Clinical Guideline for the Management of Community Acquired Pneumonia (CAP): Emergency Department and Acute Medicine

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Distribution Control

Printed copies of this document should be considered out of date. The most up to date version is available from the Trust Intranet.

Consultation

The following were consulted during the development of this document:
(list all appropriate parties, job titles only. These should include those who will be part of the roles and responsibilities and subject matter experts)

Monitoring and Review of Procedural Document

The document owner is responsible for monitoring and reviewing the effectiveness of this Procedural Document. This review is continuous however as a minimum will be achieved at the point this procedural document requires a review e.g. changes in legislation, findings from incidents or document expiry.

Relationship of this document to other procedural documents

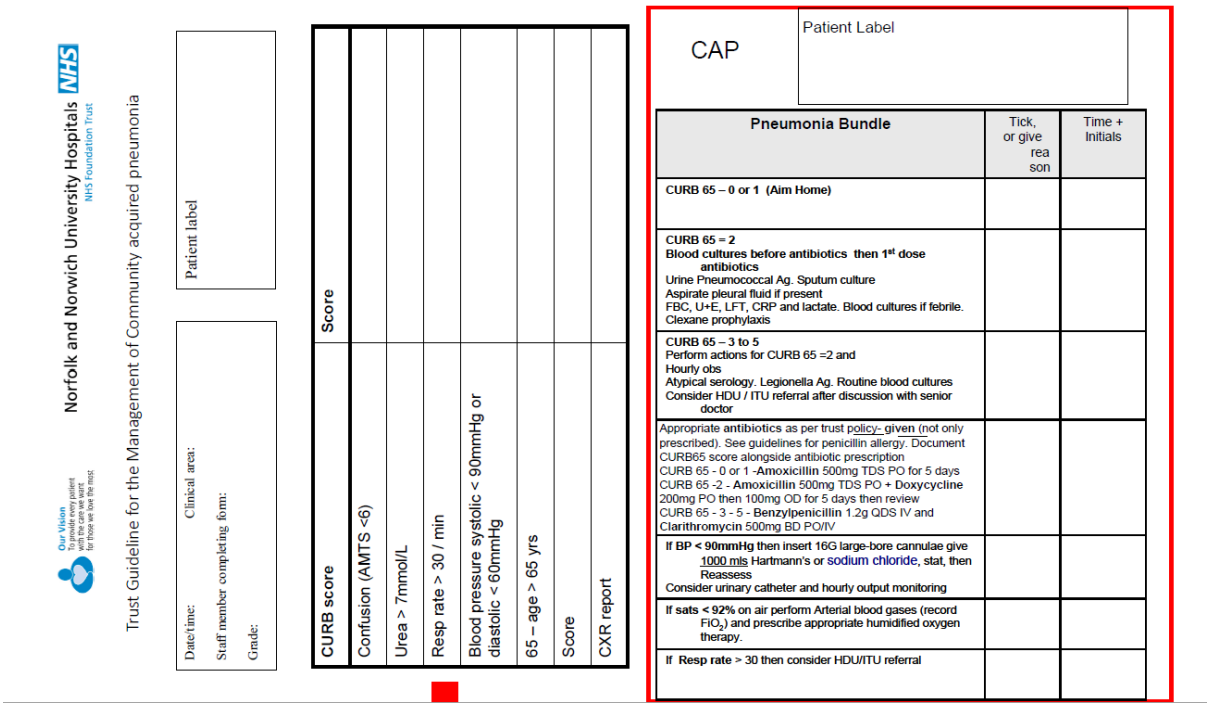
This document is a clinical guideline applicable to the Norfolk and Norwich University Hospitals NHS Foundation Trust; please refer to local Trust's procedural documents for further guidance, as noted in section 10.

Clinical Guideline for the Management of Community Acquired Pneumonia (CAP): Emergency Department and Acute Medicine

Contents Page

Quick reference

Clinical Guideline for the Management of Community Acquired Pneumonia (CAP): Emergency Department and Acute Medicine



Norfolk and Norwich University Hospitals NHS Foundation Trust

Our Vision: To provide every patient with the care we want for those we love the most

Trust Guideline for the Management of Community acquired pneumonia

Patient label

Date/time: Clinical area:

Staff member completing form:

Grade:

CURB score	Score
Confusion (AMTS <6)	
Urea > 7mmol/L	
Resp rate > 30 / min	
Blood pressure systolic < 90mmHg or diastolic < 60mmHg	
65 – age > 65 yrs	
Score	
CXR report	

CAP

Patient Label

Pneumonia Bundle	Tick, or give rea son	Time + Initials
CURB 65 – 0 or 1 (Aim Home)		
CURB 65 = 2 **Blood cultures before antibiotics then 1st dose antibiotics** Urine Pneumococcal Ag. Sputum culture Aspirate pleural fluid if present FBC, U+E, LFT, CRP and lactate. Blood cultures if febrile. Clexane prophylaxis		
CURB 65 – 3 to 5 Perform actions for CURB 65 =2 and Hourly obs Atypical serology. Legionella Ag. Routine blood cultures Consider HDU / ITU referral after discussion with senior doctor		
Appropriate **antibiotics** as per trust policy- **given** (not only prescribed). See guidelines for penicillin allergy. Document CURB65 score alongside antibiotic prescription CURB 65 - 0 or 1 -**Amoxicillin** 500mg TDS PO for 5 days CURB 65 -2 - **Amoxicillin** 500mg TDS PO + **Doxycycline** 200mg PO then 100mg OD for 5 days then review CURB 65 - 3 - 5 - **Benzylpenicillin** 1.2g QDS IV and **Clarithromycin** 500mg BD PO/IV		
If BP < 90mmHg then insert 16G large-bore cannulae give 1000 mls Hartmann's or sodium chloride, stat, then Reassess Consider urinary catheter and hourly output monitoring		
If sats < 92% on air perform Arterial blood gases (record FiO_2) and prescribe appropriate humidified oxygen therapy.		
If Resp rate > 30 then consider HDU/ITU referral		

British Thoracic Society

BTS Community Acquired Pneumonia (CAP) Care Bundle **CAP 1**

Trust logo

This care bundle describes 4 high impact actions to ensure the best clinical outcome for patients admitted with community acquired pneumonia. The aim is to ensure patient safety with timely prescribing and administration of oxygen followed by timely antibiotics administered after assessment of a CXR and risk score. Success will be measured using length of stay and mortality for patients admitted.

Exclusion criteria: Age under 16, immunocompromised, discharged from A&E

Inclusion Criteria: Symptoms and signs of LRTI with new infiltrates on chest x-ray, no hospital admission within last 10 days

Applies to patients admitted to hospital and not to patients seen and discharged from A&E

Patient sticker

COMPLETE WITHIN 4 HOURS OF ADMISSION WITH PNEUMONIA

1. PERFORM CHEST X-RAY WITHIN 4 HOURS OF ADMISSION

All patients admitted to hospital with suspected CAP should have a CXR performed as soon as possible to confirm or refute the diagnosis.

A community acquired pneumonia should be diagnosed in a patient with a compatible history and examination with new infiltrates on the chest x-ray. The objective of any service should be for the CXR to be performed in time for antibiotics to be administered within 4 hours of presentation to hospital.

CXR done within 4 hours of admission: ☐ **CXR changes consistent with CAP:** ☐

Date of CXR : _____ **Time CXR carried out:** _____

2. ASSESS OXYGEN & PRESCRIBE TARGET RANGE FOR OXYGEN

Early oxygen assessment is associated with improved prognosis. The provision of oxygen, when needed, follows after appropriate assessment. A target range for the oxygen saturation to be achieved (with supplemental oxygen if necessary) should be prescribed (Age > 16 years: 94 – 98%, Patients at risk of CO2 retention: 88 – 92%).

Physiological observations made within 1 hour of admission: ☐ **Oxygen prescribed within 1 hour of admission:** ☐

3. CALCULATE CURB 65 SCORE FOR ALL PATIENTS IN WHOM PNEUMONIA IS CONFIRMED ON THE CHEST X-RAY

The CURB65 score supports decision making about the venue of care (home/hospital), route of administration of antibiotics and mortality.

Consider discharge for patients with CURB65 0-1.

CURB65 recorded: ☐ **CURB65 score:** _____

4. ADMINISTER APPROPRIATE ANTIBIOTICS WITHIN 4 HOURS OF ADMISSION

Antibiotics should be prescribed within 4 hours following review of the CXR and CURB65 score. IV antibiotics if CURB65 ≥ 3.

Antibiotic prescribing:

Antibiotics prescribed within 4 hours ☐ **Antibiotics concordant with CURB65 score?** ☐

Date of administration of antibiotics: _____ **If antibiotics not concordant give reason:** _____

Time of administration of antibiotics: _____

CURB65 Score:
1 point for each of:
New Confusion
Urea > 7mmol/L
Resp Rate ≥ 30/min
BP < 90mmHg systolic or ≤ 60mmHg diastolic
Age ≥ 65 years

Data entry: https://audits.brit-thoracic.org.uk/
Enquiries: carebundles@brit-thoracic.org.uk

Clinical Guideline for the Management of Community Acquired Pneumonia (CAP): Emergency Department and Acute Medicine

1. Introduction

1.1. Rationale

Community-Acquired Pneumonia (CAP) is a common and potentially serious respiratory infection that occurs in people who have not recently been hospitalised or had significant healthcare exposure. CAP affects people of all ages and can range from mild to severe, with the potential for life-threatening complications. The purpose of this guideline is to provide healthcare professionals with evidence-based recommendations and best practices for the diagnosis, treatment, and management of Community-Acquired Pneumonia in adults. These guidelines aim to align with established healthcare standards and recommendations, including those set by organizations such as the National Institute for Health and Care Excellence (NICE) and the British Thoracic Society (BTS).

1.2. Objective

The objective of the Management of Community-Acquired Pneumonia Guideline is to:

- Provide evidence-based guidelines for the diagnosis, treatment, and management of Community-Acquired Pneumonia (CAP).
- Standardize the approach to CAP management to ensure high-quality care delivery.
- Enhance patient outcomes by promoting early and accurate diagnosis and appropriate treatment.
- Improve healthcare compliance with established standards and recommendations from organisations such as the National Institute for Health and Care Excellence (NICE) and the British Thoracic Society.
- Promote the responsible use of antibiotics to address antimicrobial resistance.
- Consider individual patient needs and local epidemiological factors in CAP management.
- Provide a comprehensive framework that covers various aspects of CAP, including epidemiology, clinical presentation, diagnosis, severity assessment, treatment, complications, and follow-up care.
- Address special considerations for specific patient populations, such as geriatric and immunocompromised patients.
- Offer guidance on preventive measures, including vaccination and lifestyle modifications.

1.3. Scope

What This Document Covers:

- This document provides comprehensive guidelines for the diagnosis, treatment, and management of Community-Acquired Pneumonia (CAP) in adults.

- It addresses various aspects of CAP management, including epidemiology, clinical presentation, diagnosis, severity assessment, treatment, complications, and follow-up care.
- Special considerations for specific adult patient populations, including geriatric patients and those with immunocompromised conditions, are included.
- The document covers complications such as pleural effusion, abscess formation, sepsis, and respiratory failure.
- Preventive measures, including vaccination recommendations and lifestyle modifications, are discussed.

What This Document Does Not Cover:

- Paediatric Patients
- Hospital-Acquired Pneumonia: Hospital-acquired pneumonia, including ventilator-associated pneumonia (VAP), is not within the scope of this document.
- Lower Respiratory Tract Infections (LRTIs): While CAP primarily affects the lower respiratory tract, this document does not cover other lower respiratory tract infections such as bronchitis or chronic obstructive pulmonary disease (COPD) exacerbations.
- COVID-19 Pneumonia: This document does not address the management of pneumonia specifically caused by COVID-19. COVID-19 management guidelines are available separately.

Staff Groups and Locations:

While the document is applicable to healthcare professionals involved in CAP management, it is primarily intended for staff in the Emergency Department and Acute Medicine settings. It may not fully address the needs of other staff groups or locations outside of these settings.

1.4. Glossary

The following terms and abbreviations have been used within this document:

Term	Definition

2. Responsibilities

Acute Medicine Consultant	Dr Duduzile Musa	Update Guidelines Ensure Audit Cycle complete in ED/Acute Medicine

3. Epidemiology

3.1. Incidence and Prevalence

Community-Acquired Pneumonia (CAP) is a common respiratory infection worldwide, with varying incidence rates depending on geographic location and populations studied. Key epidemiologic aspects to consider include:

- **Incidence:** CAP is a leading cause of infectious disease-related hospitalizations and mortality. The incidence varies with age, with higher rates among the very young and the elderly. In some regions, the incidence of CAP shows seasonal patterns, with increased cases during the colder months.
- **Prevalence:** CAP affects people of all ages, but certain groups are more vulnerable, such as the elderly, young children, people with underlying medical conditions (e.g., chronic obstructive pulmonary disease, diabetes), and immunocompromised individuals.

3.2. Risk Factors

Understanding the risk factors associated with CAP is critical for early recognition and prevention. Common risk factors include:

- **Age:** Both the very young and the elderly are at increased risk. Infants and young children may have underdeveloped immune systems, while the elderly often have reduced immune function and comorbidities.
- **Chronic Medical Conditions:** People with chronic conditions such as chronic obstructive pulmonary disease (COPD), asthma, diabetes, heart disease, and immunosuppressive conditions are more susceptible to CAP.
- **Immunosuppression:** Conditions or medications that suppress the immune system, such as HIV/AIDS, chemotherapy, and immunosuppressive drugs post-organ transplant, increase the risk of CAP.
- **Tobacco and Alcohol Use:** Smoking and excessive alcohol consumption can weaken the respiratory tract's defences, making people more susceptible to respiratory infections.
- **Environmental Factors:** Exposure to pollutants, including indoor and outdoor air pollution, can increase the risk of CAP.

3.3. Microbiology (Common Pathogens)

CAP can be caused by a variety of infectious agents, including bacteria, viruses, and less commonly, fungi. Understanding the common pathogens associated with CAP is crucial for appropriate treatment selection. Key microbial factors include:

- **Bacterial Pathogens:** The most common bacterial causes of CAP include Streptococcus pneumoniae, Haemophilus influenzae, Staphylococcus aureus, and atypical pathogens such as Mycoplasma pneumoniae, Chlamydia pneumoniae, and Legionella pneumophila.
- **Viral Pathogens:** Viral causes of CAP include influenza viruses, respiratory syncytial virus (RSV), adenovirus, and parainfluenza virus. Influenza co-infection with bacterial pathogens is also a concern.

- **Fungal Pathogens**: Although less common, fungal infections like Pneumocystis jirovecii pneumonia (PJP) can occur in immunocompromised people.

4. Clinical Presentation and Diagnosis

4.1. Signs and Symptoms

Community-Acquired Pneumonia (CAP) presents with a wide range of clinical signs and symptoms that may vary in severity. Common clinical features include:

- **Cough:** Most patients with CAP will have a cough, often producing sputum that can be purulent or blood-tinged.
- **Fever:** Elevated body temperature is a common symptom, although it may not be present in all cases, especially in older adults.
- **Dyspnoea:** Shortness of breath may range from mild to severe, depending on the extent of lung involvement.
- **Chest Pain:** Sharp or pleuritic chest pain, exacerbated by deep breathing or coughing, is a frequent complaint.
- **Fatigue:** Many patients experience fatigue and weakness, which can be significant, particularly in severe cases.
- **Systemic Symptoms:** These can include chills, sweats, myalgias, and headaches.
- **Gastrointestinal Symptoms:** Nausea, vomiting, and diarrhoea may sometimes occur.
- **Confusion:** In older adults or those with underlying cognitive impairment, CAP can present with acute confusion or exacerbation of pre-existing cognitive deficits.

4.2. Physical Examination

Clinical evaluation is crucial for diagnosing CAP. Key findings on physical examination may include:

- **Fever:** Elevated body temperature is a common finding.
- **Tachypnoea:** Increased respiratory rate, especially in severe cases.
- **Tachycardia:** Elevated heart rate may result from fever or hypoxia.
- **Cyanosis:** Bluish discoloration of the lips and nail beds can indicate severe hypoxaemia.
- **Decreased Breath Sounds:** On auscultation, diminished breath sounds or crackles, may be heard over affected lung areas.
- **Dullness to Percussion:** Dullness on percussion can suggest pleural effusion.
- **Signs of Respiratory Distress:** Use of accessory muscles may indicate respiratory distress.

4.3. Radiological Evaluation

- **Chest X-ray within 4 hours of arrival in a patient with suspected CAP:** A chest X-ray is often the initial imaging choice. Findings may include consolidation, infiltrates, or pleural effusion. The location and pattern of opacities can provide clues about the causative pathogen.
- **CT Scan:** A CT scan may be indicated in severe or complicated cases, or when a more detailed evaluation is necessary. It can reveal smaller lesions and help identify abscesses or other complicating factors.

4.4. Laboratory Tests

Laboratory tests support the diagnosis and guide management. Relevant tests include:

- **Full Blood Count (FBC):** Elevated white blood cell count (leucocytosis) with a left shift may suggest bacterial infection. A high neutrophil-to-lymphocyte ratio may also be indicative of bacterial pneumonia.
- **Inflammatory Markers:** Elevated C-reactive protein (CRP) and procalcitonin levels (not commonly checked outside of the intensive care setting) can suggest a bacterial aetiology and help monitor treatment response.
- **Arterial Blood Gas (ABG):** ABG analysis can assess oxygenation and acid-base balance, especially in patients with severe CAP.
- **Sputum Culture and Gram Stain:** Collecting sputum samples for culture and Gram staining can aid in identifying the causative pathogen and its susceptibility to antibiotics.
- **Respiratory Viral Screen:** In cases where viral aetiology is suspected, a respiratory viral panel can identify specific viral pathogens.
- **Atypical Pneumonia Screen:** These throat and nose swabs are helpful in screening for viruses and atypical pathogens including: SARS-CoV2, Influenza A&B, RSV, Parainfluenza, Rhionvirus, Enterovirus, Adenovirus, Parechovirus, Humana Metapneumonvirus, Coronavirus, Mycooplasma pneumoniae, Legionella pneumophila and Legionella longbeachae, Chlamidya pneumonia and Chlamydia psittaci)
- **Blood Cultures:** Blood cultures may be necessary in severe CAP or when sepsis is suspected to identify the causative pathogen.
- **HIV screen:** Consider in all patients with a confirmed pneumonia

5. Severity Assessment

5.1. Criteria for Assessing Severity

Assessing the severity of Community-Acquired Pneumonia (CAP) is essential to guide appropriate management decisions. Several clinical scoring systems are commonly used for this purpose:

- **CURB-65 Score:** This tool assesses five key criteria: **C**onfusion, **U**rea >7 mmol/L, **R**espiratory rate ≥30 breaths per minute, **B**lood pressure (systolic <90 mm Hg or diastolic ≤60 mm Hg), and Age **≥65** years. Each criterion scores 1 point, with higher scores indicating greater severity.

Completion of CURB 65 is compulsory for patients with community acquired pneumonia. The CURB 65 score MUST be clearly documented in the medical clerking proforma. Correct management of CAP can only be done if this score is completed.

- **CRB-65 Score:** Similar to CURB-65 but excludes the urea – it is primarily used in the community. It evaluates **C**onfusion, **R**espiratory rate ≥30 breaths per minute, **B**lood pressure (systolic <90 mm Hg or diastolic ≤60 mm Hg), and Age **≥65** years.

5.2. Risk Stratification

Once severity is assessed, patients can be categorized into different risk strata, which guide decisions about outpatient or inpatient management:

- **Low Risk:** Patients with low severity scores (e.g., CURB-65 of 0 or 1) are typically suitable for outpatient management with appropriate follow-up.
- **Intermediate Risk:** Patients with intermediate severity scores (e.g., CURB-65 of 2) may require closer monitoring and a decision based on clinical judgment regarding outpatient versus inpatient care.

Patients with CURB 65 score of 3 or greater should have medical handover (at the hospital at night team meeting) out of hours if escalation to critical care is appropriate.

- **High Risk:** Patients with high severity scores (e.g., CURB-65 of 3 or more) are at high risk of complications and should be admitted to the hospital for inpatient management.

A medical consultant should review patients whose CURB 65 score is 4 or greater to decide whether escalation to Critical care is appropriate.

5.3. Determining Outpatient vs. Inpatient Management

Deciding whether a patient with CAP should be managed as an outpatient or be admitted to the hospital depends on various factors, including severity, comorbidities, and the availability of resources:

- **Outpatient Management:** Low-risk patients with CAP who are clinically stable, have good home support, and can comply with oral antibiotics and follow-up care can often be treated as outpatients. They should have access to appropriate follow-up and clear instructions for seeking medical attention if their condition worsens.
- **Inpatient Management:** High-risk patients with CAP, including those with severe symptoms, significant comorbidities, or certain clinical or laboratory findings, should be admitted to the hospital for closer monitoring and intravenous antibiotics. In some cases, intensive care unit (ITU) admission may be necessary.

6. Initial Management in the Emergency Department/Acute Medicine

6.1. ABCDE Approach

In the acute setting, the initial management of patients with suspected Community-Acquired Pneumonia (CAP) follows the ABCDE approach:

- **Airway:** Ensure a patent airway. Patients with severe respiratory distress or altered mental status may require airway support, including oxygen supplementation or, in extreme cases, intubation.
- **Breathing:** Assess the patient's respiratory rate, effort, and oxygen saturation. Administer supplemental oxygen as needed to maintain oxygen saturation above 90-92% in non-hypoxic patients and higher in those with risk factors like COPD.
- **Circulation:** Monitor vital signs, including blood pressure, heart rate, and capillary refill. Intravenous access should be established for fluid resuscitation if necessary.
- **Disability:** Assess the patient's mental status. Patients with confusion or altered mental status may require additional evaluation for possible sepsis or central nervous system involvement.
- **Exposure:** Ensure the patient is appropriately dressed and adequately covered to maintain body temperature. Hypothermia can worsen respiratory distress.

6.2. Oxygen Therapy

Prescribe oxygen therapy as necessary to maintain adequate oxygenation according to trust guidelines on EPMA. Oxygen delivery methods should be selected based on the patient's clinical condition and oxygen saturation levels. Common options include:

- **Nasal Cannula:** Suitable for patients with mild hypoxia or for maintaining oxygen saturation in non-hypoxic patients.
- **Venturi Mask:** Provides precise oxygen concentration and is helpful for patients with more severe hypoxia.
- **Non-Rebreather Mask:** Reserved for patients with severe hypoxia who require the highest possible oxygen concentration.
- **High -Flow Nasal Cannula (Optiflow):** Reserved for patients with severe hypoxia who require the highest possible oxygen concentration in critical care
- **Continuous positive airway pressure (CPAP)**: Reserved for patients with severe hypoxia who require the highest possible oxygen concentration in critical care – these patients are at high risk of respiratory arrest and should be managed in critical care where intubation can happen promptly.

Target saturations should be clearly stated:

- Maintain PaO_2 at >8 kPa and SpO_2 94–98%. High concentrations of oxygen can safely be given in patients who are not at risk of hypercapnic respiratory failure, though oxygen is only required if SpO_2 <94% on air.

- Patients at risk of Type 2 respiratory failure – aim O_2 sats 88 – 92 %.

6.3. Intravenous Fluids

Intravenous (IV) access should be established to administer fluids and medications. The choice of fluids depends on the patient's volume status. In patients with dehydration or shock, crystalloid fluids (e.g., normal saline or Hartman's) may be necessary.

6.4. Antibiotic Selection and Empiric Therapy

Initiating appropriate antibiotic therapy within 4 hours of presentation to hospital is a crucial aspect of the initial management of CAP in the acute setting. The choice of antibiotics should consider the severity of illness and local resistance patterns and should be based on the Microguide.

Infection	Specimens	First Line	True penicillin allergy	Duration of Treatment	Comments
Community Acquired Pneumonia: **Low severity CURB-65 Score 0 to 1**	Listed Above	Amoxicillin PO 500mg tds (non severe lobar pneumonia) If atypical agent suspected use Doxycycline PO 200mg (day one then 100mg)	Doxycycline PO 200mg (day one then 100mg od)	5 days	• Use Amoxicillin PO 1g tds if patient is able to tolerate it. • Use IV route if oral route not available
Community Acquired Pneumonia: **Moderate severity CURB-65 Score 2**		Amoxicillin PO 500mg tds + Doxycycline PO 200mg (day one) then 100mg od	Doxycycline PO 200mg (day one) then 100mg od	5 days then review	• Use Amoxicillin PO 1g tds if patient is able to tolerate it. • Use IV route if oral route not available • Stop at 5 days unless microbiological results suggest a longer course is needed or patient is not clinically stable
Community Acquired Pneumonia: **High severity CURB-65 3 or more**		Benzylpenicillin IV 1.2g qds + Clarithromycin PO/IV 500mg bd	Vancomycin IV as per policy + Clarithromycin PO/IV 500mg bd	5 days then review (including IVs) Review IV to oral switch at 48 hours	• Use IV route if oral route not available • Clarithromycin is well absorbed and should be used orally if this route is available • Stop clarithromycin if an atypical infection is no longer suspected • Stop at 5 days unless microbiological results suggest a longer course is needed or patient is not clinically stable
Community Acquired Pneumonia **High severity CURB-65 3 or more** ***for patients who are critically ill/require high dependency care/have major co-morbidities/on advice of respiratory team/Consultant Microbiologist***		Co-amoxiclav IV 1.2g tds + Clarithromycin PO/IV 500mg bd **If pt at high risk of sepsis – see Sepsis Guideline**	Vancomycin IV as per policy + Clarithromycin PO/IV 500mg bd	5 days then review (including IVs) Review IV to oral switch at 48 hours Some infections e.g. Legionella, S. aureus, gram negatives may require longer treatment	• Use Amoxicillin PO 1g tds if patient is able to tolerate it. Stop clarithromycin if an atypical infection is no longer suspected • Stop at 5 days unless microbiological results suggest a longer course is needed or patient is not clinically stable • Alternative regimen on advice of respiratory physician only: Ceftriaxone IV 2g od + Clarithromycin PO/IV 500mg bd
		Review after 48 hours and step down to oral therapy if appropriate: Amoxicillin PO 500mg tds +/- Clarithromycin PO 500mg bd **If penicillin allergic**: Doxycycline PO 200mg (day one) then 100mg od			

7. Special Considerations

7.1. Geriatrics

- Elderly patients are at increased risk of CAP and its complications, including severe outcomes.
- Be vigilant for atypical presentations, including delirium or worsening of cognitive function.
- Vaccination against pneumococcus and influenza is particularly important in this population.

7.2. Immunocompromised Patients

- In immunocompromised patients (e.g., those with HIV/AIDS, transplant recipients, individuals on immunosuppressive medications), the approach to CAP management should consider the underlying condition and potential opportunistic pathogens.
- Broad-spectrum antibiotics and antivirals may be necessary, depending on the specific immunosuppressed state.

7.3. Aspiration Pneumonia

- Aspiration pneumonia typically results from the inhalation of gastric contents into the lungs.
- Address underlying risk factors for aspiration, such as dysphagia, and implement measures to reduce recurrence.
- Antibiotic therapy should cover oral anaerobes in addition to common CAP pathogens.

7.4. Atypical Pathogens

- In cases where Legionella or Mycoplasma pneumoniae is suspected, consider additional diagnostic tests such as Legionella urinary antigen testing or specific serologic tests.
- Appropriate antibiotics, such as macrolides should be initiated for atypical pathogen coverage.

7.5. CAP in Pregnancy

- The management of CAP in pregnant women should prioritise maternal and foetal well-being.
- Antibiotic selection should consider the safety of the medication during pregnancy.
- Monitor for signs of sepsis or respiratory compromise, as pregnant women may be at increased risk for severe CAP.

7.6. Comorbid Conditions

- Patients with comorbid conditions like chronic lung disease (e.g., COPD), diabetes, or heart disease may require more intensive management and monitoring due to their increased risk of complications.
- Tailor treatment to address both CAP and the underlying condition.

8. Complications and Management

8.1. Pleural Effusion

- Suspect pleural effusion in patients with persistent chest pain, worsening respiratory distress, or clinical signs of fluid accumulation.
- Diagnose with imaging (e.g., ultrasound or CT scan) and confirm with pleural aspiration for fluid analysis.

Management:

- Treat the underlying cause of the pleural effusion (e.g., CAP).
- Drain large effusions if they cause respiratory compromise or discomfort.
- If pleural aspiration confirms empyema (pH <7.2) will need a chest drain
- Empiric antibiotics may need adjustment based on pleural fluid analysis.

8.2. Abscess Formation

- Consider abscess formation in patients with persistent fever, worsening symptoms, or lack of clinical improvement despite appropriate antibiotic therapy.
- Confirm with imaging studies, typically a CT scan.

Management:

- Drain abscesses with interventional radiology or surgical consultation.
- Adjust antibiotic therapy based on culture and sensitivity results.

8.3. Sepsis and Septic Shock

- Be vigilant for signs of sepsis or septic shock, which can occur in severe CAP cases.
- Monitor observations (NEWS2), mental status, and laboratory parameters, including lactate levels.

Management:

- Initiate early goal-directed therapy for sepsis, including intravenous fluids, appropriate antibiotics, and vasopressors if necessary.
- Transfer to an intensive care unit (ITU) for advanced management and monitoring.

8.4. Respiratory Failure

- Patients with severe CAP may develop respiratory failure.
- Monitor for increasing oxygen requirements, confusion, or signs of impending respiratory failure.

Management:

- Provide aggressive respiratory support, including non-invasive positive pressure ventilation (NIPPV) or mechanical ventilation as needed.
- Optimise fluid balance and consider diuretics if pulmonary edema is present.

9. Follow-Up Care

9.1. Criteria for Discharge

Before discharging a patient with Community-Acquired Pneumonia (CAP), ensure that specific criteria are met:

- **Clinical Stability:** The patient should demonstrate clinical stability with improving symptoms, including resolution of fever, reduced respiratory distress, and stable observations.
- **Adequate Oral Intake:** The patient should be able to tolerate oral intake, including medications and fluids.
- **Appropriate Home Support:** Ensure that the patient has appropriate home support and can adhere to prescribed medications and follow-up care.

9.2. Follow-Up Care

After discharge, it is essential to provide clear instructions for follow-up care:

- **Follow-Up Appointment:** Arrange a follow-up appointment within a six weeks with GP
- **Medication Compliance:** Emphasise the importance of completing the full course of antibiotics and any other prescribed medications.
- **Repeat Imaging:** Repeat the PA chest x-ray in 6 weeks after discharge to ensure resolution of consolidation (please do not ask the GP to repeat this investigation).
- **Vaccination:** Ensure that the patient is up to date with recommended vaccinations, including pneumococcal, influenza and coronavirus vaccines.
- **Symptom Monitoring:** Instruct the patient to monitor for any worsening symptoms and seek medical attention if they experience significant deterioration (safety netting) – provide with Community Acquired Pneumonia leaflet.

9.3. Reinfection Prevention

Preventing reinfection is crucial in managing CAP:

- **Smoking Cessation:** Documenting the smoking status of patients admitted with community-acquired pneumonia is a fundamental aspect of care. It is essential to offer comprehensive support to patients who smoke, both during their hospitalisation and after discharge. This includes providing brief but effective advice on smoking cessation, offering nicotine replacement therapy as appropriate, and referring patients to specialized tobacco dependency specialists. It is crucial to emphasize the importance of quitting smoking to these patients, as smoking represents a significant risk factor for the development and exacerbation of CAP.
- **Hand Hygiene:** Promote good hand hygiene to reduce the risk of viral respiratory infections.
- **Vaccination:** Ensure that the patient is up to date with recommended vaccinations, including pneumococcal, influenza and coronavirus vaccines to reduce the risk of recurrent pneumonia.
- **Chronic Disease Management:** Manage underlying chronic conditions effectively to reduce the risk of pneumonia recurrence.

9.4. Discharge Summary

Prepare a detailed discharge summary for the patient and their GP, including:

- Diagnosis and clinical course
- Smoking status
- Medications prescribed
- Follow-up appointments
- Any recommended lifestyle changes or preventive measures
- Contact information for further questions or concerns

10. Related Documents

- Prescription and Administration of Oxygen in Adults
- Critical Illness Risk Assessment Tool National Early Warning Score version 2 (NEWS 2) in Adult Patients

11. References

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12. Monitoring Compliance

Compliance with the process will be monitored through the following:

Key elements	Process for Monitoring	By Whom (Individual / group /committee)	Responsible Governance Committee /dept	Frequency of monitoring
Completion of the Pneumonia Bundle	Audit	Acute Medicine Governance		Yearly
Performed the tasks outlined in the bundle	Audit	Acute Medicine Governance		Yearly
Added the bundle to the case notes	Audit	Acute Medicine Governance		Yearly

The audit results are to be discussed at relevant governance meetings in Emeregcy Medicine, Acute Medicine and Respiratory Medicie to review the results and recommendations for further action. Then sent to Medicine Division Clinical Governance Board who will ensure that the actions and recommendations are suitable and sufficient.

13. Appendices

There are no appendices for this document.

14. Equality Impact Assessment (EIA)

Type of function or policy	Existing

Division	Medicine	**Department**	Acute Medicine
Name of person completing form	Dr Duduzile Musa	**Date**	January 2024

Equality Area	**Potential Negative Impact**	**Impact Positive Impact**	**Which groups are affected**	**Full Impact Assessment Required YES/NO**
Race				No
Pregnancy & Maternity				No
Disability				No
Religion and beliefs				No
Sex				No
Gender reassignment				No
Sexual Orientation				No
Age				No
Marriage & Civil Partnership				No
EDS2 – How does this change impact the Equality and Diversity Strategic plan (contact HR or see EDS2 plan)?		N/A		

- **A full assessment will only be required if: The impact is potentially discriminatory under the general equality duty**
- **Any groups of patients/staff/visitors or communities could be potentially disadvantaged by the policy or function/service**
- **The policy or function/service is assessed to be of high significance**

IF IN DOUBT A FULL IMPACT ASSESSMENT FORM IS REQUIRED

The review of the existing policy re-affirms the rights of all groups and clarifies the individual, managerial and organisational responsibilities in line with statutory and best practice guidance.