (ID or Micro consult recommended): Non-HIV infected: 14 -21 days HIV infected: 21 days

*Please note the co-trimoxazole dose is a combined trimethoprim/sulfamethoxazole dose

Caution with dose calculation as errors have occurred when dosing is based on the trimethoprim component (as recommended in US literature)

Refs:

1. *Guidelines for the Prevention and Treatment of Opportunistic Infections in Adults and Adolescents with HIV. National Institutes of Health, Centers for Disease Control and Prevention, HIV Medicine Association, and Infectious Diseases Society of America. Available at https://clinicalinfo.hiv.gov/en/guidelines/adult-and-adolescent-opportunistic-infection. Accessed 23rd April 2024.*
2. *Pneumocystis jirovecii pneumonia. Catherinot et al. Infect Dis Clin North Am 2009;24:107-138*