**Introduction**

Introduction Respiratory diseases continue to represent a significant global health burden, affecting millions of individuals annually and contributing to high rates of morbidity and mortality across all age groups. These conditions range from acute infections such as influenza and pneumonia to chronic illnesses like asthma, chronic obstructive pulmonary disease (COPD), and pulmonary hypertension. Understanding their clinical presentation, underlying causes, and appropriate management strategies is essential for effective prevention and treatment.

This document provides a comprehensive synthesis of factual, evidence-based information on 18 key respiratory diseases. Each section outlines the major symptoms, recommended treatments based on those symptoms, and best practices or preventive measures endorsed by reputable health authorities including the World Health Organization (WHO), Centers for Disease Control and Prevention (CDC), National Health Service (NHS), and other recognized medical institutions.

1. **Acute Respiratory Distress Syndrome (ARDS) Key symptoms**

Rapid severe shortness of breath, rapid shallow breathing, cough, low oxygen saturation (cyanosis), chest crackles, fast heart rate, confusion, extreme fatigue; often develops in someone already hospitalized with trauma, sepsis, pneumonia or severe COVID/illness. NHLBI.

**Treatment (by symptoms / clinical state)**

Urgent inpatient care in ICU. Supportive respiratory care is central: high-flow oxygen, mechanical ventilation with lung-protective settings (low tidal volumes), prone positioning when appropriate, fluid management, treatment of the underlying cause (e.g., antibiotics for sepsis/pneumonia). Vasopressors if hypotensive, and other organ support as needed.

**Best practices / recommendations**

Early recognition and transfer to ICU; treat underlying cause promptly; use evidence-based ventilator strategies to reduce ventilator-induced lung injury; follow rehabilitation after recovery. Discuss prognosis transparently , ARDS can be life-threatening. NHLBI.

1. **Asbestosis Key symptoms**

Progressive exertional shortness of breath, persistent dry cough, chest tightness, crackles on auscultation, clubbing of fingers in advanced disease. Symptoms often appear decades after asbestos exposure.

**Treatment (by symptoms / clinical state)**

No cure to reverse fibrosis. Management is symptomatic and preventive: oxygen therapy for hypoxemia, pulmonary rehabilitation/exercise programs, inhalers if obstructive features present, prompt treatment of respiratory infections, and monitoring with imaging and lung function tests. Smoking cessation is essential.

**Best practices / recommendations**

Prevent exposure (workplace controls, PPE). Screen and monitor people with known asbestos exposure. Vaccinate against influenza and pneumococcus. Refer to pulmonology for long-term monitoring and compensation/legal advice when appropriate.

1. **Aspergillosis (spectrum: allergic, aspergilloma, invasive) Key symptoms**

Vary by type: allergic bronchopulmonary aspergillosis (wheeze, asthma worsening); aspergilloma (often mild cough, haemoptysis); invasive disease (fever, cough, chest pain, progressive shortness of breath , severe in immunocompromised).

**Treatment (by symptoms / clinical state)**

Allergic forms: corticosteroids and sometimes antifungal azoles (eg, itraconazole) to reduce steroid dose.

Aspergilloma: observation if asymptomatic; surgical resection for significant hemoptysis or impairment; sometimes antifungals adjunctively.

Invasive aspergillosis: systemic antifungal therapy (voriconazole often first-line), reduce immunosuppression when feasible, and sometimes surgical debridement.

**Best practices / recommendations**

Early identification of the type (allergic vs invasive) guides therapy. In high risk patients (neutropenic, transplant), maintain vigilance and consider prophylactic/early antifungal strategies per specialist guidance. Avoid unnecessary steroid escalation without addressing fungal causes.

1. **Asthma Key symptoms**

Intermittent wheeze, chest tightness, cough (often worse at night/early morning), variable shortness of breath; may be triggered by allergens, exercise, infections, irritants.

**Treatment (by symptoms / clinical state)**

Symptom relief: short acting bronchodilator (SABA) for acute symptoms. Controller therapy: inhaled corticosteroids (daily) ± long-acting bronchodilators for persistent disease. Severe/acute asthma attacks may need oral corticosteroids, nebulized bronchodilators, and emergency care. Personal action plan and inhaler technique are critical.

**Best practices / recommendations**

Identify and avoid triggers, ensure correct inhaler technique and adherence, use a written asthma action plan, vaccinate against influenza and pneumococcus when indicated, and seek urgent care for worsening breathlessness or poor response to reliever inhaler. For severe/refractory asthma, consider referral for biologic therapies.

1. **Bronchiectasis Key symptoms**

Chronic daily productive cough (large volumes of sputum), recurrent chest infections/exacerbations, hemoptysis, breathlessness, fatigue; often focal to lobes on CT scan (airway dilation).

**Treatment (by symptoms / clinical state)**

Airway clearance techniques (physiotherapy, devices, saline nebulization), treat acute infective exacerbations with targeted antibiotics (sputum culture guided), bronchodilators if reactive airways, macrolide prophylaxis in selected patients to reduce exacerbations, and surgery for localized disease not controlled medically. Vaccination and prompt treatment of infections.

**Best practices / recommendations**

Regular follow up with a respiratory specialist, individualized airway clearance plan, sputum monitoring, immunization, and smoking cessation. Early treatment of exacerbations helps prevent progression. Consider multidisciplinary care (physio, infectious disease).

1. **Bronchitis (acute) & 7. Chronic Bronchitis Key symptoms**

Acute bronchitis: recent onset cough (may be productive), sometimes fever, chest discomfort; typically viral. Chronic bronchitis: chronic productive cough for ≥3 months in 2 consecutive years (often caused by smoking/COPD), persistent sputum production and breathlessness.

**Treatment (by symptoms / clinical state)**

Acute (symptom-based): mostly supportive , rest, fluids, inhaled bronchodilators for wheeze, analgesics/antipyretics; antibiotics generally not indicated unless bacterial infection suspected (whooping cough, pneumonia). Manage complications.

Chronic bronchitis (part of COPD): smoking cessation, bronchodilators (inhalers), pulmonary rehab, vaccination, oxygen therapy if hypoxic; treat exacerbations with short-course steroids and antibiotics if bacterial infection suspected.

**Best practices / recommendations**

Avoid unnecessary antibiotics for acute bronchitis to prevent resistance; vaccinate (flu, pneumococcus) and quit smoking to prevent chronic disease; seek care for high fever, difficulty breathing, or cough lasting beyond expected course. Chronic cases need COPD-targeted care.

1. **Chronic cough Key symptoms**

Cough lasting >8 weeks in adults (duration definitions vary); common causes include postnasal drip (upper airway cough syndrome), asthma, gastroesophageal reflux (GERD), ACE inhibitors, chronic bronchitis, or infections.

**Treatment (by symptoms / clinical state)**

Target the underlying cause: treat postnasal drip (antihistamines, nasal steroids), optimize asthma therapy, manage GERD (lifestyle, PPIs when indicated), stop offending medications (e.g., ACE inhibitors), and consider trials of inhaled steroids or cough-suppressants in selected cases after evaluation. Investigations (CXR, spirometry, ENT referral) guide therapy.

**Best practices / recommendations**

Systematic evaluation to identify treatable causes; avoid chronic empirical antibiotics; use smoking cessation and environmental control; refer to specialist if red flags (haemoptysis, weight loss, abnormal imaging, voice changes).

1. **Chronic Obstructive Pulmonary Disease (COPD) Key symptoms**

Persistent exertional breathlessness, chronic productive cough, wheeze, frequent chest infections/exacerbations; progressive over time, commonly due to smoking or air pollution.

**Treatment (by symptoms / clinical state)**

No cure , optimize symptoms and prevent exacerbations: smoking cessation, bronchodilators (short/long-acting), inhaled corticosteroids for selected patients, pulmonary rehabilitation, oxygen therapy for chronic hypoxemia, and antibiotics/steroids for exacerbations. Vaccination and regular follow up are important. New biologics/therapies are emerging for select phenotypes.

**Best practices / recommendations**

Aggressive smoking cessation, early pulmonary rehab, ensure vaccinations, self-management plans for exacerbations, and prompt treatment of exacerbations. Assess for comorbidities (cardiac disease, depression). Refer to specialist for severe/refractory disease.

1. **Influenza (Flu) Key symptoms**

Abrupt onset fever, myalgia, headache, cough, sore throat, nasal congestion, fatigue; severity ranges from mild to severe (risk increased in elderly, pregnant, very young, chronic disease).

**Treatment (by symptoms / clinical state)**

Most cases: supportive care (rest, fluids, antipyretics). Antiviral drugs (oseltamivir, zanamivir, baloxavir, peramivir) are recommended for people at high risk of complications and can reduce duration/severity if started early (ideally within 48 hours). Hospitalize/treat complications (pneumonia) as indicated.

**Best practices / recommendations**

Annual influenza vaccination is primary prevention. Early antiviral treatment for high-risk patients and those hospitalized. Good hygiene, avoid close contact when ill, and seek care for severe symptoms or risk factors.

1. **Mesothelioma Key symptoms**

Progressive breathlessness, chest pain, persistent cough, pleural effusion (fluid in the chest), weight loss; often a history of asbestos exposure with long latency.

**Treatment (by symptoms / clinical state)**

Oncology-directed care: surgery (in selected early cases to remove tumor or drain fluid), chemotherapy (mainstay for many patients), radiotherapy for symptom control or local disease, and newer targeted/immunotherapies in trials/selected cases. Palliative measures (pleural drainage, indwelling catheters) manage breathlessness from effusions.

**Best practices / recommendations**

Early specialist referral to a multidisciplinary thoracic oncology team; confirm exposure history; supportive and palliative care planning; consider clinical trials. Occupational health and legal/compensation advice where relevant.

1. **Pneumonia Key symptoms**

Cough (often productive), fever, pleuritic chest pain, shortness of breath, fatigue; signs may include abnormal chest auscultation and radiographic infiltrates. Severity varies from mild outpatient illness to life-threatening inpatient disease.

**Treatment (by symptoms / clinical state)**

Outpatient mild cases: appropriate oral antibiotics guided by likely cause (typical vs atypical), supportive care (fluids, antipyretics). Inpatients: IV antibiotics, oxygen, fluids, and management of complications. Etiology (bacterial, viral, fungal) and severity determine specific therapy. Vaccination (pneumococcal, influenza) is preventive.

**Best practices / recommendations**

Use clinical severity scores (eg, CURB-65) to decide outpatient vs inpatient care; obtain chest imaging and sputum/blood cultures when indicated for moderate/severe disease; vaccinate high-risk groups; seek prompt care for breathing difficulty, high fever, or if symptoms rapidly worsen.

1. **Pneumothorax (collapsed lung) Key symptoms**

Sudden unilateral pleuritic chest pain and acute shortness of breath; decreased breath sounds on affected side; may progress to hemodynamic compromise in tension pneumothorax.

**Treatment (by symptoms / clinical state)**

Small, stable pneumothorax: observation and oxygen (may reabsorb). Larger or symptomatic pneumothorax: needle aspiration or chest tube insertion. Tension pneumothorax: immediate decompression (needle or emergency chest tube). Surgical repair for persistent air leaks or recurrent events.

**Best practices / recommendations**

Rapid assessment and chest imaging (CXR/CT). Emergency decompression for tension physiology. Address underlying lung disease (if present) and counsel on risk activities (high-altitude, scuba diving) until fully resolved.

1. **Pulmonary Hypertension (PH) Key symptoms**

Progressive exertional breathlessness, fatigue, chest pain, syncope or near-syncope, palpitations; signs of right heart strain in advanced disease.

**Treatment (by symptoms / clinical state)**

Manage underlying cause (left heart disease, lung disease, thromboembolic disease). Specific PH therapies to relax pulmonary arteries include endothelin receptor antagonists, PDE-5 inhibitors (sildenafil), prostacyclin analogues, soluble guanylate cyclase stimulators and calcium channel blockers (in vasoreactive patients). Diuretics and oxygen for symptom control; anticoagulation in selected etiologies. Specialist referral and right-heart catheterization are standard for diagnosis and therapy guidance.

**Best practices / recommendations**

Early referral to a PH center for accurate classification and tailored therapy; exercise programs in supervised settings; pregnancy counseling (high risk); and regular cardiopulmonary monitoring.

1. **Respiratory Syncytial Virus (RSV) Key symptoms**

In adults/children: runny nose, cough, fever, sore throat; in infants and older adults it can cause bronchiolitis/pneumonia with wheeze, difficulty feeding, apnea, and breathing difficulty. Most cases are mild and self-limited.

**Treatment (by symptoms / clinical state)**

Mainly supportive: fluids, suctioning nasal secretions in infants, oxygen and hydration in hospital if needed. Severe cases (high-risk infants) may receive monoclonal antibody prophylaxis (eg, nirsevimab) or, historically, palivizumab; antiviral options are limited and reserved for research/selected cases.

**Best practices / recommendations**

Preventive hygiene (handwashing, avoid contact when ill), vaccinating pregnant persons where approved to protect infants, targeted prophylaxis for high-risk infants, seek urgent care for breathing difficulty, poor feeding, or cyanosis in infants.

1. **Tuberculosis (TB) Key symptoms**

Pulmonary TB: chronic cough (often >2–3 weeks), chest pain, haemoptysis, weight loss, night sweats, fever. Latent TB has no symptoms.

**Treatment (by symptoms / clinical state)**

Drug-susceptible TB: standard 6-month regimen (2 months HRZE isoniazid, rifampicin, pyrazinamide, ethambutol; then 4 months HR). Drug-resistant TB uses longer, specialized regimens (newer shorter regimens for MDR/RR-TB exist and WHO updates should be consulted). Directly Observed Therapy (DOT or vDOT) is recommended to ensure adherence. Monitor for drug toxicity (liver, vision, etc.).

**Best practices / recommendations**

Rapid diagnosis (sputum microscopy, culture, molecular testing), start appropriate therapy promptly, adherence support (DOT/vDOT), contact tracing, and public health reporting. Vaccination (BCG) policies vary by country; TB control relies on public health systems and social supports.

1. **Bronchiolitis Key symptoms**

Viral prodrome (runny nose, cough) progressing to cough, wheeze, tachypnea, and feeding difficulty in infants; peak severity in babies <12 months. Most common cause is RSV.

**Treatment (by symptoms / clinical state)**

No specific antiviral for routine cases , supportive care: hydration, nasal suction, oxygen if hypoxic, bronchodilator trial only selectively per clinician judgment. Hospitalize if poor feeding, respiratory distress, dehydration, or hypoxia.

**Best practices / recommendations**

Keep infants hydrated; avoid unnecessary medications; emphasize hand hygiene and avoid exposure of infants to sick contacts. High risk infants may be eligible for prophylactic monoclonal antibodies (see RSV recommendations) during RSV season. Seek immediate care for breathing difficulty, cyanosis, or inability to feed.

1. **Sleep Apnea (Obstructive & Central) Key symptoms**

Loud snoring, witnessed apneas (stopped breathing), gasping/choking on waking, daytime sleepiness, morning headaches, impaired concentration; central sleep apnea features reduced respiratory effort during apneas.

**Treatment (by symptoms / clinical state)**

Obstructive sleep apnea (OSA): first line CPAP (continuous positive airway pressure) to maintain airway patency during sleep; oral mandibular advancement devices for mild/moderate OSA or CPAP intolerance; weight loss, positional therapy, and upper airway surgery for selected cases. Central sleep apnea management may include treating underlying cause, adaptive servoventilation for complex cases, oxygen or other modalities based on specialist evaluation.

**Best practices / recommendations**

Formal sleep study (polysomnography) to diagnose and quantify severity; lifestyle changes (weight loss, avoid sedatives/alcohol before bed), treat comorbid conditions (hypertension, atrial fibrillation), and regular follow-up to ensure CPAP adherence and effectiveness. Addressing OSA reduces cardiovascular risk and daytime impairment.

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