Cough: Clinical Assessment, Laboratory Evaluation, and Pharmacological and Nursing Management in Healthcare Practice

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Abstract:

Background: Cough is a frequent clinical symptom across care settings. It reflects airway reflex activity. It is linked to infection, inflammation, cardiac disease, gastrointestinal reflux, and drug effects. It creates diagnostic difficulty due to many causes and limited objective measurement. **Aim:** This work reviews clinical assessment, laboratory evaluation, and management of cough in healthcare practice. It focuses on classification, risk factors, nursing role, and coordinated care. **Methods:** A narrative clinical review approach was used. Evidence from respiratory medicine, nursing practice, and diagnostic guidelines was synthesized. Data were organized across acute, subacute, and chronic cough categories. Clinical evaluation pathways and treatment strategies were analyzed. **Results**: Cough accounts for about 30 million outpatient visits yearly. Around 40 percent of cases require specialist referral. Asthma affects about 26 million individuals in the United States. Gastroesophageal reflux contributes to up to 40 percent of chronic cough cases. Prevalence ranges from 5 to 40 percent across populations. Assessment depends on history, duration, medication review, and red flag symptoms. Chest radiography, spirometry, computed tomography, bronchoscopy, and reflux testing support diagnosis. Management depends on cause. Acute cases often require symptomatic treatment. Chronic cases require targeted therapy such as inhaled steroids for asthma, proton pump inhibitors for reflux, antibiotics for infection, and neuromodulators for neurogenic cough. Nursing care focuses on airway clearance, hydration, positioning, education, and secretion management. **Conclusion**: Cough is a symptom with multiple causes across organ systems. It requires structured assessment to identify etiology. Early classification reduces missed serious disease. Treatment must target the cause rather than suppress symptoms alone. Nursing interventions improve airway clearance and patient comfort. Multidisciplinary coordination improves diagnosis and reduces delayed treatment.

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Introduction:

Cough represents one of the most frequently encountered symptoms in clinical practice, accounting for approximately 30 million outpatient visits annually, with nearly 40% of cases ultimately requiring specialist referral to pulmonology services. This high clinical burden reflects the broad spectrum of conditions associated with cough, ranging from self-limiting respiratory infections to serious underlying cardiopulmonary and systemic diseases. As a physiological mechanism, cough functions as a fundamental protective reflex within the respiratory system, designed to clear the airways from inhaled irritants, pathogens, mucus, and foreign particles. It therefore plays a critical role in maintaining airway patency and supporting innate immune defense mechanisms. Despite its protective function, cough is a nonspecific symptom associated with a wide range of etiologies, including infectious, inflammatory, allergic, pharmacological, and malignant conditions. This broad differential diagnosis presents a significant challenge in clinical evaluation, particularly in early stages where accompanying signs may be minimal or absent. In addition, the assessment of cough remains largely subjective, as there are no universally accepted objective tools for accurate quantification or measurement of cough frequency, intensity, or impact. This limitation contributes to variability in clinical interpretation and management decisions. The clinical importance of cough is further emphasized by it potential impact on patient quality of life. Persistent coughing can lead to sleep disturbance, fatigue, musculoskeletal pain, social embarrassment, and reduced functional capacity. In some cases, it may also indicate the presence of an underlying disease process that requires urgent investigation and treatment. For this reason, cough should not be dismissed as a minor symptom but should be systematically evaluated until a benign or self-limiting cause is confirmed. Early recognition of serious etiologies remains essential to prevent delayed diagnosis and optimize patient outcomes [1][2].

Diagnosis

Nursing diagnoses in patients presenting with cough are guided by the underlying respiratory impairment, systemic involvement, and associated physiological changes. One of the primary concerns is ineffective airway clearance, which occurs when secretions, inflammation, or obstruction compromise the ability to maintain a patent airway. This condition may be accompanied by ineffective gas exchange, reflecting impaired oxygen and carbon dioxide exchange at the alveolar level, often related to airway inflammation, infection, or ventilation–perfusion mismatch. An ineffective breathing pattern may also be observed, characterized by altered respiratory rate, depth, or rhythm, commonly associated with respiratory distress, airway irritation, or fatigue of respiratory muscles. Acute pain is frequently reported, particularly when persistent coughing leads to musculoskeletal strain in the chest wall, ribs, or abdominal muscles, further affecting breathing efficiency. Patients with cough may also be at risk for knowledge deficit, especially when they lack understanding of the underlying cause, medication use, or self-management strategies. This can negatively impact adherence to treatment and delay recovery. Hyperthermia may be present in infectious causes of cough, reflecting systemic inflammatory response to bacterial or viral pathogens. Risk for infection is another important diagnosis, particularly in hospitalized patients or those with compromised immune function, where ongoing respiratory infection may worsen or become secondary. Risk for fluid volume deficit can develop due to fever, increased respiratory rate, and reduced oral intake, leading to dehydration and electrolyte imbalance. In addition, patients may experience risk for imbalanced nutrition: less than body requirements due to fatigue, reduced appetite, or increased metabolic demand associated with infection and respiratory effort. Collectively, these nursing diagnoses highlight the multidimensional impact of cough and emphasize the need for comprehensive assessment and individualized care planning to prevent complications and support recovery [1][2][3].

Causes

Cough represents a clinical manifestation categorized by its duration, which reflects underlying pathophysiological mechanisms rather than a single disease entity. Classification divides cough into acute when it persists for less than three weeks, subacute when lasting between three and eight weeks, and chronic when exceeding eight weeks. This temporal framework supports diagnostic reasoning and guides clinical evaluation toward likely etiologies across different stages of respiratory and systemic disease processes. Acute cough in adults most commonly arises from viral upper respiratory tract infections, commonly referred to as the common cold, alongside acute bronchitis. Acute bronchitis is predominantly viral in origin, although bacterial pathogens contribute in approximately 10% of cases. Additional acute causes include acute rhinosinusitis, pertussis infection, asthma exacerbations, chronic obstructive pulmonary disease exacerbations, allergic rhinitis, congestive heart failure, pneumonia, aspiration events, and pulmonary embolism. Each condition triggers cough through airway irritation, mucus hypersecretion, inflammatory mediator release, or mechanical obstruction. Acute rhinosinusitis contributes significantly to healthcare utilization and is often viral when symptoms last fewer than 10 days, while prolonged symptoms suggest bacterial involvement. Cough in this condition results primarily from post-nasal drip and excessive mucus production irritating upper airway receptors [1].

Pertussis, caused by Bordetella pertussis, produces a highly characteristic paroxysmal cough with inspiratory whooping. The disease progresses through catarrhal, paroxysmal, and convalescent phases. The catarrhal phase

includes rhinorrhea and mild systemic symptoms. The paroxysmal phase involves severe coughing episodes with post-tussive vomiting. The convalescent phase features prolonged cough persistence and gradual recovery. Pertussis remains a major contributor to infant morbidity and mortality due to severe respiratory compromise [2]. Asthma is characterized by airway hyperresponsiveness, chronic inflammation, and reversible airflow limitation. Cough results from bronchial narrowing and increased mucus secretion triggered by environmental stimuli. It affects approximately 26 million individuals in the United States [3][4]. Chronic obstructive pulmonary disease exacerbations affect a large global population and involve chronic bronchitis, emphysema, and airflow limitation. Acute exacerbations produce increased airway inflammation, mucus plugging, and bronchoconstriction, all of which stimulate persistent coughing [5].

Allergic rhinitis causes inflammation of the nasal mucosa following allergen exposure, leading to mucus hypersecretion and post-nasal drainage that irritates cough receptors. Congestive heart failure contributes to cough through pulmonary venous congestion. Left-sided cardiac dysfunction leads to fluid accumulation in pulmonary circulation, resulting in alveolar edema and airway irritation that triggers coughing reflexes [6]. Pneumonia, whether viral or bacterial, induces cough through inflammatory airway injury. Bacterial forms typically produce purulent secretions that intensify airway irritation, while viral infections primarily cause mucosal inflammation. Aspiration syndromes occur when airway protective mechanisms fail during swallowing, allowing entry of foreign material into the tracheobronchial tree. This causes direct chemical irritation and secondary infection such as aspiration pneumonia. Pulmonary embolism results in obstruction of pulmonary vasculature, leading to ischemia, inflammation, and increased pulmonary pressure. This produces cough through vascular congestion and inflammatory mediator release. Severe cases may result in tissue necrosis and further airway irritation [7].

Subacute cough most commonly follows respiratory infections and reflects persistent airway inflammation and receptor hypersensitivity after resolution of the initial infection. This stage is typically self-limiting and often requires supportive management. Chronic cough represents a complex diagnostic category requiring structured evaluation due to its multifactorial causes. Upper airway cough syndrome is the most common cause and includes allergic and non-allergic rhinitis, chronic rhinosinusitis, and post-infectious upper airway inflammation. Persistent post-nasal drip continuously stimulates airway receptors leading to chronic cough [8]. Gastroesophageal reflux disease accounts for a substantial proportion of chronic cough cases, estimated up to 40 percent. Acid reflux into the larynx and pharynx causes mucosal irritation and microaspiration. Symptoms often worsen in supine positions due to increased reflux activity [9][10]. Non-asthmatic eosinophilic bronchitis involves airway eosinophilic inflammation without bronchial hyperresponsiveness typical of asthma. Cytokine-mediated inflammation directly irritates cough receptors without significant airflow obstruction. Chronic bronchitis is defined clinically as productive cough lasting at least three months per year for two consecutive years. It results from excessive mucus production and airway inflammation. Secondary bacterial infections frequently worsen symptoms and perpetuate cough cycles.

Post-infectious cough arises from temporary airway hypersensitivity following respiratory infections, often linked to epithelial damage and prolonged receptor activation. Cough variant asthma presents primarily as chronic cough without wheezing. Diagnosis relies on bronchial provocation testing despite normal baseline spirometry. Symptoms worsen with triggers such as cold air or exercise. Malignancy can induce cough through airway obstruction, inflammation, or secretion of bioactive substances. Tumor growth may also predispose to secondary infection and mucus retention. Interstitial lung diseases include fibrotic disorders caused by environmental exposures or autoimmune conditions. Progressive lung scarring leads to reduced compliance and chronic cough due to structural distortion of airway architecture [11]. Obstructive sleep apnea causes intermittent airway collapse during sleep, leading to reflexive cough responses due to transient hypoxia and airway obstruction, particularly in obese individuals [12]. Chronic sinusitis leads to persistent cough through ongoing nasal inflammation, bacterial colonization, and post-nasal drip. Psychosomatic cough represents a diagnosis of exclusion, characterized by habitual coughing without identifiable organic pathology, often linked to behavioral or psychological factors.

Risk Factors

Cough prevalence varies widely across populations, reflecting differences in environmental exposure, lifestyle behaviors, and underlying disease burden. It remains one of the most common presenting symptoms in clinical practice, with estimated prevalence ranging from 5% to 40% depending on population characteristics and diagnostic setting. This variability highlights the broad spectrum of conditions that can manifest as cough, from self-limiting infections to chronic systemic disease. Tobacco smoking represents the most significant modifiable risk factor. Active smokers demonstrate increased airway inflammation, impaired mucociliary clearance, and chronic bronchial irritation. These changes promote persistent cough through continuous stimulation of airway receptors. Long-term exposure to cigarette smoke is strongly associated with chronic bronchitis and chronic obstructive pulmonary disease, both of which are major contributors to chronic cough burden. Environmental exposures also contribute substantially. Air pollution, occupational dust, chemical fumes, and biomass fuel exposure increase airway irritation and inflammatory responses. Individuals working in mining, construction, agriculture, and industrial settings show higher rates of chronic respiratory symptoms, including cough. Infectious exposure is another key determinant. Crowded living conditions, inadequate vaccination coverage, and high transmission settings increase risk of respiratory infections such as influenza, pneumonia, and pertussis, all of which present with cough as a dominant symptom. Age influences susceptibility, with higher risk in older

adults due to reduced immune function, comorbidities, and increased medication use such as angiotensin-converting enzyme inhibitors, which can induce chronic cough. Gender and race differences appear in specific etiologies rather than cough itself. Hormonal factors influence airway responsiveness, while genetic predisposition affects susceptibility to asthma, allergic disease, and certain interstitial lung disorders. Gastroesophageal reflux disease, obesity, and chronic sinus disease also increase risk through mechanical and inflammatory pathways that stimulate airway cough receptors. These combined factors demonstrate that cough is not a standalone disease but a clinical endpoint of diverse pathological processes influenced by behavioral, environmental, and biological determinants [12][13].

Assessment

Cough evaluation depends primarily on structured clinical history and focused physical examination. Cough itself is not a disease. It represents a symptom arising from respiratory, cardiovascular, gastrointestinal, infectious, or pharmacological causes. Many patients do not present because of cough alone but because of its consequences such as sleep disturbance, fatigue, chest discomfort, or functional limitation. Accurate assessment depends on systematic identification of triggers, duration, associated features, and risk exposures. Duration is the first classification step. Acute cough suggests infection or short-term inflammatory processes. Subacute cough often follows respiratory infection and reflects airway hypersensitivity. Chronic cough indicates persistent pathology requiring deeper investigation into respiratory or systemic disease. History of smoking remains essential. Tobacco exposure causes chronic airway inflammation, impaired mucociliary clearance, and structural airway changes. This increases the likelihood of chronic bronchitis, chronic obstructive pulmonary disease, and malignancy-related cough. Passive smoke exposure also contributes, especially in household or occupational environments. Medication review is critical, especially use of angiotensin-converting enzyme inhibitors. These drugs induce cough through increased bradykinin and substance P levels, leading to airway irritation. Discontinuation often resolves symptoms, making drug history a key diagnostic step. Systemic indicators such as weight loss suggest malignancy, chronic infection, or systemic inflammatory disease. Occupational history identifies exposure to dust, chemicals, asbestos, or irritant gases, all of which contribute to chronic airway inflammation and interstitial lung disease.

Temporal variation provides diagnostic direction. Diurnal pattern may indicate asthma or gastroesophageal reflux disease. Nocturnal cough is frequently associated with reflux, post-nasal drip, or cardiac failure. Identifying relieving and aggravating factors further refines differential diagnosis. Cough triggered by cold air, exercise, or allergens suggests airway hyperreactivity. Relief with bronchodilators supports asthma-related pathology. Character of cough is highly informative. Dry cough is commonly associated with asthma, early infection, or medication-related causes. Productive cough suggests infection, chronic bronchitis, or pneumonia. Sputum color provides additional clues. Purulent sputum suggests bacterial infection. Blood-stained sputum raises concern for tuberculosis, malignancy, or pulmonary embolism. Associated hemoptysis requires urgent evaluation due to its association with malignancy, tuberculosis, bronchiectasis, or pulmonary embolism. Fever suggests infectious etiology, particularly pneumonia or bronchitis. Dyspnea indicates possible lower respiratory tract disease, heart failure, or pulmonary embolism. The preceding upper respiratory infection strongly supports post-infectious cough, which is commonly self-limiting but may persist due to airway hypersensitivity. A comprehensive systems review should identify associated symptoms affecting multiple organ systems. General symptoms include malaise, fatigue, and insomnia, reflecting systemic disease burden. Musculoskeletal chest pain may occur due to repetitive coughing strain. Hoarseness suggests laryngeal involvement or reflux disease. Excessive sweating may indicate infection or systemic inflammation. Severe coughing episodes may cause urinary incontinence, syncope, or even cardiac rhythm disturbances due to vagal stimulation. Increased intrathoracic pressure can lead to complications such as headache, subconjunctival hemorrhage, or inguinal herniation. Gastroesophageal reflux symptoms often coexist and may either trigger or worsen cough [13].

These associated findings guide prioritization of diagnostic investigations. For example, hemoptysis directs urgent imaging and possible bronchoscopy, while chronic nocturnal cough with reflux symptoms supports gastrointestinal evaluation. Physical examination must align with history findings. Respiratory examination assesses airflow limitation, crackles, wheezing, or reduced breath sounds. Cardiovascular assessment identifies signs of heart failure. ENT examination evaluates post-nasal drip or sinus disease. Abdominal examination may reveal reflux-related tenderness. Effective evaluation integrates history, physical findings, and targeted diagnostic testing. This structured approach ensures accurate identification of underlying etiology and prevents misclassification of a symptom as a standalone diagnosis [13].

Evaluation

Evaluation of cough follows a stepwise clinical approach guided by duration, severity, associated symptoms, and suspicion of underlying pathology. Acute and subacute coughs typically do not require extensive diagnostic testing when clinical features suggest a self-limiting cause such as viral upper respiratory infection or post-infectious airway irritation. In these cases, management is primarily symptomatic. Diagnostic imaging is reserved for patients with red flag features such as severe respiratory distress, persistent high fever, suspected pneumonia, or systemic toxicity. A chest radiograph becomes appropriate when clinical presentation raises concern for significant lower respiratory tract infection, structural lung disease, or other serious pathology. Chronic cough requires a more comprehensive and structured diagnostic workup due to its broad differential diagnosis. Initial evaluation commonly includes a chest Xray to assess for structural abnormalities, infection,

interstitial lung disease, or malignancy. Pulmonary function testing is essential to identify obstructive or restrictive ventilatory defects and to assess conditions such as asthma or chronic obstructive pulmonary disease. When baseline investigations including imaging and spirometry are normal, and no clear diagnosis is identified from history and physical examination, referral to a pulmonologist is indicated for advanced evaluation. In many cases, chronic cough does not arise from a single etiology but instead results from multiple overlapping conditions. This multifactorial nature necessitates further targeted investigations. Bronchoscopy may be performed to directly visualize the upper and lower airways, including the vocal cords, trachea, and bronchial tree, to exclude structural lesions such as tumors, foreign bodies, or vocal cord abnormalities. During bronchoscopy, bronchoalveolar lavage and tissue biopsy may be obtained for microbiological, cytological, and histopathological assessment when infection, malignancy, or inflammatory disease is suspected [11][12][13].

Cardiac evaluation may be necessary when symptoms suggest heart failure or cardiogenic pulmonary congestion. In such cases, echocardiography is used to assess cardiac function, particularly left ventricular performance. Computed tomography of the chest provides detailed anatomical imaging and is useful in identifying interstitial lung disease, pulmonary embolism, or occult malignancy that may not be visible on plain radiography. Gastrointestinal evaluation plays a significant role when gastroesophageal reflux disease or aspiration is suspected. Diagnostic modalities may include esophagogastroduodenoscopy, pH monitoring of the esophagus, and formal speech and swallowing assessments to evaluate for aspiration risk and reflux-related airway irritation. Sleep-related evaluation is indicated in patients with nocturnal cough and symptoms suggestive of obstructive sleep apnea. Polysomnography confirms diagnosis and guides management through airway pressure therapy or other interventions. Neurogenic cough represents a distinct diagnostic entity characterized by persistent, non-productive cough with minimal or absent respiratory pathology. Clinical features include near-constant coughing during the day, absence of sputum production, and laryngeal findings such as unilateral or bilateral vocal fold paresis. Confirmation may involve laryngeal electromyography demonstrating nerve dysfunction. A key diagnostic criterion is complete symptom resolution following appropriate targeted therapy, supporting a neurogenic origin [14].

Medical Management

The management of acute cough is predominantly empirical and centers on alleviating symptoms while allowing the underlying condition to resolve naturally in most cases. Therapeutic strategies are primarily supportive and include commonly available over-the-counter preparations formulated for cough and cold relief. These agents are widely used despite limited evidence of substantial clinical benefit. In particular, many antihistamine-decongestant combinations have demonstrated efficacy comparable to placebo in controlled evaluations, raising concerns regarding their routine use in uncomplicated respiratory infections. Pharmacological suppression of cough is sometimes employed to reduce symptom severity through inhibition of the cough reflex pathway. Centrally acting antitussive agents such as dextromethorphan are frequently prescribed for this purpose. In contrast, expectorant agents such as guaifenesin are utilized when excessive mucus production is present, with the intention of enhancing secretion clearance and improving airway patency. Despite their widespread use, it is essential to recognize that cough serves as a critical physiological defense mechanism that facilitates airway clearance and pathogen elimination. Suppressing this reflex indiscriminately may potentially delay recovery or mask progression of disease. Consequently, current clinical guidelines from the American College of Chest Physicians do not support routine use of centrally or peripherally acting antitussives in acute cough associated with uncomplicated upper respiratory tract infections and discourage combination over-the-counter formulations for this indication [13][14].

When an infectious cause is suspected, microbiological evaluation through sputum culture is recommended to guide targeted antimicrobial therapy. In cases of chronic infectious upper respiratory tract disease, prolonged antibiotic regimens extending between three to six weeks may be necessary to achieve adequate microbial eradication. Amoxicillin-clavulanate is generally considered a first-line therapeutic option at a dosage of 875 mg orally twice daily over this treatment period. Alternative antimicrobial agents may be selected based on patient tolerance, microbial resistance patterns, and clinical response, including clindamycin, cefuroxime axetil, cefprozil, clarithromycin, and fluoroquinolones such as gatifloxacin, levofloxacin, and moxifloxacin administered over similar durations. In acute symptomatic airway obstruction or bronchospasm, inhaled bronchodilator therapy may be indicated for rapid relief. Nebulized beta-agonists such as albuterol, often combined with anticholinergic agents like ipratropium bromide, are used to improve airflow in patients with suspected reversible airway constriction. These interventions provide short-term symptomatic improvement in urgent clinical scenarios but do not address underlying etiologies. Long-term management of chronic cough requires a fundamentally different therapeutic approach that prioritizes identification and treatment of the underlying cause rather than symptom suppression alone. When cough is associated with angiotensin-converting enzyme inhibitor therapy, discontinuation of the offending agent is essential, with substitution using alternative antihypertensive agents such as angiotensin receptor blockers or aldosterone receptor antagonists. In patients with airway hyperreactivity disorders, inhaled corticosteroids and anticholinergic medications are commonly employed to reduce airway inflammation and bronchospasm [15].

Cardiovascular contributors to chronic cough require optimization of cardiac function in accordance with cardiology-directed management protocols tailored to the individual patient’s condition. In cases of gastroesophageal reflux disease, therapeutic intervention involves both lifestyle modification and pharmacologic acid suppression. Dietary avoidance of reflux-promoting substances such as caffeine, chocolate, alcohol, and

tobacco is recommended. Positional measures, including elevation of the head of the bed and avoidance of late evening meals, are essential to reduce nocturnal reflux episodes. Pharmacologic therapy typically involves proton pump inhibitors administered at maximal therapeutic doses to achieve effective acid suppression. Management of neurogenic cough differs significantly from other etiologies due to its neuropathic basis. In isolated cases without evidence of laryngopharyngeal reflux, pharmacologic agents such as tramadol administered at low doses or amitriptyline at bedtime may be initiated to modulate neural hypersensitivity. In cases where reflux-related or additional laryngeal symptoms are present, gabapentin is often preferred as a first-line neuromodulatory agent, initiated at low doses and titrated upward based on clinical response and tolerability. Effective dosing frequently ranges from 300 mg to 500 mg four times daily. Combination regimens involving gabapentin and low-dose tricyclic antidepressants such as amitriptyline are commonly utilized to enhance therapeutic outcomes. Second-line agents, including pregabalin and baclofen, are reserved for refractory cases or specific clinical scenarios [4][14][9][10][15].

Nursing Management

Nursing management of patients with cough focuses on optimizing airway clearance, reducing symptom burden, preventing complications, and supporting overall respiratory function. A structured nursing approach combines patient education, physical interventions, and environmental modifications to enhance comfort and promote effective secretion clearance. Patient education is essential in improving cough effectiveness. Nurses instruct patients on proper coughing techniques that engage abdominal muscles to generate sufficient expiratory force. Controlled coughing techniques improve mucus mobilization and reduce airway obstruction. This approach is particularly important in patients with productive cough or impaired secretion clearance. Hydration is a fundamental nursing intervention. Adequate fluid intake reduces mucus viscosity, making secretions easier to expectorate. Nurses should continuously assess hydration status and encourage regular oral fluid intake unless contraindicated due to cardiac or renal conditions. Early mobilization and frequent repositioning are important for maintaining pulmonary ventilation and preventing secretion retention. Position changes every two hours support lung expansion and improve ventilation-perfusion matching. Ambulation, when tolerated, enhances respiratory mechanics and reduces the risk of atelectasis [11][12][13].

Positioning plays a central role in respiratory comfort. Elevation of the head of the bed improves lung expansion, decreases diaphragmatic pressure, and facilitates easier breathing. Semi-Fowler or high-Fowler positions are commonly used to reduce coughing intensity and improve oxygenation. Soothing measures are used to reduce throat irritation. Warm liquids help relieve mucosal dryness and reduce cough reflex sensitivity. Steam inhalation, humidified air, and warm showers contribute to airway hydration and reduce irritation of respiratory passages. Oral soothing agents such as lozenges or peppermint-based products may provide temporary relief by stimulating salivation and reducing throat discomfort. These are used while the patient is awake and able to safely manage oral intake. Chest physiotherapy is a key nursing intervention in patients with retained secretions. Techniques such as percussion, vibration, and postural drainage facilitate mobilization of mucus from peripheral airways toward central airways for expectoration. Saline nasal irrigation supports clearance of upper airway secretions, particularly in cases associated with post-nasal drip or sinus involvement. Sterile saline rinses reduce nasal congestion and decrease upper airway irritation contributing to cough. Topical menthol-based rubs applied to the chest or back may provide subjective relief by creating a cooling sensation and improving perceived airflow, although their effect is symptomatic rather than curative. Regular oral hygiene is essential in maintaining mucosal integrity and preventing secondary infection. Oral care every four hours reduces bacterial colonization, improves comfort, and supports overall respiratory health, particularly in patients with productive cough or reduced self-care ability. Overall nursing management requires continuous assessment of respiratory status, evaluation of intervention effectiveness, and individualized care planning based on patient response and clinical condition [14][15].

Coordination of Care

Persistent cough requires structured evaluation across multiple healthcare disciplines because the symptom may reflect benign irritation or serious underlying disease. Initial assessment typically begins in primary care or emergency settings where clinicians identify duration, triggers, medication history, and associated systemic symptoms. This stage determines whether the cough is acute, subacute, or chronic and guides early decisions on investigation or referral. Primary care providers and nurse practitioners play a central role in early triage. They rule out common causes such as upper respiratory infection, asthma, or medication-induced cough, especially from angiotensin-converting enzyme inhibitors. Early identification of red flags such as weight loss, hemoptysis, night sweats, or progressive dyspnea directs the patient toward specialist evaluation. Internists contribute by coordinating broader systemic assessment. They evaluate multisystem conditions such as heart failure, autoimmune disease, and metabolic disorders that may present with chronic cough. Pulmonologists become essential when initial investigations such as chest radiography or spirometry fail to identify a clear cause or when symptoms persist despite initial therapy. Their role includes advanced diagnostics such as bronchoscopy, high-resolution computed tomography, and targeted pulmonary function testing. Otolaryngology involvement is important when upper airway cough syndrome, chronic sinusitis, or laryngeal dysfunction is suspected. ENT evaluation allows direct visualization of the upper airway, which is critical in cases of voice change, chronic throat irritation, or suspected structural lesions. Pharmacists contribute by reviewing medication profiles, identifying cough-inducing drugs, ensuring safe antibiotic use when infection is suspected, and educating

patients about correct use of inhalers or antitussive agents. Nurses maintain continuity of care through monitoring symptoms, reinforcing adherence, educating on trigger avoidance, and assessing response to therapy. Effective coordination depends on shared documentation, timely referrals, and clear communication between providers. What happens when each clinician focuses only on symptom suppression instead of etiology? Delayed diagnosis, repeated visits, and progression of undetected disease. A coordinated approach reduces this risk and improves diagnostic accuracy and patient outcomes [15].

Conclusion

Cough reflects airway response to internal and external triggers. It is not a single disease. It links to respiratory, cardiac, gastrointestinal, and drug related causes. Clinical evaluation starts with duration and symptom pattern. Acute cough often follows infection. Chronic cough signals persistent disease. History, examination, and targeted tests guide diagnosis. Serious causes require early detection. Hemoptysis, weight loss, and dyspnea shift priority toward imaging and specialist referral. Delayed evaluation increases risk of missed malignancy or chronic disease progression. Treatment depends on cause. Antibiotics treat bacterial infection. Inhaled therapy supports asthma and obstructive disease. Acid suppression targets reflux. Neuromodulators address neurogenic cough. Symptom suppression alone is not sufficient in chronic cases. Nursing care supports airway function. Hydration reduces mucus thickness. Positioning improves ventilation. Patient education improves technique and adherence. Chest physiotherapy supports secretion clearance. Care coordination improves outcomes. Primary care identifies early patterns. Specialists confirm diagnosis. Pharmacists optimize medication safety. Nurses maintain monitoring and continuity. Structured assessment and multidisciplinary care reduce diagnostic error. You improve outcomes when you link symptom to cause before choosing treatment.

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