

Cold Medicine

Subjects: Medicine, General & Internal

Contributor: HandWiki Huang

Cold medicines are a group of medications taken individually or in combination as a treatment for the symptoms of the common cold and similar conditions of the upper respiratory tract. The term encompasses a broad array of drugs, including analgesics, antihistamines and decongestants, among many others. It also includes drugs which are marketed as cough suppressants or antitussives, but their effectiveness in reducing cough symptoms is unclear or minimal. While they have been used by 10% of American children in any given week, they are not recommended in Canada or the United States in children six years or younger because of lack of evidence showing effect and concerns of harm. One version with codeine, guaifenesin, and pseudoephedrine was the 213th most commonly prescribed medication in 2017, in the United States, with more than two million prescriptions.

Keywords: common cold ; analgesics ; children

1. Types

There are a number of different cough and cold medications, which may be used for various coughing symptoms. The commercially available products may include various combinations of any one or more of the following types of substances:

- Mucokinetics, or mucolytics, are a class of drugs which aid in the clearance of mucus from the airways, lungs, bronchi, and trachea. Examples are carbocisteine, ambroxol, and bromhexine.
- Expectorants are substances claimed to make coughing easier while enhancing the production of mucus and phlegm. Two examples are acetylcysteine and guaifenesin.
- Antitussives, or cough suppressants, are substances which suppress the coughing itself. Examples are codeine, pholcodine, dextromethorphan, noscapine, and butamirate.
- Antihistamines, for allergic rhinitis may produce mild sedation and reduce other associated symptoms, like a runny nose and watery eyes. Examples are diphenhydramine, chlorpheniramine, brompheniramine, loratadine, and cetirizine.
- Decongestants may improve nasal congestion in a sinus infections. Examples are ephedrine, phenylephrine, pseudoephedrine, and oxymetazoline.
- Fever or pain medication. Examples are paracetamol (acetaminophen) and NSAIDs such as ibuprofen or naproxen.
- Also employed are various substances supposed to soften the coughing, like honey or supplement syrup.

2. Effectiveness

The efficacy of cough medication is questionable, particularly in children.^{[1][2]} A 2014 Cochrane review concluded that "There is no good evidence for or against the effectiveness of OTC medicines in acute cough".^[3] Some cough medicines may be no more effective than placebos for acute coughs in adults, including coughs related to upper respiratory tract infections.^[4] The American College of Chest Physicians emphasizes that cough medicines are not designed to treat whooping cough, a cough that is caused by bacteria and can last for months.^[5] No over-the-counter cough medicines have been found to be effective in cases of pneumonia.^[6] They are not recommended in those who have COPD, chronic bronchitis, or the common cold.^{[7][8]} There is not enough evidence to make recommendations for those who have a cough in cancer.^[9]

2.1. Medications

- Dextromethorphan (DXM) may be modestly effective in decreasing cough in adults with viral upper respiratory infections. However, in children it has not been found to be effective.^[10]
- Codeine was once viewed as the "gold standard" in cough suppressants, but this position is now questioned.^[11] Some placebo-controlled trials have found that it is ineffective against some forms of cough, including acute cough in children.

^{[12][13]} It is thus not recommended for children.^{[13][14]} Additionally, there is no evidence that hydrocodone is useful in children.^[15] Similarly, a 2012 Dutch guideline does not recommend its use to treat acute cough.^[16]

- A number of other commercially available cough treatments have not been shown to be effective in viral upper respiratory infections. These include for adults: antihistamines, antihistamine-decongestant combinations, benzonatate, anti asthmatic-expectorant-mucolytic combinations, expectorant-bronchodilator combinations, leukotriene inhibitors, ambroxol, and guaifenesin, sometimes with analgesics, antipyretics, anti inflammatories, and anticholinergics; and for children: antihistamines, decongestants for clearing the nose, or combinations of these and leukotriene inhibitors for allergy and asthma.^[10] However, antihistamines cannot be used as an empirical therapy in case of chronic, or non-specific cough, especially in very young children.^[17] Long term diphenhydramine use is associated with negative outcomes in older people.^[18]

2.2. Alternative Medicine

A small study found honey may be a minimally effective cough treatment due to "well-established antioxidant and antimicrobial effects" and a tendency to soothe irritated tissue.^[19] A Cochrane review found there was weak evidence to recommend for or against the use of honey in children as a cough remedy.^[20] In light of these findings, the Cochrane study they found honey was better than no treatment, placebo, or diphenhydramine but not better than dextromethorphan for relieving cough symptoms.^[20] Honey's use as a cough treatment has been linked on several occasions to infantile botulism and accordingly should not be used in children less than one year old.^[21]

Many alternative treatments are used to treat the common cold, though data on effectiveness is generally limited. A 2007 review states that, "alternative therapies (i.e., Echinacea, vitamin C, and zinc) are not recommended for treating common cold symptoms; however,...Vitamin C prophylaxis may modestly reduce the duration and severity of the common cold in the general population and may reduce the incidence of the illness in persons exposed to physical and environmental stresses."^[22] A 2014 review also found insufficient evidence for Echinacea, where no clinical relevance was proven to provide benefit for treating the common cold, despite a weak benefit for positive trends.^[23] Similarly, A 2014 systematic review showed that garlic may prevent occurrences of the common cold but there was insufficient evidence of garlic in treating the common cold and studies reported adverse effects of a rash and odour.^[24] Therefore, more research need to be done to prove that the benefits out weight the harms.

A 2009 review found that the evidence supporting the effectiveness of zinc is mixed with respect to cough,^[10] and a 2011 Cochrane review concluded that zinc "administered within 24 hours of onset of symptoms reduces the duration and severity of the common cold in healthy people".^[25] A 2003 review concluded: "Clinical trial data support the value of zinc in reducing the duration and severity of symptoms of the common cold when administered within 24 hours of the onset of common cold symptoms."^[26] Zinc gel in the nose may lead to long-term or permanent loss of smell. The FDA therefore discourages its use.^[27]

2.3. Recreational Usage

Cough medicines, especially those containing dextromethorphan and codeine, are often abused as recreational drugs.^[28] Abuse may result in hallucinations, loss of consciousness and death.^[29]

3. Adverse Effects

A number of accidental overdoses and well-documented adverse effects suggested caution in children.^[21] The FDA in 2015 warned that the use of codeine-containing cough medication in children may cause breathing problems.^[30] Cold syrup overdose has been linked to visual and auditory hallucinations as well as rapid involuntary jaw, tongue, and eye movements in children.

4. History

Heroin was originally marketed as a cough suppressant in 1898.^[31] It was, at the time, believed to be a non-addictive alternative to other opiate-containing cough syrups. This was quickly realized not to be true as heroin readily breaks down into morphine in the body. Morphine was already known to be addictive.

5. Society and Culture

5.1. Brands

Some brand names include: Benilyn, Sudafed, Robitussin and Vicks among others.^[32] Most contain a number of active ingredients.^[33]

Sudafed is a brand manufactured by McNeil Laboratories. The original formulation contains the active ingredient pseudoephedrine, but formulations without pseudoephedrine are also being sold under the brand. In 2016, it was one of the biggest selling branded over-the-counter medications sold in Great Britain, with sales of £34.4 million.^[34] The effectiveness of phenylephrine by mouth as a nasal decongestant is questionable.^[35]

Gee's Linctus is a cough medicine which contains opium tincture.^[36] New Zealand in 2019 moved it to prescription only.^[37]

Coricidin, Coricidin D, or Coricidin HBP, is the brand name of a combination of dextromethorphan and chlorpheniramine maleate (an antihistamine). Varieties may also contain acetaminophen and guaifenesin.

Codral is a brand name manufactured by Johnson & Johnson and sold primarily in *Australia* and New Zealand. Codral is the highest-selling cold and flu medication in Australia.^[38]

5.2. Economics

In the United States, several billion dollars are spent on over-the-counter products per year.^[39]

5.3. Poisoning

According to *The New York Times*, at least eight mass poisonings have occurred as a result of counterfeit cough syrup in which medical-grade glycerin has been replaced with diethylene glycol, an inexpensive, yet toxic, glycerin substitute marketed for industrial use. In May 2007, 365 deaths were reported in Panama, which were associated with cough syrup containing diethylene glycol.^[40]

In 2022, the Food and Drug Administration issued a warning against cooking foods in cough syrup, after a video of someone preparing "NyQuil chicken" became popular on social media. Cough syrup is designed to be stored at room temperature and its properties can change when it is heated, making it potentially deadly. Heated cough syrup can also vaporize, leading to inhalation hazards.^[41]

References

1. Medsafe cough and cold group "Minutes of the Second Cough and Cold Review Group Meeting". <http://www.medsafe.govt.nz/hot/alerts/CoughandCold/Minutes2CoughandCold.asp>.
2. Speich, B; Thomer, A; Aghlmandi, S; Ewald, H; Zeller, A; Hemkens, LG (October 2018). "Treatments for subacute cough in primary care: systematic review and meta-analyses of randomised clinical trials.". *The British Journal of General Practice* 68 (675): e694–e702. doi:10.3399/bjgp18X698885. PMID 30201831. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pmcentrez&artid=6145999>
3. Smith, SM; Schroeder, K; Fahey, T (24 November 2014). "Over-the-counter (OTC) medications for acute cough in children and adults in community settings.". *The Cochrane Database of Systematic Reviews* 11 (11): CD001831. doi:10.1002/14651858.CD001831.pub5. PMID 25420096. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pmcentrez&artid=7061814>
4. Knut Schroeder; Tom Fahey (2002). "Systematic review of randomised controlled trials of over the counter cough medicines for acute cough in adults". *British Medical Journal* 324 (7333): 329–331. doi:10.1136/bmj.324.7333.329. PMID 11834560. PMC 65295. <http://bmj.bmjournals.com/cgi/content/full/324/7333/329>.
5. "New Cough Guidelines Urge Adult Whooping Cough Vaccine; Many OTC Medications Not Recommended for Cough Treatment" (Press release). American College of Chest Physicians. January 9, 2006. Archived from the original on 8 February 2006. Retrieved 4 February 2006. <https://web.archive.org/web/20060208195024/http://www.chestnet.org/about/press/releases/2006/010906a.php>
6. Chang, CC; Cheng, AC; Chang, AB (10 March 2014). "Over-the-counter (OTC) medications to reduce cough as an adjunct to antibiotics for acute pneumonia in children and adults.". *The Cochrane Database of Systematic Reviews* 3 (3): CD006088. doi:10.1002/14651858.CD006088.pub4. PMID 24615334. <https://dx.doi.org/10.1002%2F14651858.CD006088.pub4>

7. Vestbo, Jørgen (2013). "Therapeutic Options". Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease. Global Initiative for Chronic Obstructive Lung Disease. pp. 19–30. http://www.goldcopd.org/uploads/users/files/GOLD_Report_2013_Feb20.pdf#36.
8. Malesker, MA; Callahan-Lyon, P; Ireland, B; Irwin, RS; CHEST Expert Cough, Panel. (November 2017). "Pharmacologic and Nonpharmacologic Treatment for Acute Cough Associated With the Common Cold: CHEST Expert Panel Report.". *Chest* 152 (5): 1021–1037. doi:10.1016/j.chest.2017.08.009. PMID 28837801. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pmcentrez&artid=6026258>
9. Molassiotis, A; Bailey, C; Caress, A; Brunton, L; Smith, J (Sep 8, 2010). Molassiotis, Alex. ed. "Interventions for cough in cancer.". *The Cochrane Database of Systematic Reviews* (9): CD007881. doi:10.1002/14651858.CD007881.pub2. PMID 20824870. <https://dx.doi.org/10.1002%2F14651858.CD007881.pub2>
10. "Do OTC remedies relieve cough in acute upper respiratory infections?". *J Fam Pract* 58 (10): 559a–c. October 2009. PMID 19874728. <http://www.ncbi.nlm.nih.gov/pubmed/19874728>
11. ed, Kian Fan Chung ... (2008). *Pharmacology and therapeutics of cough*. Berlin: Springer. p. 248. ISBN 9783540798422. <https://books.google.com/books?id=Z4kXCSRq0OAC&pg=PA248>.
12. "Codeine and cough: an ineffective gold standard". *Current Opinion in Allergy and Clinical Immunology* 7 (1): 32–6. February 2007. doi:10.1097/ACI.0b013e3280115145. PMID 17218808. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pmcentrez&artid=2921574>
13. Goldman, RD (Dec 2010). "Codeine for acute cough in children". *Canadian Family Physician* 56 (12): 1293–4. PMID 21156892. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pmcentrez&artid=3001921>
14. "FDA acts to protect kids from serious risks of opioid ingredients contained in some prescription cough and cold products by revising labeling to limit pediatric use". U.S. Food and Drug Administration (FDA) (Press release). Retrieved 2 February 2018. <https://www.fda.gov/news-events/press-announcements/fda-acts-protect-kids-serious-risks-opioid-ingredients-contained-some-prescription-cough-and-cold>
15. Paul, IM (Feb 2012). "Therapeutic options for acute cough due to upper respiratory infections in children.". *Lung* 190 (1): 41–4. doi:10.1007/s00408-011-9319-y. PMID 21892785. <https://dx.doi.org/10.1007%2Fs00408-011-9319-y>
16. Verlee, L; Verheij, TJ; Hopstaken, RM; Prins, JM; Salomé, PL; Bindels, PJ (2012). "[Summary of NHG practice guideline 'Acute cough']". *Nederlands Tijdschrift voor Geneeskunde* 156: A4188. PMID 22917039. <http://www.ncbi.nlm.nih.gov/pubmed/22917039>
17. Chang, AB; Peake, J; McElrea, MS (16 April 2008). "Anti-histamines for prolonged non-specific cough in children.". *The Cochrane Database of Systematic Reviews* 2010 (2): CD005604. doi:10.1002/14651858.CD005604.pub3. PMID 18425925. PMC 8896440. https://espace.library.uq.edu.au/view/UQ:192262/UQ192262_OA.pdf.
18. Ruxton, K; Woodman, RJ; Mangoni, AA (August 2015). "Drugs with anticholinergic effects and cognitive impairment, falls and all-cause mortality in older adults: A systematic review and meta-analysis.". *British Journal of Clinical Pharmacology* 80 (2): 209–20. doi:10.1111/bcp.12617. PMID 25735839. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pmcentrez&artid=4541969>
19. "Honey A Better Option For Childhood Cough Than Over The Counter Medications". 2007-12-04. <https://www.sciencedaily.com/releases/2007/12/071203164750.htm>.
20. Oduwole, O; Udoh, EE; Oyo-Ita, A; Meremikwu, MM (10 April 2018). "Honey for acute cough in children.". *The Cochrane Database of Systematic Reviews* 4 (12): CD007094. doi:10.1002/14651858.CD007094.pub5. PMID 29633783. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pmcentrez&artid=6513626>
21. Sung, Valerie; Cranswick, Noel (October 2009). "Cough and cold remedies for children". *Australian Prescriber* 32 (5): 122–4. doi:10.18773/austprescr.2009.060. <http://www.australianprescriber.com/magazine/32/5/122/4/>. Retrieved 27 August 2010.
22. "Treatment of the common cold". *Am Fam Physician* 75 (4): 515–20. February 2007. PMID 17323712. <http://www.ncbi.nlm.nih.gov/pubmed/17323712>
23. Karsch-Völk, M; Barrett, B; Kiefer, D; Bauer, R; Ardjomand-Woelkart, K; Linde, K (20 February 2014). "Echinacea for preventing and treating the common cold.". *The Cochrane Database of Systematic Reviews* 2 (2): CD000530. doi:10.1002/14651858.CD000530.pub3. PMID 24554461. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pmcentrez&artid=4068831>
24. Lissiman, Elizabeth; Bhasale, Alice L.; Cohen, Marc (2012-03-14). "Garlic for the common cold". *The Cochrane Database of Systematic Reviews* (3): CD006206. doi:10.1002/14651858.CD006206.pub3. ISSN 1469-493X. PMID 22419312. <https://pubmed.ncbi.nlm.nih.gov/22419312/>.

25. Singh, Meenu, ed (2011). "Zinc for the common cold". *Cochrane Database Syst Rev* (2): CD001364. doi:10.1002/14651858.CD001364.pub3. PMID 21328251. <https://dx.doi.org/10.1002/14651858.CD001364.pub3>
26. Hulisz D (2004). "Efficacy of zinc against common cold viruses: an overview". *J Am Pharm Assoc* (2003) 44 (5): 594–603. doi:10.1331/1544-3191.44.5.594.Hulisz. PMID 15496046. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pmcentrez&artid=7185598>
27. "Zicam Cold Remedy Nasal Products (Cold Remedy Nasal Gel, Cold Remedy Nasal Swabs, and Cold Remedy Swabs, Kids Size)". <https://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm166996.htm>.
28. Reeves, Roy R.; Ladner, Mark E.; Perry, Candace L.; Burke, Randy S.; Laizer, Janet T. (Mar 2015). "Abuse of Medications That Theoretically Are Without Abuse Potential". *Southern Medical Journal* 108 (3): 151–157. doi:10.14423/SMJ.0000000000000256. ISSN 1541-8243. PMID 25772048. <https://dx.doi.org/10.14423/2FSMJ.0000000000000256>
29. "Cough and Cold Medicine Abuse". May 2014. <https://www.drugabuse.gov/publications/drugfacts/cough-cold-medicine-abuse>.
30. "Codeine Cough-and-Cold Medicines in Children: Drug Safety Communication - FDA Evaluating Potential Risk of Serious Side Effects". 1 July 2015. <https://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm453379.htm>.
31. Burch, Druin (2009). *Taking the Medicine: A Short History of Medicine's Beautiful Idea, and Our Difficulty Swallowing It*. Random House. pp. 118. ISBN 9781407021225.
32. "Children's cough and cold medicines – Lists of products". Medicines and Healthcare products Regulatory Agency. <http://www.mhra.gov.uk/home/groups/comms-po/documents/websiteresources/con038907.pdf>.
33. Shefrin and Goldman; Goldman, RD (November 2009). "Use of over-the-counter cough and cold medications in children". *Canadian Family Physician* 55 (11): 1081–1083. PMID 19910592. PMC 2776795. <http://www.cfp.ca/cgi/content/full/55/11/1081>.
34. "A breakdown of the over-the-counter medicines market in Britain in 2016". *Pharmaceutical Journal*. 28 April 2017. http://www.pharmaceutical-journal.com/20202662.article?amp;utm_medium=email&.
35. Deckx, L; De Sutter, Al; Guo, L; Mir, NA; van Driel, ML (17 October 2016). "Nasal decongestants in monotherapy for the common cold.". *The Cochrane Database of Systematic Reviews* 2016 (10): CD009612. doi:10.1002/14651858.CD009612.pub2. PMID 27748955. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pmcentrez&artid=6461189>
36. "Proposal for reclassification of cough medicines containing dextromethorphan, opium tincture, squill oxymel and pholcodine to restricted medicines". <https://medsafe.govt.nz/profs/class/Agendas/Agenda61/62Dextromethorphan.pdf>.
37. "Some commonly used cough medicines now need a prescription". 3 March 2019. <https://www.rnz.co.nz/news/national/383807/some-commonly-used-cough-medicines-now-need-a-prescription>.
38. "Johnson & Johnson - Codral". Johnson & Johnson. 2008-05-30. <http://www.jnjaust.com.au/products/codral/pages/home.aspx>.
39. Chung, Kian Fan (2008). *Pharmacology and therapeutics of cough*. Berlin: Springer. p. 188. ISBN 9783540798422. <https://books.google.com/books?id=Z4kXCSRq0OAC&pg=PA188>.
40. Bogdanich, Walt; Hooker, Jake (2007-05-06). "From China to Panama, a Trail of Poisoned Medicine". *The New York Times*. <https://www.nytimes.com/2007/05/06/world/06poison.html>.
41. "Don't cook your chicken in NyQuil: FDA issues warning against social media challenge". <https://www.cbsnews.com/news/nyquil-chicken-fda-warning/>.

Retrieved from <https://encyclopedia.pub/entry/history/show/80767>