

Clinical Insights on Efficacy of Combined Antitussive Agents in Cough Relief

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Abstract

Cough is an essential respiratory reflex that, when dysfunctional, can lead to morbidity and significantly disrupt a patient's well-being. Cough is categorized as acute, sub-acute, and chronic. Pharmacotherapy chiefly targets symptomatic relief. Further, combination treatment enhances efficacy and reduces prescriptions. This review highlights the combination of ambroxol, guaiphenesin, and terbutaline, for cough relief. Individual roles of ambroxol acting as a mucolytic, guaiphenesin as an expectorant, and terbutaline as a β_2 -receptor agonist are discussed. This combination has shown efficacy in reducing the frequency and severity of cough with minimal adverse effects. Other approved formulations for dry and productive cough are also reviewed. The necessity for the approval of the treatment and its rational use is underlined. Overall, the rational use of approved combinations can enhance cough management and patient outcomes.

Keywords: Combination therapy, Dry cough, Expectorant, Mucolytic, Productive cough

INTRODUCTION

Cough is an essential protective respiratory activity that involves forcefully expelling air against a closed glottis.^[1] It can progress into dysfunction, leading to a persistent symptomatic condition that disrupts the quality of life.^[2] This reflex condition aids in clearing the airway passages and also shields them from inhaling foreign materials. It is observed that cough is among the most frequent symptoms for which people seek medical assistance.^[1,3] During the initial evaluation of cough, categorizing it based on its duration and severity helps in the diagnosis and comprehension of the condition.^[2,4]

Based on the duration (i.e., according to the length of time for which the cough continues), cough is categorized into three types:^[2,3]

- Acute: ≤ 3 weeks
- Subacute: 3–8 weeks
- Chronic: > 8 weeks

Cough is also classified into productive (wet) and non-productive (dry) types.^[4,5]

- Wet or productive cough: Typically produces sputum (mucus or phlegm)^[4,5]
- Dry cough or non-productive cough: Does not show the presence of sputum^[4,6]

EPIDEMIOLOGY OF COUGH

Cough has a significant impact on patients' quality of life. Cough exhibits a prevalence of 9.6% globally.^[6] In China, acute cough prevails in the range of 9–64% while chronic cough affects a larger portion of the population, showing a prevalence of $> 10\%$ (between 7.2% and 33%).^[7] Regional variations are observed in many countries, with cough being more prevalent in Western countries than in Eastern countries, possibly due to factors such as gastroesophageal reflux disease and obesity. In India, the prevalence of cough ranges from 5% to 10%.^[6]

In the general population, cough is observed more commonly among males who smoke.^[6] The prevalence of cough is significantly influenced by the social history of tobacco smoking, with estimates ranging from 5% to 40%.^[8] Chronic cough presents more in middle-aged women and is estimated to prevail in 3% of non-smokers, 4% of former smokers, and 8% of active smokers.^[1]

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PATHOPHYSIOLOGY OF COUGH

Coughing is triggered by the repeated activation of a cough reflex arc involving sensory nerves that send signals to the cough center located in the brain, which then sends signals back to the diaphragm, abdominal wall, and inspiratory and expiratory muscles [Figure 1].^[9] After a stimulus activates the cough reflex, the inspiratory phase begins with inward airflow and muscle expansion, followed by the compressive phase, which involves glottis closure and muscle contraction to increase pulmonary pressure. Finally, the expiratory phase opens the glottis and forces air out rapidly.^[9-11]

supportive measures such as over-the-counter cough and cold medications, cough suppressants, and expectorants. Cough suppressants help reduce the cough reflex, whereas expectorants improve mucus clearance, particularly in cases of excessive mucus production [Figure 2].^[8]

Antitussive agents can be used appropriately in patients experiencing severe dry cough, while expectorants or mucolytic agents improve symptoms in patients with expectorating sputum.^[13] Dextromethorphan is the most commonly used cough suppressant,^[8,14] whereas guaiphenesin is the most common expectorant.^[8]

PHARMACOLOGICAL MANAGEMENT OF COUGH

Treatment for cough, especially acute cough, should focus on providing symptomatic relief through the use of pharmacological therapies [Figure 2].^[6,8,12,13] This involves

COMBINATION TREATMENT OF AMBROXOL, GUAIPHENESIN, AND TERBUTALINE

The active combination of ambroxol HCl 30 mg + guaiphenesin 100 mg + terbutaline sulfate 2.5 mg (per 10 mL of syrup) is approved by the drug Controller General

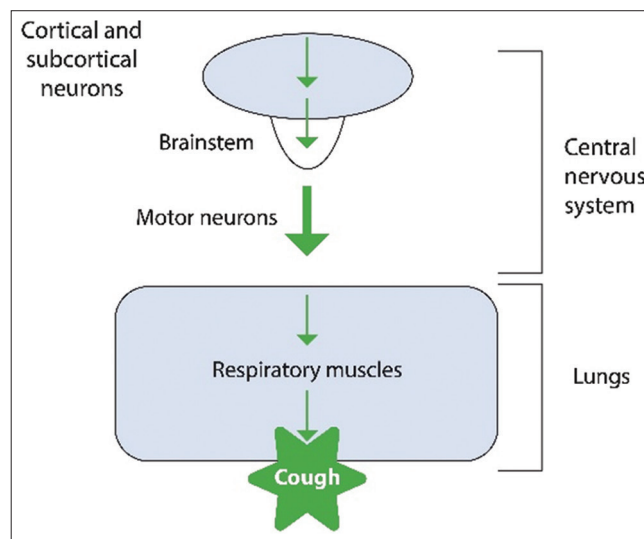


Figure 1: Simplified representation of cough reflex pathway (Adapted from Kandiva *et al.*)^[9]

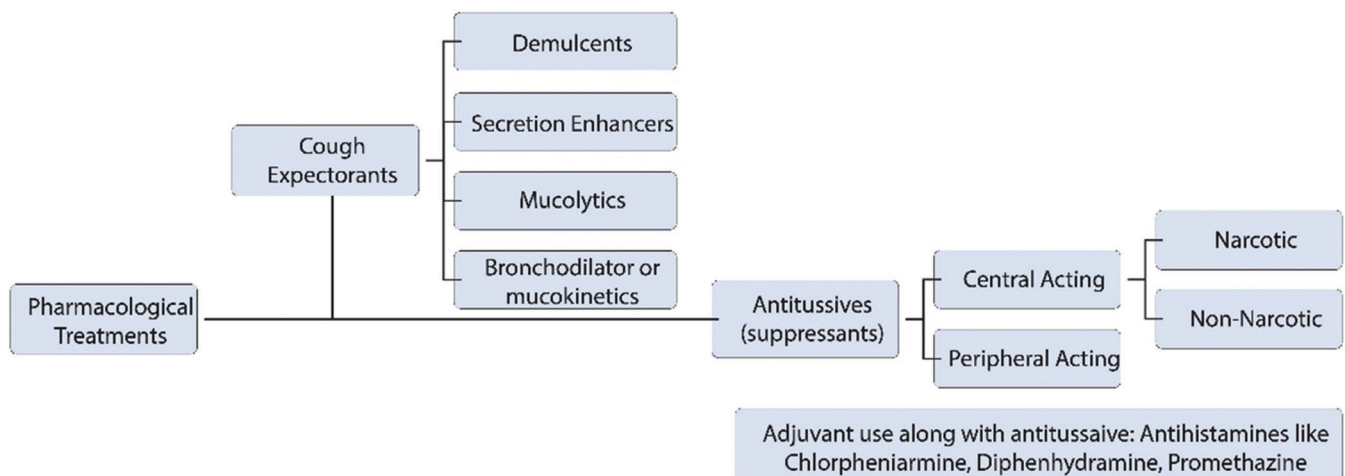


Figure 2: Pharmacological management of cough (Adapted from cough algorithm: Simplify cough management in India)^[12]

of India for providing symptomatic relief of bronchospasm in cases of bronchial asthma and chronic bronchitis.^[15,16]

Mucolytic Agent: Ambroxol

Ambroxol demonstrates active mucolytic activity and effectively inhibits neuronal Na⁺ channels. It is mainly employed in the treatment of respiratory diseases and pain relief in acute sore throat.^[17] Mucolytics directly modify the structure and physical properties of mucus, reducing its viscosity and facilitating expectoration.^[18] A study done by Schulz *et al.* reported that in cough syrup, ambroxol is used as per the advice given in the patients' leaflet and supports the already established safety and efficacy of the product for use in acute bronchitis.^[19-21] In a study conducted by Kardos *et al.*, the global efficacy of ambroxol across formulations was rated as very good, good, moderate, or poor in 36.1, 57.5, 6.0, and 0.4% of cases, respectively, by the participants. Thus, establishing the efficacy of the formulation.^[19,20,22]

Expectorant: Guaiphenesin

It is a widely used expectorant in cough syrups and enhances the output of respiratory tract fluids, thereby thinning and loosening mucus. Its ability to facilitate productive cough and improve the removal of mucus can ease symptoms and enhance respiratory function in chronic bronchitis patients.^[18,19] It is also useful in alleviating chest congestion caused by common cold, infections, or allergies. Guaiphenesin might exhibit side effects such as headaches, nausea, and vomiting.^[17] A study by Kuhn *et al.* reported that patients in the guaiphenesin group experienced 100% improvement in cough frequency and severity as opposed to patients in the placebo group. Guaiphenesin reduced sputum thickness substantially.^[23,24]

β2-Receptor Agonist: Terbutaline

Terbutaline is a β₂-receptor agonist and acts on the β₂ adrenergic receptors in the airways. It aids in bronchodilation and relaxation of the smooth muscles found primarily in bronchial, vascular, and uterine tissue.^[17,18] β₂-receptor agonists are widely used in the management of respiratory conditions. They reduce coughing episodes by relaxing the bronchial smooth muscles and improving airflow, thus providing relief.^[18] Cough formulations consisting of terbutaline or levosalbutamol can be considered for chronic bronchitis with productive cough as they cause bronchodilation and also lessen the stickiness of the mucus, promoting expectoration along with mucoactive agents.^[19]

A study done by Kiran *et al.* involving Indian patients revealed that the patients demonstrated an 80% reduction in the cough severity score after the consumption of the active combination of ambroxol, guaiphenesin, and terbutaline. Only 2.97% of patients experienced mild-

intensity adverse events. Thus, establishing the potency and safety of the combination.^[25]

COMBINATION OF ACTIVES FOR COUGH RELIEF

Fixed-dose combinations enhance the efficacy of the treatment and reduce pill burden, thus improving patient adherence, but irrational combinations should be avoided due to side effects. The following are a few CDSCO-approved cough formulations, along with the dosing regimen for a dry and productive cough.^[12]

- Ambroxol Hydrochloride + Guaiphenesin + Levosalbutamol^[12]
 - Children: (6–12 years) start with 2.5 mL thrice daily and increase to 5 mL syrup 2–3 times daily
 - Adults: (>12 years) 5 mL 3 times daily, which may be increased to 10 mL syrup twice daily.
- Ambroxol Hydrochloride + Guaiphenesin + Terbutaline sulfate ^[12]
 - Adults: 10–20 mL thrice daily
 - Children: (6–12 years) 5–10 mL and (2–6 years) 2.5 mL, thrice daily.
- Dextromethorphan Hydrobromide + Chlorpheniramine Maleate^[12]
 - Adults: 5 mL 4 times daily
 - Children: (>6 years) 2.5 mL and (4–6 years) 1.25 mL, 4 times daily.
- Dextromethorphan Hydrobromide + Chlorpheniramine Maleate + Phenylephrine Hydrochloride^[12]
 - Adults: 10 mL thrice daily
 - Children: (7–12 years) 5 mL and (4–6 years) 2.5 mL, thrice daily.

CONCLUSION

Cough, a fundamental respiratory reflex, can develop into a morbid condition that significantly disrupts quality of life. Pharmacological treatments primarily aim to provide symptomatic relief. Approved combination therapies, when used rationally, can be used to enhance efficacy, reduce pill burden, and improve patient adherence.

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EXPERT OPINION

1. Dr. Mukhesh Mehrotra, M.B.B.S.

Dr. Mehrotra's Clinic, Jabalpur, Madhya Pradesh

In my clinical practice, I observe more patients suffering from dry cough lasting more than 10 days. While prescribing a cough syrup, I consider factors such as the approved combination of actives for managing the cough type, cooling effect, viscosity, and taste of the syrup and prescribe it for 10–12 days for cessation of cough with cold or congestion. For rating the relief provided, I would score the combination of ambroxol + guaiphenesin + terbutaline + menthol and levosalbutamol + ambroxol + guaiphenesin 5/5. I will give a rating of 5/5 to dextromethorphan + chlorpheniramine for treating dry cough. Phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide will be 4/5 for treating cough in combination with cold or congestion (observed in >20% of cases). I would wait for more results before choosing between 15 mg of dextromethorphan and 10 mg of dextromethorphan.

2. Dr. Rajendra K. Gupta, M.B.B.S.

Sparsh Clinic, Kanpur, Uttar Pradesh

Most patients visiting my clinic present with a productive cough lasting over 20 days. I prescribe cough syrup for 10–12 days in cases of cough with cold or congestion, considering factors such as the rationale behind the approved combination of actives, soothing effect, viscosity, and taste. I would rate the relief provided by the combination of ambroxol + guaiphenesin + terbutaline + menthol as 4/5 and the combination of levosalbutamol + ambroxol + guaiphenesin as 5/5. Dextromethorphan + chlorpheniramine scores 3/5 for relieving dry cough and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scores 4/5 for relieving cough with cold and congestion. More than 20% of my patients present with cold and congestion, along with cough. More clinical data are required to choose between 15 mg and 10 mg of Dextromethorphan.

3. Dr. Vinod Raut, BHMS, PGDEMS, CCH

Yash Hospital, Aurangabad, Maharashtra

A productive cough lasting for over 20 days is observed in most of the patients. Factors such as the rationale behind the active combination, viscosity, taste, and soothing effect are considered while prescribing syrup for 10–12 days. Combination of ambroxol + guaiphenesin + terbutaline + menthol scores 5/5 and levosalbutamol + ambroxol + guaiphenesin scores 3/5 for providing effective relief. Dextromethorphan + chlorpheniramine scores 3/5 for

dry cough relief, and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scores 3/5 for cough with cold and congestion relief (seen in 10–20% cases). I need more data to favor 15 mg of dextromethorphan over 10 mg of dextromethorphan.

4. Dr. M. Shamshad, MD, FCCP, PGDHA, AFIH

Health Care Clinic, New Delhi

I observe more patients with dry cough lasting for 5–7 days. I prescribe cough syrup for 10–12 days and, I consider factors such as the rationale of active combination, viscosity, taste, and soothing effect. Both the combinations of ambroxol + guaiphenesin + terbutaline + menthol and levosalbutamol + ambroxol + guaiphenesin score 4/5 for providing effective relief. Dextromethorphan + chlorpheniramine scores 5/5 for dry cough relief, and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scores 3/5 for cough with cold and congestion relief (10–20% cases). I require additional data to justify choosing 15 mg dextromethorphan over 10 mg dextromethorphan.

5. Dr. M. P. Gupta, M.B.B.S., PGT-Diabetology

Dr. MP Gupta Clinic, Forbesganj, Bihar

Most of my patients experience dry cough lasting over 10 days. When prescribing cough syrup, I consider factors such as the rationale behind the combination of actives, cooling effect, viscosity, and taste. I typically prescribe syrup for 5–7 days to patients presenting with cough in conjunction with cold or congestion. According to me, the combinations ambroxol + guaiphenesin + terbutaline + menthol and levosalbutamol + ambroxol + guaiphenesin are effective, both scoring 4/5 for cough relief. I would rate dextromethorphan + chlorpheniramine and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide as 4/5 for relieving dry cough and cough with cold or congestion (>20% of cases), respectively. I prefer 15 mg of dextromethorphan over 10 mg for effectively treating cough.

6. Dr. Nitin Singh, Family Physician

Maa Durga Clinic, Bengaluru, Karnataka

In my practice, I frequently see productive coughs that last for more than 10 days. For treatment, I prescribe cough syrup for 5–7 days, considering the adequate combination of actives, soothing effect, taste, and viscosity. Combinations of ambroxol + guaiphenesin + terbutaline + menthol and levosalbutamol + ambroxol + guaiphenesin provide effective cough relief, scoring 5/5 and 4/5, respectively. Active combination dextromethorphan + chlorpheniramine scores 3/5 for relieving dry cough,

whereas phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scores 4/5 for relieving cough with cold and congestion (seen in over 20% of cases). We need more data to support the choice of 15 mg dose of dextromethorphan over 10 mg.

7. Dr. Dinesh Kumar Vemula, M.B.B.S.

Suraksha Hospital, Repalle, Andhra Pradesh

I often see cases of productive cough lasting longer than 10 days. To treat such cases, I prescribe cough syrup for 5–7 days, considering viscosity, taste, cooling effect, and the appropriate combination of actives. Combinations of ambroxol + guaiphenesin + terbutaline + menthol and levosalbutamol + ambroxol + guaiphenesin score 1/5 for providing cough relief. Combinations of dextromethorphan + chlorpheniramine and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide score 2/5 for providing relief from dry cough and cough with cold and congestion, respectively. About 10–20% of patients with cough also show symptoms such as cold and congestion. I need more data to choose between 15 mg and 10 mg doses of dextromethorphan.

8. Dr. Padmanabhan, MD (General Physician)

S. B. Clinic, Bengaluru, Karnataka

I have encountered more cases of dry cough, with the duration of the cough lasting for over 20 days. While prescribing the cough syrup, I consider the approved rationale combination for the treatment. I rate the combinations ambroxol + guaiphenesin + terbutaline + menthol, levosalbutamol + ambroxol + guaiphenesin, and dextromethorphan + chlorpheniramine as 4/5. More than 20% of my patients suffer from cough along with cold or congestion and are treated for 10–12 days with cough syrup. For providing relief to such patients, phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scores 3/5. I prefer 15 mg of dextromethorphan over 10 mg of dextromethorphan for effective cough relief.

9. DR. D. K. Jaiswal, M.B.B.S., MD

Sun Multispecialty Centre, Azamgarh, Uttar Pradesh

The majority of my patients present with a dry cough lasting for 5–7 days, which is treated with a 5–7 days course of cough syrup. Factors including viscosity, taste, cooling effect, and an appropriate combination of actives should be considered while selecting the cough syrup. Levosalbutamol + ambroxol + guaiphenesin provides better cough relief, scoring 5/5, whereas ambroxol + guaiphenesin + terbutaline + menthol scores 2/5. I rate dextromethorphan + chlorpheniramine as 5/5 for relieving

dry cough and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide as 4/5 for relieving cough with cold and congestion, seen in >20% of my patients. I do not prefer the 15 mg dose of dextromethorphan over the 10 mg dose for the treatment of cough.

10. Dr. M. G. Deepa Priya, M.B.B.S., DNB (General Medicine)

G. J. Multispecialty Hospital, Chennai, Tamil Nadu

The majority of cases seen in routine practice present with a dry cough persisting for over 20 days. I consider factors such as the rationale behind the combination of actives, viscosity, soothing effect, and taste when prescribing cough syrup. The course of cough syrup typically lasts for 5–7 days. I rate both levosalbutamol + ambroxol + guaiphenesin and ambroxol + guaiphenesin + terbutaline + menthol combinations as 4/5 for providing relief. For cough patients with cold and congestion (>20% cases), phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide provides relief, scoring 4/5, while dextromethorphan + chlorpheniramine scores 4/5 for treating dry cough. 15 mg dose of dextromethorphan is not preferred over 10 mg for providing cough relief.

11. Dr. B. Varalakshmi, M.B.B.S

Lakshmi Clinic, Chennai, Tamil Nadu

Majority of my patients present with productive cough lasting for more than 10 days. My treatment course for them is cough syrup for 10–12 days considering parameters such as taste, cooling effect, viscosity, and appropriate combination of actives. Both the combinations of levosalbutamol + ambroxol + guaiphenesin and ambroxol + guaiphenesin + terbutaline + menthol score 5/5 for providing cough relief. Dry cough is treated with dextromethorphan + chlorpheniramine which scores 5/5 and cough with cold and congestion seen in 10–20% of my patients, is treated with phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide that scores 4/5. We need more data to decide between the 15 mg dose of Dextromethorphan over the 10 mg dose.

12. Dr. Sai Rajesh K., M.B.B.S., PGDMCH

Ashritha Clinic, Uppal, Hyderabad, Telangana

In my clinical experience, I commonly see patients with dry cough lasting more than 20 days. When prescribing cough syrup, I take into account factors such as the appropriate combination of active ingredients, viscosity, soothing effect, and taste. Typically, I prescribe cough syrup for 5–7 days to patients presenting with cough, cold, or congestion. I find both the levosalbutamol + ambroxol + guaiphenesin and ambroxol + guaiphenesin + terbutaline

+ menthol combinations to be effective, rating them 5/5 for providing relief. For providing relief from dry cough, dextromethorphan + chlorpheniramine scores 3/5. In cases of cough with cold and congestion (>20% of my patients), I have observed that phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide provides relief, scoring 4/5. I prefer the 15 mg dose of dextromethorphan over the 10 mg dose for effective cough relief.

13. Dr. S. Tajudeen, M.B.B.S.

Taj Clinic, Madurai, Tamil Nadu

I see patients with dry as well as productive types of coughs in my routine practice. Typically, the cough lasts for 5–7 days. While prescribing cough syrup, I consider factors such as the viscosity, taste, cooling effect, appropriate ingredients for the concerned cough, and whether the rational combination is approved. To provide relief, ambroxol + guaiphenesin + terbutaline + menthol scores 5/5, levosalbutamol + ambroxol + guaiphenesin and dextromethorphan + chlorpheniramine score 4/5, while phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scores 3. About 5–10% of the patients suffer from cough with cold or congestion and I treat them with cough syrup for 5–7 days. To choose between the 15 mg and 10 mg doses of Dextromethorphan, more clinical data are needed.

14. Dr. K. Loganathan, M.B.B.S., DA

People Medical Centre and Hospital, Coimbatore, Tamil Nadu

In my practice, I have observed more cases of dry cough and the duration of the cough persists for more than 20 days. While treating the patients with cough syrup, I consider factors such as taste, viscosity, and soothing effect of the syrup along with the approved and appropriate combination of actives for the respective cough type. I rate the combinations ambroxol + guaiphenesin + terbutaline + menthol, dextromethorphan + chlorpheniramine, and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide as 4/5, while levosalbutamol + ambroxol + guaiphenesin scores 3. About 10–20% of my patients suffer from cough along with cold or congestion and are treated for 5–7 days with cough syrup. I do prefer a 15 mg dose of Dextromethorphan over 10 mg for cough relief.

15. Dr. Rehbar Khan, MD (Chest)

Muzaffarnagar Medical College and Hospital, Muzaffarnagar, Uttar Pradesh

In routine practice, cases of a productive cough that lasts for over 20 days are more frequent. When prescribing

cough syrup, I consider the suitable combination of actives, viscosity, soothing effect, and taste, typically prescribing it for 5–7 days. The combination of ambroxol + guaiphenesin + terbutaline + menthol scores 4/5 whereas the combination of levosalbutamol + ambroxol + guaiphenesin scores 2/5 for providing relief. Active combinations of dextromethorphan + chlorpheniramine scored 5/5 and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scored 4/5 for providing relief against dry cough and cough with cold and congestion (10–20% of the cases), respectively. I prefer a 15 mg dose of dextromethorphan over a 10 mg dose for effective relief.

16. Dr. Lal Kumar Kishnani, M.B.B.S.

Kishnani Hospital, Bairagarh, Bhopal, Madhya Pradesh

A greater number of patients visiting my clinic experience a productive cough that lasts for more than 10 days. I prescribe them with cough syrup for over 15 days, considering the appropriate combination of actives. I rate the ambroxol + guaiphenesin + terbutaline + menthol combination as 5/5 and levosalbutamol + ambroxol + guaiphenesin as 4/5 for effective relief. For relief from dry cough and cough with cold and congestion, I rate both dextromethorphan + chlorpheniramine and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide combinations as 5/5, respectively. Cough with cold and congestion is seen in 10–20% of the cases. More clinical data are needed to make a choice between 15 mg and 10 mg of dextromethorphan.

17. Dr. Abhoy Banerjee, M.B.B.S.

Dr. Abhoy Banerjee clinic, 10/1R, Atal Sur Road, Tangra, Kolkata, West Bengal

A productive cough typically lasts for over 10 days. The cough is treated with a 10–12-day course of cough syrup. I take into consideration the appropriate combination of active before prescribing the cough syrup. Ambroxol + guaiphenesin + terbutaline + menthol combination scores 3/5 and levosalbutamol + ambroxol + guaiphenesin scores 1/5 for providing effective relief. Dextromethorphan + chlorpheniramine combination scores 2/5 for treating dry cough whereas, phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scores 1/5 for treating cough with cold and congestion which is observed in 5–10% of my patients. I prefer 15 mg of dextromethorphan for effective treatment of cough.

18. Dr. Sachin Kumar Maheshwari, M.B.B.S., DLO

Sanjeevani Clinic, Noida, Uttar Pradesh

In my clinical experience, a dry cough typically lasts for more than 10 days. For the treatment, I prescribe cough

syrup for 10–12 days. Before prescribing cough syrup, I carefully consider factors like the appropriate combination of active ingredients, viscosity, taste, and cooling effect. I rate the ambroxol + guaiphenesin + terbutaline + menthol combination as 5/5 and levosalbutamol + ambroxol + guaiphenesin as 4/5, for providing relief. For treating dry cough, I rate the dextromethorphan + chlorpheniramine combination as 5/5, and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide combination as 3/5 for cough with cold and congestion (seen in 10–20% of my patients). I do not prefer the 15 mg of dextromethorphan over 10 mg.

19. Dr. Vishal A. Patel, M.B.B.S., AFIH, PDDM

Dr. Vishal's Clinic, Vapi, Gujarat

I have encountered cases of dry cough that last for a longer duration of > 10 days. When prescribing cough syrup, I consider the presence of the right ingredients for the respective cough type. I rate the combinations of ambroxol + guaiphenesin + terbutaline + menthol, levosalbutamol + ambroxol + guaiphenesin, and dextromethorphan + chlorpheniramine as 5/5 for providing relief. Out of the cases I encounter, 10–20% of the patients suffer from cough with cold or congestion, and they are treated with cough syrup for 10–12 days. For treating such patients, I rate the phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide combination as 4/5. I prefer a 15 mg dose of dextromethorphan over 10 mg for effectively treating cough.

20. Dr. A. K. Vimal, M.B.B.S.

Dr. Vimal's Clinic, Agra, Uttar Pradesh

A dry cough lasting more than 10 days was the most common Type I encountered in my practice. I prescribe cough syrup for 10–12 days considering factors such as the rationale behind the combination of actives, viscosity, taste, and cooling effect. I rate the ambroxol + guaiphenesin + terbutaline + menthol combination as 4/5 and levosalbutamol + ambroxol + guaiphenesin as 2/5, for providing relief. I rate both dextromethorphan + chlorpheniramine combination and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide combination as 4/5 for dry cough and cough with cold and congestion (5–10% of cases), respectively. I do not prefer 15 mg dextromethorphan over 10 mg dextromethorphan.

21. Dr. Sumeet Kumar Bakali, M.B.B.S., DCH, PGP

Revive Medical, Barpeta, Assam

A productive cough typically lasts for more than 20 days. When recommending a cough syrup, factors such as the rationale behind the appropriate ingredients, cooling effect,

viscosity, and taste are considered. More than 20% of my patients experience symptoms of congestion or a cold along with their cough, and a treatment course of 5–7 days is recommended for these individuals. For providing cough relief, I rate combinations of ambroxol + guaiphenesin + terbutaline + menthol, levosalbutamol + ambroxol + guaiphenesin, phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide, dextromethorphan + chlorpheniramine as 4/5. However, further data are needed to compare the effectiveness of dextromethorphan 15 mg and 10 mg for managing cough efficiently.

22. Dr. Subir Kumar Nandi, M.B.B.S.

Palash Medical Stores, Alipurduar, West Bengal

Patients visiting my clinic present with productive cough that persists for up to 5–7 days. I typically prescribe cough syrup for 5–7 days. When prescribing cough syrup, I consider the approved combination of active ingredients based on scientific rationale. For providing relief, I rate ambroxol + guaiphenesin + terbutaline + menthol as 4/5 and levosalbutamol + ambroxol + guaiphenesin as 5/5. For treating dry cough and cough with cold and congestion (as seen with >20% of my patients), I rate dextromethorphan + chlorpheniramine and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide as 4/5. I need more data to choose 15 mg of dextromethorphan over 10 mg of dextromethorphan.

23. Dr. Ananda Mohan Patra, M.B.B.S.

Dr. Ananda Mohan Patra Clinic, Bankura, West Bengal

In my routine practice, I see many patients with a productive cough that extends beyond 10 days. When prescribing cough syrup, I take into account parameters such as appropriate actives, approved rational combination, viscosity, soothing effect, and taste. For providing relief, I rate both combinations of ambroxol + guaiphenesin + terbutaline + menthol and levosalbutamol + ambroxol + guaiphenesin as 5/5. I rate dextromethorphan + chlorpheniramine as well as phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide as 4/5 for relieving dry cough and cough with cold or congestion, respectively. About 10–20% of patients presenting with cough, cold, or congestion are treated with a 5–7 days course of cough syrup. Additional data are required to support the choice of 15 mg of dextromethorphan over 10 mg of dextromethorphan.

24. Dr. Pradeep Tandon, M.B.B.S., DCH, MRSH

Tandon Clinic, New Delhi, Delhi

A dry cough lasting for up to 5–7 days is more prevalent. Factors such as the approved rational combination,

viscosity, soothing effect, and taste, are considered while prescribing the syrup. For giving effective relief, I rate ambroxol + guaiphenesin + terbutaline + menthol as 4/5 and levosalbutamol + ambroxol + guaiphenesin as 5/5. For treating dry cough, I rate dextromethorphan + chlorpheniramine as 5/5. Cough along with cold or congestion is seen in 10–20% of cases and is treated with a 5–7 days course of cough syrup. For providing relief against cough with cold or congestion, I would rate phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide as 3/5. 15 mg dextromethorphan over 10 mg dextromethorphan is not preferred.

25. Dr. Mridul Kumar Pandey, M.B.B.S.,
Manish Medical, Bounsi, Bhagalpur, Bihar

In my clinical practice, I have seen more cases of dry cough persisting for over 10 days. While prescribing a cough syrup, factors such as the active combination, approved rational combination, viscosity, soothing effect, and taste of the syrup are considered. For rating the relief provided, the combination of ambroxol + guaiphenesin + terbutaline + menthol and levosalbutamol + ambroxol + guaiphenesin scored 5/5. I will give a rating of 5/5 to dextromethorphan + chlorpheniramine for treating dry cough. Phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scores 4/5 for treating cough in combination with cold or congestion, which is prevalent in >20% of cases, and these patients are treated with cough syrup for 5–7 days. In my opinion, 15 mg of dextromethorphan is not preferable for effective cough relief over 10 mg of dextromethorphan.

26. Dr. Susanta Das, M.B.B.S., RCGP
Arogya Niketan, Kolkata, West Bengal

I frequently encounter cases of dry cough lasting over 10 days. When prescribing cough syrup, I consider factors such as the combination of actives, approved rational combination, viscosity, cooling effect, and taste. The combinations ambroxol + guaiphenesin + terbutaline + menthol, dextromethorphan + chlorpheniramine, and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide score 5/5 whereas the combination of levosalbutamol + ambroxol + guaiphenesin scores 4/5 for providing relief. More than 20% of my patients suffer from cough with cold or congestion and are treated with cough syrup for 10–12 days. Need additional data to choose a 15 mg dose of dextromethorphan over 10 mg.

27. Dr. Prabir Kumar Kar, M.B.B.S.
Apollo Medicare, Barasat, West Bengal

Productive cough persists for more than 10 days. While prescribing cough syrup, I consider factors such as

soothing effect, viscosity, taste, and rationale behind the approved combination of appropriate ingredients for the respective cough type. For providing relief, I rate the combinations of ambroxol + guaiphenesin + terbutaline + menthol, levosalbutamol + ambroxol + guaiphenesin, and dextromethorphan + chlorpheniramine as 5/5. About 10–20% of the patients I encounter suffer from cough with cold or congestion and are treated with cough syrup for 10–12 days. I rate the phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide combination as 2/5. I need more clinical data to choose a 15 mg dose of dextromethorphan over 10 mg for providing cough relief.

28. Dr. Tathagata Das, M.B.B.S.
Dr. Tathagata Das Chamber, Contai, West Bengal

In general, a productive cough typically lasts over 10 days. While prescribing cough syrup, I consider factors such as the right and approved combination of components, soothing effect, viscosity, and taste. Both the combinations ambroxol + guaiphenesin + terbutaline + menthol and levosalbutamol + ambroxol + guaiphenesin are rated 5/5 for providing relief. Combinations of dextromethorphan + chlorpheniramine and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide are rated 4/5 and 5/5, respectively. About 10–20% of the patients, experience cough with cold or congestion. More data are needed to choose between dextromethorphan 10 mg and 15 mg for efficient therapy of cough.

29. Dr. Suresh Bhoite, M.B.B.S.
Ashwini Clinic, Thane, Maharashtra

In my clinic, I encounter patients with dry cough that lasts for >10 days. Factors of cough syrup including cooling effect, viscosity, taste, and rationale behind the approved combination of appropriate ingredients for the respective cough type are considered by me while prescribing. All three combinations ambroxol + guaiphenesin + terbutaline + menthol, levosalbutamol + ambroxol + guaiphenesin, and dextromethorphan + chlorpheniramine are rated 5/5 for providing relief. Out of all my patients, >20% suffer from cough with cold or congestion and are treated with cough syrup for 5–7 days. I rate phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide as 5/5, and I prefer 15 mg dextromethorphan over 10 mg for providing cough relief.

30. Dr. Raj Shekhar, M.B.B.S.
Ranchi, Jharkhand

A dry cough lasts for more than 10 days. While prescribing cough syrup, various factors such as the legally approved and right combination of actives, soothing effects, viscosity,

and taste, are considered. For exhibiting relief, I rate both ambroxol + guaiphenesin + terbutaline + menthol and levosalbutamol + ambroxol + guaiphenesin as 5/5. For exhibiting relief in dry cough, dextromethorphan + chlorpheniramine scores 5/5, and for relieving cough with cold or congestion, phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scores 2/5. Cough with cold or congestion is seen in 5–10% of cases who are treated with cough syrup for 5–7 days. I prefer 15 mg of dextromethorphan over 10 mg of dextromethorphan for treating cough.

31. Dr. Nitin Jathan, M.B.B.S.

Sai Kripa Clinic, Nallasopara, Maharashtra

In my clinical practice, I have observed that productive cough lasts for >10 days. While prescribing a cough syrup, I evaluate the cooling and soothing effect it provides. I rate ambroxol + guaiphenesin + terbutaline + menthol and dextromethorphan + chlorpheniramine as 5/5, while levosalbutamol + ambroxol + guaiphenesin and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide score 4/5. In my practice, I have observed that 10–20% of the patients suffer from cough with cold or congestion and are treated with cough syrup for 5–7 days. I prefer the 15 mg dose of Dextromethorphan over 10 mg for treating cough.

32. Dr. Asish Kumar Mandal, DCMS, CMC

Shubha Medical, Tufanganj, West Bengal, Kolkata

According to me, the most frequently reported cases are of a productive cough that lasts over 10 days. Factors such as approved rational combinations of active ingredients, soothing effects, viscosity, and taste, are considered while prescribing a syrup. For exhibiting relief, I rate ambroxol + guaiphenesin + terbutaline + menthol as 5/5 and levosalbutamol + ambroxol + guaiphenesin as 4/5. For exhibiting relief in dry cough, and in cough with cold or congestion, dextromethorphan + chlorpheniramine and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide score 4/5, respectively. About 10–20% of patients present with cough along with cold or congestion and are treated with cough syrup for 5–7 days. Additional data are needed to choose between 15 mg or 10 mg doses of dextromethorphan as an efficacious cough treatment.

33. Dr. S. Sundarakumar, M.B.B.S.

Sri Dhanvanthri Clinic, Coimbatore, Tamil Nadu

A dry cough persisting for over 10 days is the most common type of cough in patients. While prescribing cough syrup, I consider the approved rational combination.

Cough syrup containing ambroxol + guaiphenesin + terbutaline + menthol scores 2/5 and the one containing levosalbutamol + ambroxol + guaiphenesin scores 4/5 for easing cough. Combinations of dextromethorphan + chlorpheniramine and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide score 4/5 for easing dry cough and cough with cold or congestion, respectively. About 5–10% of the patients suffering from cough with cold or congestion are treated with cough syrup for 5–7 days. 15 mg of dextromethorphan is not preferred over 10 mg of dextromethorphan.

34. Dr. Pankaj Devnani, M.B.B.S.

Vishvas Nindan Kendra, Keshod, Gujarat

The most common case encountered is of productive cough lasting over 20 days. While prescribing cough syrup, I consider the right ingredients, approved active combination, taste, viscosity, and soothing effect of the syrup. I rate all four combinations including ambroxol + guaiphenesin + terbutaline + menthol, levosalbutamol + ambroxol + guaiphenesin, dextromethorphan + chlorpheniramine and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide as 5/5 for providing relief. More than 20% of the patients suffer from cough with cold or congestion which is treated with cough syrup for over 15 days. For treating cough, I do not prefer 15 mg of dextromethorphan over 10 mg.

35. Dr. H. Chauhan, BAMS

Shree Haribhuvan Clinic, Nashik, Maharashtra

I mostly encounter patients with dry cough with cough persisting for >10 days. While prescribing cough syrup to these patients, I consider factors including taste, viscosity, soothing effect, and the appropriate and approved combination of the actives for the concerned cough type. I would rate ambroxol + guaiphenesin + terbutaline + menthol as 4/5 and levosalbutamol + ambroxol + guaiphenesin, dextromethorphan + chlorpheniramine and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide as 5/5 for providing relief. I treat cases of cough with a cold or congestion (>20% of my patients) with cough syrup for 5–7 days. In my opinion, the 15 mg dose of dextromethorphan can provide effective cough relief as compared to the 10 mg dose.

36. Dr. Anju Jangir-Sharma, M.B.B.S.

Dr. Sharma General Health Clinic, Mumbai, Maharashtra

In my practice, I have not observed any changes in the duration of the cough and it lasts for 5–7 days. I encounter more cases of dry cough in my routine

practice. While prescribing cough syrup, I consider the appropriate ingredients, with their approved combination, taste, viscosity, and cooling effect of the syrup. I rate both levosalbutamol + ambroxol + guaiphenesin and dextromethorphan + chlorpheniramine as 5/5, while ambroxol + guaiphenesin + terbutaline + menthol scores 3 and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scores 4. More than 20% of the patients suffer from cough with cold or congestion and are treated for 5–7 days with cough syrup. I need more clinical data to justify choosing the 15 mg dose of dextromethorphan over the 10 mg dose.

37. Dr. Suraj Namdev Dhainje, MD

Jeevandhara Hospital, Kolhapur, Maharashtra

The duration of a productive cough tends to be longer than 20 days. Factors such as approved rational combination of actives, taste, viscosity, and ability to soothe, are considered for cough syrup. Cough syrup with ambroxol + guaiphenesin + terbutaline + menthol scores 5/5, levosalbutamol + ambroxol + guaiphenesin and dextromethorphan + chlorpheniramine scores 4/5, and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scores 3/5. About 10–20% of my patients suffer from cough with cold or congestion and are treated with cough syrup for 10–12 days. We need additional data to justify choosing a 15 mg dose of dextromethorphan over 10 mg.

38. Dr. Rajesh Kumar Dhanowar, M.B.B.S., MD

Associate Professor at the Department of Medicine at Assam Medical College, Dibrugarh, Assam

In my practice, I have observed more cases of dry cough that lasts for 5–7 days. While prescribing a cough syrup, I consider its cooling and soothing effect. I rate ambroxol + guaiphenesin + terbutaline + menthol as 4/5 and levosalbutamol + ambroxol + guaiphenesin as 1/5 for alleviating cough. I rate both dextromethorphan + chlorpheniramine and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide as 4/5 for alleviating dry cough and cough with cold or congestion (seen in 10–20% of the cases). Cases of cough with cold or congestion are treated with cough syrup for 5–7 days. I prefer 15 mg of dextromethorphan over 10 mg.

39. Dr. Neeraj Jain, M.B.B.S.

Doctor's Colony, Panna, Madhya Pradesh

As per my clinical experience, dry cough lasting for over 10 days is more common. I consider the relevant combination of active ingredients when prescribing cough syrup. Cough syrups containing active combinations such as ambroxol

+ guaiphenesin + terbutaline + menthol, levosalbutamol + ambroxol + guaiphenesin, dextromethorphan + chlorpheniramine, and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide score 4/5 for effectively curing the condition. 10–20% of my patients experience cough along with cold or congestion and are treated with cough syrup for 5–7 days of course. I do not recommend using 15 mg of Dextromethorphan over 10 mg for the effective treatment of cough.

40. Dr. Kamal Jodhani, M.B.B.S., MD

Jodhani clinic, Guwahati, Assam

Productive cough lasting over 10 days is the most frequently observed type in my patients. When prescribing cough syrup, I consider factors such as the appropriate approved combination, viscosity, taste, and cooling effect. Cough syrup with actives ambroxol + guaiphenesin + terbutaline + menthol scores 3/5, whereas levosalbutamol + ambroxol + guaiphenesin scores 1/5. The combinations of dextromethorphan + chlorpheniramine scores 3/5 and phenylephrine + chlorpheniramine maleate + dextromethorphan hydrobromide scored 2/5 for easing dry cough and cough with cold or congestion, respectively. Approximately 5–10% of my patients present with cough and cold or congestion and are treated with cough syrup for 10–12 days. I prefer using 15 mg of dextromethorphan over 10 mg of dextromethorphan.

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