INTEGRATING NURSING CARE AND DIAGNOSTIC IMAGING IN ACUTE AND CHRONIC BRONCHITIS

Davranov Ismoil Ibragimovich[1], Murodova Shahlo Uchkunboyevna[2]
[1] Samarkand State Medical University, Faculty of Postgraduate Education, Department of Medical Radiology, Samarkand, Uzbekistan. PhD in Medical Sciences, Assistant.
[2] Ishtixon Abu Ali ibn Sino Public Health Technical School, Ishtixon, Samarkand Region, Uzbekistan. Teacher.

Abstract

Objective. To describe collaboration between nursing care and diagnostic imaging in adults with acute and chronic bronchitis.

Methods. Public international recommendations were synthesised using a focused narrative approach. No new patient data were collected; no systematic review or meta-analysis was performed.

Main findings. A pathway integrating observations, escalation, indication-based radiography or CT and revision of care after report review is proposed. Routine imaging is unnecessary in uncomplicated acute bronchitis, and chronic bronchitis must be distinguished from COPD. Pathway effectiveness was not measured.

Conclusion. A defined clinical question and feedback after imaging provide an organisational basis for collaborative care. Local adaptation and prospective evaluation are required.

Keywords: acute bronchitis; chronic bronchitis; nursing care; chest radiography; computed tomography; interprofessional collaboration.

Introduction

Quality of bronchitis care involves more than relief of cough. It also requires observation of breathing, communication of deterioration and revision of the care plan after diagnostic assessment. This review links nursing observation and radiological decision making around one clinical question: could an alternative condition require additional investigation or urgent care?

Acute and chronic bronchitis require different diagnostic pathways. The classical clinical definition of chronic bronchitis is productive cough for at least three months in each of two consecutive years after other causes have been excluded [3]. This phenotype may coexist with chronic obstructive pulmonary disease (COPD), but does not establish that diagnosis. COPD assessment requires the appropriate clinical context and post-bronchodilator spirometry [4].

Approach to the review

This article is a focused narrative review with a proposed practice integration pathway for adults. Public recommendations from CDC, NICE, ACR, BTS, ATS and FDA, together with NLM terminology, were consulted as of 14 November 2026. Sources were selected for direct relevance to acute cough, chronic bronchitis, COPD, thoracic imaging, oxygen safety and rehabilitation. The principal search concepts were acute bronchitis, chronic bronchitis, nursing care, chest radiography, computed tomography and COPD.

This is not a systematic review: an exhaustive bibliographic search, independent duplicate screening, formal risk-of-bias assessment and meta-analysis were not performed. No new patient data were collected and no diagnostic accuracy or effectiveness estimates were calculated. The proposed pathway is a practical synthesis and should not be interpreted as a validated clinical prediction rule.

Risk assessment in acute bronchitis

Routine antibiotics are not recommended for uncomplicated acute bronchitis, and sputum colour does not establish bacterial infection [1]. NICE advises explaining that acute cough may last up to three or four weeks and reassessing deterioration [2]. A nurse can use teach-back to check whether the patient understands when to seek further care.

CDC identifies abnormal observations relevant to pneumonia assessment: heart rate ≥100/min, respiratory rate ≥24/min, oral temperature ≥38 °C and focal lung findings. Pneumonia is uncommon in otherwise healthy adults when these abnormalities are absent, and most do not need chest radiography [1]. These observations neither diagnose pneumonia nor exclude it in every patient. Individual assessment remains essential in older, immunocompromised or medically complex patients. Progressive breathlessness, altered consciousness, haemoptysis or haemodynamic instability should trigger escalation beyond routine bronchitis care.

Matching imaging to the clinical question

Chest radiography addresses suspected pneumonia or another diagnosis rather than confirming uncomplicated bronchitis. ACR relates imaging selection in acute respiratory illness to examination findings, vital signs and additional risk factors [5]. A normal image should not override clinical deterioration. A useful referral records symptom duration, temperature, respiratory rate, oxygen saturation, focal findings and the specific diagnostic question.

For chronic symptoms, radiography helps exclude alternative pathology. CT may be considered for symptoms disproportionate to spirometric impairment, suspected bronchiectasis or fibrosis, or an abnormal radiograph requiring clarification [4]. CT

is not a universal confirmatory test for chronic bronchitis. Reports should distinguish imaging findings from the clinical diagnosis.

The expected benefit of CT should justify the exposure, and its protocol should be optimised for the question [8]. Previous imaging should be checked before repeat examination. Contrast administration requires a separate indication; bronchitis alone is insufficient. Responsibility and timing for review of the imaging report should be established before the examination.

Nursing care and examination safety

The proposed observation record combines baseline status, respiratory rate, pulse, temperature, SpO_2, alertness and symptom trajectory. Saturation should be recorded alongside room-air status or the oxygen device and flow. Reassessment frequency should reflect illness severity. Recording the direction of change and the action taken is more informative than documenting an isolated value.

When oxygen is prescribed, a target range should be specified. BTS generally recommends 88–92% pending blood gas assessment for patients at risk of hypercapnic respiratory failure, including known COPD, and 94–98% for most acutely ill patients without that risk [6]. These ranges do not mean that every patient with bronchitis needs oxygen. Individual prescriptions and emergency protocols take precedence.

In chronic disease, practical assessment of prescribed inhaler technique, smoking cessation support and referral of suitable patients for pulmonary rehabilitation are relevant [4,7]. Activity and fluid intake should be individualised with the treating team. Before imaging, nursing checks include identity, transport tolerance and monitoring needs. If contrast is planned, previous reactions and the imaging service's preparation requirements should be clarified.

Proposed collaborative pathway

The following pathway is a proposed implementation model; its local effectiveness has not been tested. First, the nurse completes structured observations and escalates warning signs. Second, the clinician defines the working diagnosis, whether imaging is needed and the clinical question. Third, the radiologist reviews the referral and selects an appropriate examination and protocol. Fourth, the report is interpreted with the clinical findings and the care plan is updated. Finally, the patient receives a clear follow-up and safety-net plan.

The record should identify who received the message, when it was sent, the response and the subsequent action. This closed-loop communication is particularly relevant when imaging takes place in another department: obtaining an image does not

establish that its result has informed care. Urgent findings should reach the responsible clinician directly under local procedures.

Technical-school teaching can use three hypothetical scenarios: acute cough without warning signs; new hypoxaemia with focal findings; and persistent productive cough with recurrent infection. Assessment should focus on collecting observations, communicating the situation and preparing the patient safely, rather than independently making a medical diagnosis. These scenarios are educational proposals, not clinical observations or research results.

Discussion and limitations

The practical contribution is to organise nursing and imaging as a process with reciprocal information flow. Understanding the imaging question clarifies the purpose of preparation and monitoring; a clinically informative referral helps radiological decision making. However, this article provides no direct evidence that the proposed collaboration reduces unnecessary examinations or prevents complications.

A future local audit could assess whether referrals contain a clinical question, baseline observations are complete, reports are reviewed by the responsible clinician and patients understand return instructions. Outcomes, observation periods, eligibility criteria and ethical requirements should be defined before data collection. Fewer examinations alone would not establish better care; repeat attendance and missed important diagnoses would also need assessment.

Limitations include purposive source selection, differences between the healthcare systems in which recommendations were developed and the absence of local validation. Children, pregnant patients and immunocompromised patients require separate guidance. This review does not replace their specific assessment pathways.

Conclusion

Nursing observations provide information needed to assess imaging requirements in acute and chronic bronchitis. Imaging should answer a defined clinical question, and its results should feed back into the care plan. The proposed model may help organise team communication and practical teaching; its clinical effectiveness requires prospective evaluation.

Declarations

Ethics and data. No new human-participant research or individual patient information was used. No clinical dataset was generated for this article.

Funding and competing interests. These must be declared by the authors before submission; the relevant information has not been supplied.

Author contributions. Actual contributions, approval of the final manuscript and accountability for the work must be confirmed by both named authors before submission [9].

Use of artificial intelligence. OpenAI ChatGPT was used to prepare the initial draft, translation and structure. The authors are responsible for checking and approving all clinical statements, references and the final manuscript; that approval has not yet been obtained [9].

References

1. Centers for Disease Control and Prevention. Outpatient clinical care for adults [Internet]. Available from: https://www.cdc.gov/antibiotic-use/hcp/clinical-care/adult-outpatient.html [Accessed 2026 Nov 14].
2. National Institute for Health and Care Excellence. Cough (acute): antimicrobial prescribing. NICE guideline NG120 [Internet]. 2019. Available from: https://www.nice.org.uk/guidance/ng120/chapter/recommendations [Accessed 2026 Nov 14].
3. National Library of Medicine. Bronchitis, Chronic. Medical Subject Headings [Internet]. Available from: https://www.ncbi.nlm.nih.gov/mesh/?term=Bronchitis%2C+Chronic [Accessed 2026 Nov 14].
4. National Institute for Health and Care Excellence. Chronic obstructive pulmonary disease in over 16s: diagnosis and management. NICE guideline NG115 [Internet]. 2018. Available from: https://www.nice.org.uk/guidance/ng115/chapter/recommendations [Accessed 2026 Nov 14].
5. American College of Radiology. ACR Appropriateness Criteria. Acute respiratory illness in immunocompetent patients [Internet]. Available from: https://acsearch.acr.org/docs/69446/Narrative/ [Accessed 2026 Nov 14].
6. British Thoracic Society. Guideline for oxygen use in adults in healthcare and emergency settings [Internet]. 2017. Available from: https://www.brit-thoracic.org.uk/clinical-resources/guidelines/emergency-oxygen/ [Accessed 2026 Nov 14].
7. American Thoracic Society. Pulmonary rehabilitation for adults with chronic respiratory disease: an official American Thoracic Society clinical practice guideline. Am J Respir Crit Care Med. 2023;208(4):e7–e26. doi:10.1164/rccm.202306-1066ST. [Accessed 2026 Nov 14].
8. US Food and Drug Administration. White paper: initiative to reduce unnecessary radiation exposure from medical imaging [Internet]. Available from: https://www.fda.gov/radiation-emitting-products/initiative-reduce-unnecessary-

radiation-exposure-medical-imaging/white-paper-initiative-reduce-unnecessary-radiation-exposure-medical-imaging [Accessed 2026 Nov 14].

9. International Committee of Medical Journal Editors. Defining the role of authors and contributors; Use of AI by authors [Internet]. Available from: https://www.icmje.org/recommendations/ [Accessed 2026 Nov 14].