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Brand Names

AeroTuss, Buckley's Cough Suppressant , Buckley's DM, Buckley's Mixture, Cough DM, Cough Suppressant , Delsym, Delsym Children's, Delsym Children's Cough Relief, Delsym Cough, Dexalone, ElixSure Cough, ElixSure Cough DM, Father John's, Giltuss DM, PediaCare Children's Long Acting Cough, PediaCare Infants' Long-Acting Cough, PediaCare Long-Acting Cough , Robafen Cough, Robitussin, Robitussin Adult, Robitussin Children's Cough, Robitussin Cough, Robitussin CoughGels, Robitussin Lingerin Cold Long-Acting Cough, Robitussin Pediatric Cough, Scot-Tussin CF, Silphen DM, Theraflu Long Acting Cough Strip, Triaminic Long Acting Cough , Triaminic Long Acting Cough Strip, Tylenol Children's Simply Cough, Vicks DayQuil Cough, Vicks DayQuil Nature Fusion, Vicks Formula 44, Vicks Nature Fusion Cough, Zicam Concentrated Cough, Zicam Cough Max, Zicam Cough Nite

Indication Specific Dosing

For temporary relief of cough due to minor throat and bronchial irritation as may occur with the common cold or inhaled irritants

Oral dosage (immediate-release formulations of dextromethorphan hydrobromide)

Adults

10 to 20 mg PO every 4 hours as needed; or 30 mg PO every 6 to 8 hours as needed. Follow the directions on the consumer label for the product chosen.
Max: 120 mg/day PO.

Children and Adolescents 12 to 17 years

10 to 20 mg PO every 4 hours as needed; or 30 mg PO every 6 to 8 hours as needed. Follow the directions on the consumer label for the product chosen.
Max: 120 mg/day PO.

Children 6 to 11 years

5 to 10 mg PO every 4 hours as needed; or 15 mg PO every 6 to 8 hours as needed. Follow the directions on the consumer label for the product chosen.
Max: 60 mg/day PO.

Children 4 to 5 years

2.5 to 5 mg PO every 4 hours as needed; or 7.5 mg PO every 6 to 8 hours as needed. Follow the directions on the consumer label for the product chosen.
Max: 30 mg/day PO.

Oral dosage (extended-release oral suspension containing dextromethorphan polistirex 30 mg per 5 mL)

Adults

60 mg (10 mL) PO every 12 hours as needed. Max: 120 mg/day PO.

Children and Adolescents 12 to 17 years

60 mg (10 mL) PO every 12 hours as needed. Max: 120 mg/day PO.

Children 6 to 11 years

30 mg (5 mL) PO every 12 hours as needed. Max: 60 mg/day PO.

Children 4 to 5 years

15 mg (2.5 mL) PO every 12 hours as needed. Max: 30 mg/day PO.

For the treatment of painful diabetic neuropathy†

Oral dosage (immediate-release, compounded extemporaneous formulations)

Adults

A median dose of 400 mg/day PO, given in 4 divided doses, has been used in clinical trials. Doses are initiated at 30 mg PO 4 times daily, then titrated to effectiveness and maximal tolerance. Limited, small, randomized trials have suggested that high doses of dextromethorphan may produce moderate reductions of painful diabetic neuropathy (PDN); however, significant adverse effects occur. Max: 960 mg/day PO given in 4 divided doses. American Academy of Neurology guidelines consider dextromethorphan as probably effective in

lessening pain and improving quality of life; moderate pain reductions of 16% to 24% are achieved; however, sedation approaches 58% and other substantial adverse effects (e.g., anorexia, constipation, ataxia, confusion) may occur. Because of the dosages used, commercially available products are not amenable for dosing; trials used extemporaneously compounded capsules for dosing.

Contraindications And Precaution

Drug Interactions

The coadministration of certain medications may lead to harm and require avoidance or therapy modification; review all drug interactions prior to concomitant use of other medications.

Hypersensitivity

This medication is contraindicated in patients with a history of hypersensitivity to it or any of its components.

CYP2D6 poor metabolizer, hepatic failure

Use dextromethorphan with caution in people with hepatic failure due to reduced oxidative metabolism of the drug. In addition, individuals who are a poor CYP2D6 metabolizer have higher dextromethorphan concentrations than extensive/intermediate CYP2D6 metabolizers. At the usual dosages used for cough suppression in nonprescription products, no dosage adjustment is recommended for either hepatic failure or poor metabolizers. Reduced metabolism due to liver disease or CYP2D6 poor metabolizer status is more likely to require dosage adjustments when dextromethorphan is used at higher daily doses for other medical indications.

children, infants, neonates

Due to the risk for serious adverse reactions, the FDA recommends against administration of over the counter (OTC) cough and cold products to neonates, infants and children younger than 2 years of age. When administering OTC medications to older pediatric patients, they advise caregivers to read product labels carefully, use caution when administering multiple products to avoid duplication of ingredients, and use only measuring devices specifically designed for use with medications. Care teams should thoroughly assess the use of similar products, both prescription and nonprescription, to avoid duplication of therapy and the potential for inadvertent overdose.

pregnancy

Dextromethorphan should be given during pregnancy, particularly in the first trimester, only if clearly needed. Increased fluids to ease expectoration are usually recommended for first-line treatment of cough in the pregnant patient. If a cough remedy is used, choose one that is alcohol-free. Pregnant individuals are recommended to seek advice from their health care professional for treatment recommendations. In a large, population-based case control study of maternal use of cough medications during early pregnancy, dextromethorphan use was associated with a small number of birth defects, including hydrocephalus, atrioventricular septal defect and transverse limb deficiency. In contrast, human surveillance data and retrospective studies have shown dextromethorphan to be relatively safe during the first trimester. The results of one controlled study suggested that the use of dextromethorphan during pregnancy does not pose a risk to the fetus; however, due to the small sample size, an increased risk of rare malformations could not be ruled out.

asthma, emphysema, tobacco smoking

People with a chronic cough that persists, such as occurs with tobacco smoking, asthma, or emphysema, or a cough that occurs with too much phlegm (mucus), should consult their care team before dextromethorphan use. Patients should stop use and consult their care team if a cough lasts more than 7 days, comes back, or occurs with fever, rash, or persistent headache. These could be signs of a serious condition.

breast-feeding

Dextromethorphan is usually considered compatible with breast-feeding. Some experts consider dextromethorphan, at usual adult doses for cough and for limited duration of use for this purpose, to be compatible with breast-feeding and unlikely to be harmful to the breastfed infant. Based on dextromethorphan's relatively low molecular weight, some transfer into breast milk is expected. One study estimated infant exposure via breast milk to be less than 1% of the usual maternal dose. If the use of dextromethorphan is necessary during lactation, it is best to choose products that are alcohol-free.

Pregnancy And Lactation

Dextromethorphan should be given during pregnancy, particularly in the first trimester, only if clearly needed. Increased fluids to ease expectoration are usually recommended for first-line treatment of cough in the pregnant patient. If a cough remedy is used, choose one that is alcohol-free. Pregnant individuals are recommended to seek advice

from their health care professional for treatment recommendations. In a large, population-based case control study of maternal use of cough medications during early pregnancy, dextromethorphan use was associated with a small number of birth defects, including hydrocephalus, atrioventricular septal defect and transverse limb deficiency. In contrast, human surveillance data and retrospective studies have shown dextromethorphan to be relatively safe during the first trimester. The results of one controlled study suggested that the use of dextromethorphan during pregnancy does not pose a risk to the fetus; however, due to the small sample size, an increased risk of rare malformations could not be ruled out.

Interactions

Abiraterone: (Moderate) Abiraterone inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor. If dextromethorphan-related side effects occur, a dose reduction or discontinuation of dextromethorphan may be necessary. In an in vivo drug-drug interaction trial, the C_{max} and AUC of the CYP2D6 substrate dextromethorphan were increased 2.8- and 2.9-fold, respectively when dextromethorphan 30 mg was given with abiraterone acetate 1,000 mg daily along with prednisone 5 mg twice daily. The AUC for dextromethorphan, the active metabolite of dextromethorphan, increased approximately 1.3 fold.

Acetaminophen; Codeine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering codeine with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Alfentanil: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering alfentanil with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Almotriptan: (Moderate) Monitor for signs and symptoms of serotonin syndrome, particularly during treatment initiation and dosage increase, during concomitant dextromethorphan and serotonin-receptor agonists use. If serotonin syndrome occurs, discontinue therapy. Concomitant use increases the risk for serotonin syndrome.

Amitriptyline: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with tricyclic antidepressants. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during

treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Artemether; Lumefantrine: (Moderate) Use of dextromethorphan with lumefantrine may result in increased dextromethorphan exposure. Lumefantrine inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Aspirin, ASA; Carisoprodol; Codeine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering codeine with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Atazanavir; Cobicistat: (Moderate) Use of dextromethorphan with cobicistat may result in increased dextromethorphan exposure. Cobicistat inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Benzoic Acid; Hyoscyamine; Methenamine; Methylene Blue; Phenyl Salicylate: (Major) Because of the potential risk and severity of serotonin syndrome, coadministration of dextromethorphan and IV methylene blue should be avoided if possible. Methylene blue has been demonstrated to be a potent monoamine oxidase inhibitor (MAOI) and may cause potentially fatal serotonin toxicity (serotonin syndrome) when combined with serotonin reuptake inhibitors (SRIs). Dextromethorphan increases central serotonin effects. If methylene blue is judged to be indicated, all SRIs, including dextromethorphan, must be ceased prior to treatment/procedure/surgery. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Buprenorphine: (Moderate) If concomitant use of buprenorphine and dextromethorphan is warranted, monitor patients for the emergence of serotonin syndrome. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs. The concomitant use of opioids with other drugs that affect the serotonergic neurotransmitter system has resulted in serotonin syndrome.

Buprenorphine; Naloxone: (Moderate) If concomitant use of buprenorphine and dextromethorphan is warranted, monitor patients for the emergence of serotonin syndrome. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs. The concomitant use of opioids with other drugs that affect the serotonergic neurotransmitter system has resulted in serotonin syndrome.

buPROPion: (Moderate) Monitor for dextromethorphan-related side effects, such as dizziness or drowsiness, if concomitant use of bupropion is necessary. Concomitant use may increase dextromethorphan exposure and side effects. Dextromethorphan is a CYP2D6 substrate and bupropion is a strong CYP2D6 inhibitor. Concomitant use with

another strong CYP2D6 inhibitor increased dextromethorphan overall exposure by 2.69-fold.

buPROPion; Naltrexone: (Moderate) Monitor for dextromethorphan-related side effects, such as dizziness or drowsiness, if concomitant use of bupropion is necessary.

Concomitant use may increase dextromethorphan exposure and side effects.

Dextromethorphan is a CYP2D6 substrate and bupropion is a strong CYP2D6 inhibitor.

Concomitant use with another strong CYP2D6 inhibitor increased dextromethorphan overall exposure by 2.69-fold.

Butalbital; Acetaminophen; Caffeine; Codeine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering codeine with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Butalbital; Aspirin; Caffeine; Codeine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering codeine with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

chlordiazepoxide; Amitriptyline: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with tricyclic antidepressants. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Chlorpheniramine; Codeine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering codeine with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Citalopram: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with citalopram. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome, particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

clobazam: (Moderate) Use of dextromethorphan with clobazam may result in increased dextromethorphan exposure. Monitor for dextromethorphan-related side effects, such

as drowsiness, nausea or vomiting, sweating, restlessness, or tremor. Clobazam inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. A dosage reduction of dextromethorphan may be necessary for some patients. During one in vivo study, co-administration of dextromethorphan and clobazam resulted in increased AUC and Cmax of dextromethorphan by 90% and 59%, respectively.

clomiPRAMINE: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with tricyclic antidepressants. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Cobicistat: (Moderate) Use of dextromethorphan with cobicistat may result in increased dextromethorphan exposure. Cobicistat inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Codeine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering codeine with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Codeine; Dexbrompheniramine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering codeine with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Codeine; guaifenesin: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering codeine with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Codeine; guaifenesin; Pseudoephedrine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering codeine with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Codeine; Phenylephrine; Promethazine: (Moderate) Because of the potential risk and

severity of serotonin syndrome, caution should be observed when administering codeine with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Codeine; Promethazine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering codeine with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Dacomitinib: (Moderate) Monitor for dextromethorphan-related side effects, such as dizziness or drowsiness, if concomitant use of dacomitinib is necessary. For patients receiving combination dextromethorphan; bupropion, do not exceed a maximum dose of 45 mg dextromethorphan; 105 mg bupropion once daily. Concomitant use may increase dextromethorphan exposure and side effects. Dextromethorphan is a CYP2D6 substrate and dacomitinib is a strong CYP2D6 inhibitor. Concomitant use with another strong CYP2D6 inhibitor increased dextromethorphan overall exposure by 2.69-fold.

Darifenacin: (Minor) Use of dextromethorphan with darifenacin may result in increased dextromethorphan exposure. Darifenacin is a moderate inhibitor of CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Darunavir; Cobicistat: (Moderate) Use of dextromethorphan with cobicistat may result in increased dextromethorphan exposure. Cobicistat inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Darunavir; Cobicistat; Emtricitabine; Tenofovir alafenamide: (Moderate) Use of dextromethorphan with cobicistat may result in increased dextromethorphan exposure. Cobicistat inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Desipramine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with tricyclic antidepressants. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Desvenlafaxine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with desvenlafaxine. Inform patients taking this combination of the possible increased risk

and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs. In addition, the manufacturer of desvenlafaxine recommends that the dose of CYP2D6 substrates, such as dextromethorphan, be reduced by up to 50% if used with desvenlafaxine 400 mg/day, a CYP2D6 inhibitor.

Dextromethorphan; buPROPion: (Moderate) Monitor for dextromethorphan-related side effects, such as dizziness or drowsiness, if concomitant use of bupropion is necessary. Concomitant use may increase dextromethorphan exposure and side effects.

Dextromethorphan is a CYP2D6 substrate and bupropion is a strong CYP2D6 inhibitor. Concomitant use with another strong CYP2D6 inhibitor increased dextromethorphan overall exposure by 2.69-fold.

Dextromethorphan; quiniDine: (Moderate) Monitor for dextromethorphan-related side effects, such as dizziness or drowsiness, if concomitant use of quinidine is necessary. For patients receiving combination dextromethorphan; bupropion, do not exceed a maximum dose of 45 mg dextromethorphan; 105 mg bupropion once daily.

Concomitant use may increase dextromethorphan exposure and side effects.

Dextromethorphan is a CYP2D6 substrate and quinidine is a strong CYP2D6 inhibitor. Concomitant use with another strong CYP2D6 inhibitor increased dextromethorphan overall exposure by 2.69-fold.

Donepezil; Memantine: (Moderate) Dextromethorphan is a NMDA antagonist and may lead to additive adverse effects if combined with memantine, also an NMDA antagonist. It may be prudent to avoid coadministration of dextromethorphan with memantine. If coadministration cannot be avoided, monitor for increased adverse effects such as agitation, dizziness and other CNS events.

Doxepin: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with tricyclic antidepressants. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Dronedarone: (Moderate) Use of dextromethorphan with dronedarone may result in increased dextromethorphan exposure. Dronedarone inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

DULoxetine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with duloxetine. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate

symptomatic treatment if serotonin syndrome occurs.

Eletriptan: (Moderate) Monitor for signs and symptoms of serotonin syndrome, particularly during treatment initiation and dosage increase, during concomitant dextromethorphan and serotonin-receptor agonists use. If serotonin syndrome occurs, discontinue therapy. Concomitant use increases the risk for serotonin syndrome.

Eliglustat: (Moderate) Use of dextromethorphan with eliglustat may result in increased dextromethorphan exposure. Eliglustat inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Elvitegravir; Cobicistat; Emtricitabine; Tenofovir Alafenamide: (Moderate) Use of dextromethorphan with cobicistat may result in increased dextromethorphan exposure. Cobicistat inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Elvitegravir; Cobicistat; Emtricitabine; Tenofovir Disoproxil Fumarate: (Moderate) Use of dextromethorphan with cobicistat may result in increased dextromethorphan exposure. Cobicistat inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Escitalopram: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with escitalopram. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome, particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Fedratinib: (Moderate) Use of dextromethorphan with fedratinib may result in increased dextromethorphan exposure. Fedratinib is a moderate inhibitor of CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Fenfluramine: (Moderate) Use fenfluramine and dextromethorphan with caution due to an increased risk of serotonin syndrome. Monitor patients for the emergence of serotonin syndrome. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

fentaNYL: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering fentanyl with dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

FLUoxetine: (Moderate) Monitor for dextromethorphan-related side effects, such as

dizziness or drowsiness, if concomitant use of fluoxetine is necessary. For patients receiving combination dextromethorphan; bupropion, do not exceed a maximum dose of 45 mg dextromethorphan; 105 mg bupropion once daily. Additionally, monitor patients for signs and symptoms of serotonin syndrome. Concomitant use may increase dextromethorphan exposure and the risk for serotonin syndrome. Dextromethorphan is a CYP2D6 substrate and fluoxetine is a strong CYP2D6 inhibitor. Concomitant use with another strong CYP2D6 inhibitor increased dextromethorphan overall exposure by 2.69-fold.

fluvoxamine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with fluvoxamine. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome, particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Frovatriptan: (Moderate) Monitor for signs and symptoms of serotonin syndrome, particularly during treatment initiation and dosage increase, during concomitant dextromethorphan and serotonin-receptor agonists use. If serotonin syndrome occurs, discontinue therapy. Concomitant use increases the risk for serotonin syndrome.

Gepirone: (Moderate) Monitor for serotonin syndrome if concomitant use of gepirone and dextromethorphan is necessary. Both medications affect the serotonergic neurotransmitter system; concomitant use increases the risk for serotonin syndrome.

Givosiran: (Moderate) If possible, avoid concomitant use of dextromethorphan with givosiran due to the risk of increased dextromethorphan-related adverse reactions. If use is necessary, consider decreasing the dextromethorphan dose. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor. Dextromethorphan is a sensitive CYP2D6 substrate. Givosiran may moderately reduce hepatic CYP2D6 enzyme activity because of its pharmacological effects on the hepatic heme biosynthesis pathway.

Grapefruit juice: (Minor) Intake of grapefruit juice or seville orange juice increased dextromethorphan bioavailability in one study. Patients with increased concentrations of dextromethorphan may experience drowsiness or serotonergic side effects (dizziness, nervousness or restlessness, nausea, vomiting, stomach upset) not usually noted with prescribed or nonprescription product doses. Grapefruit juice and seville orange juice contain compounds that can inhibit P-glycoprotein in the intestinal wall, and dextromethorphan absorption may be affected by P-glycoprotein activity.

Dextromethorphan is largely metabolized by CYP2D6, so this particular interaction with grapefruit juice may be more relevant in patients who are poor CYP2D6 metabolizers.

Hyoscyamine; Methenamine; Methylene Blue; Phenyl Salicylate; Sodium Biphosphate: (Major) Because of the potential risk and severity of serotonin syndrome, coadministration of dextromethorphan and IV methylene blue should be avoided if

possible. Methylene blue has been demonstrated to be a potent monoamine oxidase inhibitor (MAOI) and may cause potentially fatal serotonin toxicity (serotonin syndrome) when combined with serotonin reuptake inhibitors (SRIs). Dextromethorphan increases central serotonin effects. If methylene blue is judged to be indicated, all SRIs, including dextromethorphan, must be ceased prior to treatment/procedure/surgery. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Imatinib: (Moderate) Use of dextromethorphan with imatinib may result in increased dextromethorphan exposure. Imatinib inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Imipramine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with tricyclic antidepressants. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Isocarboxazid: (Contraindicated) Dextromethorphan products are contraindicated in patients taking a monoamine oxidase inhibitor (MAOI) or in patients who have taken an MAOI within the last 14 days, due to the risk of serious and possibly fatal drug interactions, including serotonin syndrome. A washout period of at least 14 days should elapse between the start of dextromethorphan after discontinuation of an MAOI.

Patients should read nonprescription product labels carefully. Before initiating an MAOI after using other serotonergic agents, a sufficient amount of time must be allowed for clearance of the serotonergic agent and its active metabolites.

Lasmiditan: (Moderate) Serotonin syndrome may occur during coadministration of lasmiditan and dextromethorphan. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome, particularly after a dose increase or the addition of other serotonergic medications to an existing regimen. Discontinue all serotonergic agents if serotonin syndrome occurs and implement appropriate medical management.

Levomilnacipran: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with levomilnacipran. Dextromethorphan has serotonergic activity. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Linezolid: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering linezolid with dextromethorphan.

Linezolid is an antibiotic that is also a reversible, non-selective MAO inhibitor and has potential to interact with serotonergic agents. Dextromethorphan has serotonergic activity. However, the potential for interaction has been studied. Subjects were administered dextromethorphan (two 20-mg doses given 4 hours apart) with or without linezolid. No serotonin syndrome effects (confusion, delirium, restlessness, tremors, blushing, diaphoresis, hyperpyrexia) have been observed in normal subjects receiving linezolid and dextromethorphan.

Mavorixafor: (Moderate) Monitor for dextromethorphan-related side effects, such as dizziness or drowsiness, if concomitant use of mavorixafor is necessary. For patients receiving combination dextromethorphan; bupropion, do not exceed a maximum dose of 45 mg dextromethorphan; 105 mg bupropion once daily. Concomitant use may increase dextromethorphan exposure and side effects. Dextromethorphan is a CYP2D6 substrate and mavorixafor is a strong CYP2D6 inhibitor. Concomitant use increased dextromethorphan overall exposure by 9-fold.

Meloxicam; Rizatriptan: (Moderate) Monitor for signs and symptoms of serotonin syndrome, particularly during treatment initiation and dosage increase, during concomitant dextromethorphan and serotonin-receptor agonists use. If serotonin syndrome occurs, discontinue therapy. Concomitant use increases the risk for serotonin syndrome.

Memantine: (Moderate) Dextromethorphan is a NMDA antagonist and may lead to additive adverse effects if combined with memantine, also an NMDA antagonist. It may be prudent to avoid coadministration of dextromethorphan with memantine. If coadministration cannot be avoided, monitor for increased adverse effects such as agitation, dizziness and other CNS events.

Methenamine; Sodium Acid Phosphate; Methylene Blue; Hyoscyamine: (Major) Because of the potential risk and severity of serotonin syndrome, coadministration of dextromethorphan and IV methylene blue should be avoided if possible. Methylene blue has been demonstrated to be a potent monoamine oxidase inhibitor (MAOI) and may cause potentially fatal serotonin toxicity (serotonin syndrome) when combined with serotonin reuptake inhibitors (SRIs). Dextromethorphan increases central serotonin effects. If methylene blue is judged to be indicated, all SRIs, including dextromethorphan, must be ceased prior to treatment/procedure/surgery. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Methylene Blue: (Major) Because of the potential risk and severity of serotonin syndrome, coadministration of dextromethorphan and IV methylene blue should be avoided if possible. Methylene blue has been demonstrated to be a potent monoamine oxidase inhibitor (MAOI) and may cause potentially fatal serotonin toxicity (serotonin syndrome) when combined with serotonin reuptake inhibitors (SRIs).

Dextromethorphan increases central serotonin effects. If methylene blue is judged to be

indicated, all SRIs, including dextromethorphan, must be ceased prior to treatment/procedure/surgery. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Milnacipran: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with milnacipran. Dextromethorphan has serotonergic activity. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Mirabegron: (Minor) Use of dextromethorphan with mirabegron may result in increased dextromethorphan exposure. Mirabegron moderately inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Mirtazapine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with mirtazapine. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Monoamine oxidase inhibitors: (Contraindicated) Dextromethorphan products are contraindicated in patients taking a monoamine oxidase inhibitor (MAOI) or in patients who have taken an MAOI within the last 14 days, due to the risk of serious and possibly fatal drug interactions, including serotonin syndrome. A washout period of at least 14 days should elapse between the start of dextromethorphan after discontinuation of an MAOI. Patients should read nonprescription product labels carefully. Before initiating an MAOI after using other serotonergic agents, a sufficient amount of time must be allowed for clearance of the serotonergic agent and its active metabolites.

Naratriptan: (Moderate) Monitor for signs and symptoms of serotonin syndrome, particularly during treatment initiation and dosage increase, during concomitant dextromethorphan and serotonin-receptor agonists use. If serotonin syndrome occurs, discontinue therapy. Concomitant use increases the risk for serotonin syndrome.

Nefazodone: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with nefazodone. Both drugs have serotonergic activity. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Niraparib; Abiraterone: (Moderate) Abiraterone inhibits CYP2D6 and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor. If

dextromethorphan- related side effects occur, a dose reduction or discontinuation of dextromethorphan may be necessary. In an in vivo drug-drug interaction trial, the C_{max} and AUC of the CYP2D6 substrate dextromethorphan were increased 2.8- and 2.9-fold, respectively when dextromethorphan 30 mg was given with abiraterone acetate 1,000 mg daily along with prednisone 5 mg twice daily. The AUC for dextrophan, the active metabolite of dextromethorphan, increased approximately 1.3 fold.

Nortriptyline: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with tricyclic antidepressants. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

OLANzapine; FLUoxetine: (Moderate) Monitor for dextromethorphan-related side effects, such as dizziness or drowsiness, if concomitant use of fluoxetine is necessary. For patients receiving combination dextromethorphan; bupropion, do not exceed a maximum dose of 45 mg dextromethorphan; 105 mg bupropion once daily. Additionally, monitor patients for signs and symptoms of serotonin syndrome. Concomitant use may increase dextromethorphan exposure and the risk for serotonin syndrome.

Dextromethorphan is a CYP2D6 substrate and fluoxetine is a strong CYP2D6 inhibitor. Concomitant use with another strong CYP2D6 inhibitor increased dextromethorphan overall exposure by 2.69-fold.

Oliceridine: (Moderate) If concomitant use of oliceridine and dextromethorphan is warranted, monitor patients for the emergence of serotonin syndrome. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs. The concomitant use of opioids with other drugs that affect the serotonergic neurotransmitter system has resulted in serotonin syndrome.

Oritavancin: (Moderate) Administration of oritavancin, a weak inducer of CYP2D6 and CYP3A4, with dextromethorphan resulted in a 31% reduction in the ratio of dextromethorphan to dextrophan concentrations in the urine. The efficacy of dextromethorphan may be reduced if these drugs are administered concurrently.

Panobinostat: (Major) Avoid coadministering panobinostat with sensitive CYP2D6 substrates such as dextromethorphan due to increased dextromethorphan exposure. Consider alternatives to dextromethorphan if possible. If concomitant use cannot be avoided, closely monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor. Panobinostat inhibits CYP2D6. When a single 60-mg dose of dextromethorphan (DM) was administered after 3 doses of panobinostat (20 mg on days 3, 5, and 8), the DM C_{max} increased by 20% to 200% and DM exposure (AUC) increased by 20% to 130% (interquartile ranges) vs. when DM was given alone; however, the change in exposure was highly variable among the patients studied.

PARoxetine: (Moderate) Monitor for dextromethorphan-related side effects, such as dizziness or drowsiness, if concomitant use of paroxetine is necessary. For patients receiving combination dextromethorphan; bupropion, do not exceed a maximum dose of 45 mg dextromethorphan; 105 mg bupropion once daily. Additionally, monitor patients for signs and symptoms of serotonin syndrome. Concomitant use may increase dextromethorphan exposure and the risk for serotonin syndrome. Dextromethorphan is a CYP2D6 substrate and paroxetine is a strong CYP2D6 inhibitor. Concomitant use with paroxetine increased dextromethorphan overall exposure by 2.69-fold.

PAZOPanib: (Moderate) Use of dextromethorphan with pazopanib may result in increased dextromethorphan exposure. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor. Results from drug-drug interaction trials conducted in cancer patients suggest that pazopanib is a weak inhibitor of CYP2D6 and dextromethorphan is a CYP2D6 substrate. Coadministration of dextromethorphan and pazopanib resulted in an increase of 33% to 64% in the ratio of dextromethorphan to dextrorphan concentrations in the urine, indicating reduced CYP2D6 metabolism to the dextrorphan metabolite.

Peginterferon Alfa-2b: (Minor) Monitor for adverse effects associated with increased exposure to dextromethorphan if peginterferon alfa-2b is coadministered.

Peginterferon alfa -2b is a CYP2D6 inhibitor, while dextromethorphan is a CYP2D6 substrate.

Perphenazine; Amitriptyline: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with tricyclic antidepressants. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Phenelzine: (Contraindicated) Dextromethorphan products are contraindicated in patients taking a monoamine oxidase inhibitor (MAOI) or in patients who have taken an MAOI within the last 14 days, due to the risk of serious and possibly fatal drug interactions, including serotonin syndrome. A washout period of at least 14 days should elapse between the start of dextromethorphan after discontinuation of an MAOI.

Patients should read nonprescription product labels carefully. Before initiating an MAOI after using other serotonergic agents, a sufficient amount of time must be allowed for clearance of the serotonergic agent and its active metabolites.

Procarbazine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with procarbazine, an antineoplastic agent with monoamine oxidase inhibitor (MAOI) activity. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if

serotonin syndrome occurs.

Propafenone: (Minor) Use of dextromethorphan with propafenone might increase dextromethorphan exposure. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor. In vitro studies suggest that propafenone inhibits CYP2D6, but clinically relevant interactions have not been reported due to this potential action. Dextromethorphan is a CYP2D6 substrate.

Protriptyline: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with tricyclic antidepressants. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

quinidine: (Moderate) Monitor for dextromethorphan-related side effects, such as dizziness or drowsiness, if concomitant use of quinidine is necessary. For patients receiving combination dextromethorphan; bupropion, do not exceed a maximum dose of 45 mg dextromethorphan; 105 mg bupropion once daily. Concomitant use may increase dextromethorphan exposure and side effects. Dextromethorphan is a CYP2D6 substrate and quinidine is a strong CYP2D6 inhibitor. Concomitant use with another strong CYP2D6 inhibitor increased dextromethorphan overall exposure by 2.69-fold.

quinine: (Moderate) Although clinical drug interaction studies have not been performed, antimalarial doses of quinine (greater than or equal to 600 mg/day in adults) may inhibit the metabolism of CYP2D6 substrates such as dextromethorphan and may result in increased dextromethorphan exposure. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Rasagiline: (Contraindicated) Dextromethorphan prescription products are contraindicated in patients taking monoamine oxidase inhibitors (MAOIs) or in patients who have taken MAOIs within the preceding 14 days, due to the risk of serious and possibly fatal drug interactions, including serotonin syndrome. Allow at least 14 days after stopping dextromethorphan before starting an MAOI, including rasagiline. Brief episodes of psychosis or bizarre behavior have also been reported with this combination. Patients should read nonprescription product labels carefully. Before initiating an MAOI after using other serotonergic agents, a sufficient amount of time must be allowed for clearance of the serotonergic agent and its active metabolites.

Rizatriptan: (Moderate) Monitor for signs and symptoms of serotonin syndrome, particularly during treatment initiation and dosage increase, during concomitant dextromethorphan and serotonin-receptor agonists use. If serotonin syndrome occurs, discontinue therapy. Concomitant use increases the risk for serotonin syndrome.

Rolapitant: (Moderate) Rolapitant increases exposure to dextromethorphan. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor. Rolapitant is a moderate CYP2D6 inhibitor with a

prolonged effect; the inhibitory effect of rolapitant is expected to persist beyond 28 days for an unknown duration. During drug interaction studies, exposure (AUC) to dextromethorphan following a single dose of rolapitant increased close to 3-fold on Days 8 and Day 22. The inhibition of CYP2D6 persisted on Day 28 with a 2.3-fold increase in dextromethorphan exposure (AUC), the last time point measured.

Safinamide: (Contraindicated) Dextromethorphan prescription products are contraindicated in patients taking monoamine oxidase inhibitors (MAOIs) or in patients who have taken MAOIs within the preceding 14 days, due to the risk of serious and possibly fatal drug interactions, including serotonin syndrome. Allow at least 14 days after stopping dextromethorphan before starting an MAOI, including safinamide. Brief episodes of psychosis or bizarre behavior have also been reported with this combination. Patients should read nonprescription product labels carefully. Before initiating an MAOI after using other serotonergic agents, a sufficient amount of time must be allowed for clearance of the serotonergic agent and its active metabolites.

Selegiline: (Contraindicated) Dextromethorphan products are contraindicated in patients taking selegiline, a selective monoamine oxidase type B inhibitor (MAO-B inhibitor) or in patients who have taken an selegiline within the last 14 days, due to the risk of serious and possibly fatal drug interactions, including serotonin syndrome. A washout period of at least 14 days should elapse between the start of dextromethorphan after discontinuation of selegiline. Patients should read nonprescription product labels carefully. Before initiating selegiline after using dextromethorphan, a sufficient amount of time is advisable for clearance of dextromethorphan.

Serotonin-Receptor Agonists: (Moderate) Monitor for signs and symptoms of serotonin syndrome, particularly during treatment initiation and dosage increase, during concomitant dextromethorphan and serotonin-receptor agonists use. If serotonin syndrome occurs, discontinue therapy. Concomitant use increases the risk for serotonin syndrome.

Sertraline: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with sertraline. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome, particularly during treatment initiation and dose adjustment. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs. In addition, sertraline inhibits CYP2D6 and may increase systemic dextromethorphan exposure. Increased dextromethorphan concentrations may result in adverse effects consistent with the serotonin syndrome.

St. John's Wort, Hypericum perforatum: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with St. John's Wort. Inform patients of the possible increased risk and monitor for the emergence of serotonin syndrome, particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate

symptomatic treatment if serotonin syndrome occurs.

SUMatriptan: (Moderate) Monitor for signs and symptoms of serotonin syndrome, particularly during treatment initiation and dosage increase, during concomitant dextromethorphan and serotonin-receptor agonists use. If serotonin syndrome occurs, discontinue therapy. Concomitant use increases the risk for serotonin syndrome.

SUMatriptan; Naproxen: (Moderate) Monitor for signs and symptoms of serotonin syndrome, particularly during treatment initiation and dosage increase, during concomitant dextromethorphan and serotonin-receptor agonists use. If serotonin syndrome occurs, discontinue therapy. Concomitant use increases the risk for serotonin syndrome.

Terbinafine: (Moderate) Monitor for dextromethorphan-related side effects, such as dizziness or drowsiness, if concomitant use of terbinafine is necessary. For patients receiving combination dextromethorphan; bupropion, do not exceed a maximum dose of 45 mg dextromethorphan; 105 mg bupropion once daily. Concomitant use may increase dextromethorphan exposure and side effects. Dextromethorphan is a CYP2D6 substrate and terbinafine is a strong CYP2D6 inhibitor. Concomitant use with another strong CYP2D6 inhibitor increased dextromethorphan overall exposure by 2.69-fold.

Tipranavir: (Moderate) Monitor for dextromethorphan-related side effects, such as dizziness or drowsiness, if concomitant use of tipranavir is necessary. For patients receiving combination dextromethorphan; bupropion, do not exceed a maximum dose of 45 mg dextromethorphan; 105 mg bupropion once daily. Concomitant use may increase dextromethorphan exposure and side effects. Dextromethorphan is a CYP2D6 substrate and tipranavir is a strong CYP2D6 inhibitor. Concomitant use with another strong CYP2D6 inhibitor increased dextromethorphan overall exposure by 2.69-fold.

Tocilizumab: (Minor) Concomitant use of tocilizumab and dextromethorphan may lead to a decrease in the efficacy of dextromethorphan; clinical significance of this interaction is not known or established. Inhibition of IL-6 signaling by tocilizumab may restore CYP450 activities to higher levels leading to increased metabolism of drugs that are CYP450 substrates as compared to metabolism prior to treatment. This effect on CYP450 enzyme activity may persist for several weeks after stopping tocilizumab. A 5% decrease in dextromethorphan exposure and a 29% decrease in its metabolite, dextrophan was noted 1 week after a single tocilizumab infusion. In vitro, tocilizumab has the potential to affect expression of multiple CYP enzymes, including CYP1A2, CYP2B6, CYP2C9, CYP2C19, CYP2D6, and CYP3A4. Dextromethorphan is a CYP2D6 substrate.

Tranylcypromine: (Contraindicated) Dextromethorphan products are contraindicated in patients taking a monoamine oxidase inhibitor (MAOI) or in patients who have taken an MAOI within the last 14 days, due to the risk of serious and possibly fatal drug interactions, including serotonin syndrome. A washout period of at least 14 days should elapse between the start of dextromethorphan after discontinuation of an MAOI.

Patients should read nonprescription product labels carefully. Before initiating an MAOI

after using other serotonergic agents, a sufficient amount of time must be allowed for clearance of the serotonergic agent and its active metabolites.

Tricyclic antidepressants: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with tricyclic antidepressants. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Trimipramine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with tricyclic antidepressants. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Vemurafenib: (Minor) Use of dextromethorphan with vemurafenib increases dextromethorphan exposure. Vemurafenib is a weak CYP2D6 inhibitor and dextromethorphan is a CYP2D6 substrate. Monitor for dextromethorphan-related side effects, such as drowsiness, nausea or vomiting, sweating, restlessness, or tremor.

Coadministration of vemurafenib and dextromethorphan increased the AUC of dextromethorphan by 47% and the dextromethorphan C_{max} by 36%.

Venlafaxine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with venlafaxine. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome, particularly during treatment initiation and dose increases. If serotonin syndrome occurs, serotonergic drugs should be discontinued and appropriate medical treatment should be initiated.

Vilazodone: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with vilazodone. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

Viloxazine: (Moderate) Monitor for an increase in dextromethorphan-related adverse effects if concomitant use of viloxazine is necessary. Concomitant use may increase dextromethorphan exposure; viloxazine is a weak CYP2D6 inhibitor and dextromethorphan is a CYP2D6 substrate.

Vortioxetine: (Moderate) Because of the potential risk and severity of serotonin syndrome, caution should be observed when administering dextromethorphan with vortioxetine. Inform patients taking this combination of the possible increased risk and monitor for the emergence of serotonin syndrome particularly during treatment

initiation and dose adjustments. Discontinue all serotonergic agents and initiate symptomatic treatment if serotonin syndrome occurs.

ZOLMitriptan: (Moderate) Monitor for signs and symptoms of serotonin syndrome, particularly during treatment initiation and dosage increase, during concomitant dextromethorphan and serotonin-receptor agonists use. If serotonin syndrome occurs, discontinue therapy. Concomitant use increases the risk for serotonin syndrome.

Adverse Reaction

anaphylactoid reactions, dizziness, drowsiness, fatigue, rash, urticaria

Adverse reactions to dextromethorphan at usual doses used for cough suppression are generally mild and infrequent. Drowsiness, dizziness, and fatigue are not reported often. Rash, urticaria and anaphylactoid reactions have rarely been reported.

psychosis, serotonin syndrome

Excessive dextromethorphan dosage due to higher than recommended doses or substance abuse may result in additional adverse effects consistent with the serotonin syndrome including: confusion, excitement, nervousness, restlessness, irritability, nausea, vomiting, and dysarthria (slurred speech). Psychosis, hallucinations, ataxia, disassociation, and other CNS and neurological effects have been reported with abuse or overdose. Although dextromethorphan is the dextro-isomer of levorphanol, it has little dependence liability since it lacks the opiate agonist effects.

Description

Dextromethorphan is an oral non-opioid antitussive agent. Although it is related to the opioid agonists (dextromethorphan is the methyl ether of the d-isomer of levorphanol), dextromethorphan does not exhibit typical opioid characteristics. The only opioid-like characteristic dextromethorphan retains is its antitussive property. Dextromethorphan is primarily used to treat nonproductive cough; it has no expectorant activity. When ingested at recommended dosage levels for intended purposes, dextromethorphan is generally regarded as a safe and effective cough suppressant; however, the drug's utility for cough due to upper respiratory infection (URI) is not robust. There is some evidence dextromethorphan is helpful for patients with cough due to chronic bronchitis or COPD. Dextromethorphan has been identified as an antagonist to N-methyl-D-aspartate (NMDA) receptors and has been studied in the treatment of pain including cancer pain, postoperative pain, and neuropathic pain with mixed results and, in some cases, intolerable side effects due to the high doses employed for these uses. Abuse of dextromethorphan has been reported and excessive dosage can cause serious side

effects, including ataxia, impaired cognition, psychosis, disassociation, and serotonin syndrome. A variety of oral formulations of dextromethorphan are available without a prescription, and dextromethorphan is also frequently found in nonprescription combination cough and cold products.

Mechanism Of Action

Dextromethorphan is a non-competitive antagonist of N-methyl-D-aspartate (NMDA) receptors in the brain and spinal cord, and this activity is responsible for its therapeutic and toxic effects. The NMDA receptor complex is a ligand-gated ion channel capable of allowing intracellular entry of calcium ions, which, in turn, stimulates second and third messenger signaling pathways. The NMDA receptor is found throughout the nervous system and is involved in processes such as development, learning, and memory. The NMDA receptor is also thought to sensitize interneurons following repetitive activation of nociceptors. Sustained activation of the NMDA receptor is believed to be involved in allodynia, hyperalgesia, and reduced efficacy of opioids. Activation of NMDA receptors by glutamate and aspartate may play a role in the "wind-up" phenomenon or secondary pain. Secondary pain occurs due to C-fiber stimulation of nociceptors. As compared to A-fibers, the afferent C-fibers are small and have slow conduction, resulting in delayed sensation of dull, persistent, poorly localized pain. The overactivity of these receptors has been shown to produce neurotoxicity that may lead to nerve death. NMDA antagonists, such as dextromethorphan, can block these actions and, in theory, may be neuroprotective. NMDA antagonists can also potentiate opioids and reduce the development of tolerance to opiates, which may be helpful in treating neuropathic pain.

As an antitussive, dextromethorphan acts centrally on the cough center in the medulla to raise the threshold for coughing by decreasing the excitability of the cough center. Dextromethorphan is about equal to codeine in depressing the cough reflex. It is the d-isomer of levorphanol but has none of the analgesic, respiratory depressive, or sedative effects associated with opiate agonists when used in usual antitussive dosages. In therapeutic dosage dextromethorphan also does not inhibit ciliary activity. Naloxone, an opiate-antagonist, does not block the antitussive effects of dextromethorphan.

Pharmacokinetics

Dextromethorphan is administered orally. Dextromethorphan is approximately 60% to 70% protein bound. Dextromethorphan is rapidly and primarily metabolized via first-pass in the liver by CYP2D6 to the major O-demethylated metabolite dextrorphan (DX). Less prominently, dextromethorphan undergoes N-demethylation to 3-

methoxymorphinan via CYP3A4/A5. Once DX is formed, it is glucuronidated by uridine diphosphate-glucuronosyltransferase to form dextrorphan-O-glucuronide, This glucuronide metabolite is unlikely to produce significant pharmacological effects as it does not cross the blood-brain barrier well. In humans, (+)-3-hydroxy-N-methylmorphinan, (+)-3-hydroxy-morphinan, and traces of unmetabolized drug were found in urine after oral administration, but renal elimination is not a significant pathway. The mean half-life of dextromethorphan is approximately 4 hours from an immediate-release formulation in those with extensive CYP2D6 metabolizer status.

Affected Cytochrome P450 (CYP450) isoenzymes and drug transporters: CYP2D6
Dextromethorphan is primarily metabolized by the CYP2D6 isoenzyme and is a sensitive substrate.

Route-Specific Pharmacokinetics

- **Oral Route**

Dextromethorphan is rapidly absorbed orally, with antitussive activity appearing within 15 to 30 minutes after ingestion of an immediate-release formulation. Food does not appear to affect absorption. The duration of action after oral administration is about 3 to 8 hours for dextromethorphan hydrobromide and 10 to 12 hours for dextromethorphan polistirex.

- **Hepatic Impairment**

Dextromethorphan pharmacokinetic parameters (exposure, maximum concentrations, clearance) are similar in people with mild to moderate hepatic impairment with extensive CYP2D6 metabolizer status and healthy subjects. Dextromethorphan pharmacokinetics has not been specifically studied in people with severe hepatic disease, but exposure is expected to increase due to reduced oxidative metabolism.

- **Renal Impairment**

Subjects with renal impairment show little difference in dextromethorphan pharmacokinetics compared to healthy subjects. Renal elimination is not a significant elimination pathway for dextromethorphan.

- **Other**

CYP2D6 Poor Metabolizers

Dextromethorphan is primarily metabolized by CYP2D6 to dextrorphan. The rate of dextromethorphan metabolism varies between individuals according to CYP2D6 phenotype (extensive or poor metabolizers). In poor metabolizers (PMs) of CYP2D6, dextromethorphan exposure is naturally increased and the action is prolonged, and dextromethorphan-related adverse effects may be possible, particularly with higher

dosages. Approximately 7% to 10% of Caucasians and 3% to 8% of African Americans are classified as CYP2D6 PMs.

Administration

For storage information, see the specific product information within the How Supplied section.

Oral Administration

Oral Solid Formulations

Tablets and Softgel capsules:

Administer orally. Not intended for administration to individuals less than 12 years of age.

Oral Liquid Formulations

Oral solutions or syrup (immediate-release, dextromethorphan hydrobromide):

To ensure accurate dosing, administer using a calibrated oral measuring device.

Extended-release oral suspension (dextromethorphan polistirex suspension):

Shake well prior to each administration.

To ensure accurate dosing, administer using a calibrated oral measuring device. The manufacturers recommend using the calibrated dosing cup supplied with the product.

Maximum Dosage Limits

- **Adults**

120 mg/day PO for extended- and immediate-release formulations as a cough suppressant; off-label suggested maximum for diabetic neuropathy: 960 mg/day PO of immediate-release formulations.

- **Geriatric**

120 mg/day PO for extended- and immediate-release formulations as a cough suppressant; off-label suggested maximum for neuropathy: 960 mg/day PO of immediate-release formulations.

- **Adolescents**

120 mg/day PO for extended- and immediate-release formulations.

- **Children**

12 years: 120 mg/day PO for extended and immediate-release formulations.

6 to 11 years: 60 mg/day PO for extended and immediate-release formulations.

4 to 5 years: 30 mg/day PO for extended and immediate-release formulations.

1 to 3 years: Safety and efficacy have not been established.

- **Infants**

Safety and efficacy have not been established.

- **Neonates**

Safety and efficacy have not been established.

Dosage Forms

- Actidom DMX 30mg-200mg-10mg/5mL Solution
- Actinel Cough 15mg-200mg-30mg/5mL Solution
- Actinel DM 20mg-400mg-10mg/5mL Solution
- Actinel Pediatric Cough 5mg-50mg-15mg/5mL Solution
- ACTISPEC PSE 10mg-187mg-30mg/5mL Solution (Grape)
- ALAHIST DM 10mg-12.5mg-5mg/5mL Liquid (Strawberry)
- Altarussin DM Solution
- Aquanaz PSE 20mg-375mg-60mg Tablet
- Aquatab DM 60mg-1200mg Sustained-Release Tablet
- Auvelity 45mg-105mg Extended-Release Tablet
- BIOCOTRON Dextromethorphan Hydrobromide/Guaifenesin 10mg-100mg/5mL Solution
- BIODESP DM 15mg-100mg-5mg/5mL Oral Solution (Grape)
- BioGtuss 15mg-300mg-10mg/5mL Solution (Grape)
- BIONEL 15mg-200mg-30mg/5mL Liquid
- BIONEL Pediatric 5mg-50mg-15mg/5mL Liquid
- Broncotron PED 15mg-350mg-10mg/5ml Solution
- Broncotron PED 5mg-100mg-2.5mg/mL Drops
- Brontuss SF-NR 15mg-300mg-10mg/5mL Solution (Grape)
- Buckley's Cough Suppressant 12.5mg/5ml Suspension
- Buckley's DM Cough Suppressant 12.5mg/5ml Suspension
- Buckley's Mixture 12.5mg/5ml Suspension
- Capmist DM 15mg-400mg-60mg Tablet
- Capron DM 7.5mg-7.5mg/5ml Liquid
- CAPRON DMT 30mg-30mg Tablet
- Cheracol D Maximum Strength Cough Formula Solution
- Chest Congestion Relief DM Expectorant/Cough Suppressant 10mg-100mg/5mL Solution (Cherry)
- Coricidin HBP Chest Congestion and Cough SoftGel
- Cough and Chest Congestion DM Syrup (Raspberry)
- Cough DM 12 Hour 30mg/5ml Extended-Release Suspension (Orange)

- CVS Adult Cough & Chest Congestion Maximum Strength 20mg-400mg/20mL Liquid (Cherry)
- CVS Adult DM Maximum 20mg-400mg/20ml Solution
- CVS Adult Severe Cough & Congestion Maximum Strength Solution
- CVS Adult Tussin CF Cough and Cold 10mg-100mg-5mg/5mL Solution
- CVS Adult Tussin Long Acting Cough Solution
- CVS Chest Congestion and Cough HBP Softgel
- CVS Chest Congestion Relief DM 20mg-400mg Tablet
- CVS Children's Chest Congestion Plus Cough 5mg-100mg/5ml Liquid (Cherry)
- CVS Children's Cough & Chest Congestion DM Liquid (Grape)
- CVS Children's Cough DM 12 Hour 30mg/5mL Extended-Release Suspension (Grape)
- CVS Children's Multi-Symptom Cold Liquid (Very Berry)
- CVS Cough DM 12 Hour 30mg/5ml Extended-Release Suspension (Grape)
- CVS Cough DM 12 Hour 30mg/5ml Extended-Release Suspension (Orange)
- CVS Cough Relief 5mg-5mg Lozenge (Honey Lemon)
- CVS Daytime/Nighttime Cough Combo Pack
- CVS Mucus DM 12 Hour Maximum Strength 1,200mg-60mg Extended-Release Tablet
- CVS Mucus DM 30mg-600mg Extended-Release Tablet
- CVS Mucus-DM 1200mg-60mg Extended-Release Tablet
- CVS Nighttime Cough 30mg-12.5mg/30ml Liquid (Cherry)
- CVS Severe Congestion & Cough Maximum Strength Tablet
- CVS Tussin CF Cough and Cold 20mg-400mg-10mg/10mL Solution
- CVS Tussin CF Cough and Cold 10mg-100mg-5mg/5ml Solution
- CVS Tussin CF Cough and Cold 20mg-400mg-10mg/10mL Solution
- CVS Tussin Cough Softgel
- CVS Tussin Cough Sugar Free 10mg-100mg/5ml Solution
- CVS Tussin DM 20mg-200mg/20mL Solution
- CVS Tussin DM 20mg-200mg/10mL Solution
- CVS Tussin DM Maximum Strength Cough & Chest Congestion Solution
- CVS Tussin DM Maximum Strength Cough and Chest Congestion Solution
- CVS Tussin DM Sugar Free 20mg-200mg/10mL Solution
- CVS Tussin Long Acting Cough 15mg/5ml Solution
- DECONEX DMX 17.5mg-400mg-10mg Tablet
- Delsym 12-Hour 30mg/5ml Extended-Release Suspension (Orange)
- Delsym 12-Hour Cough 30mg/5mL Extended-Release Suspension (Grape)
- Delsym Children's 12-Hour Cough 30mg/5mL Extended-Release Suspension (Grape)
- Delsym Children's 12-Hour Cough 30mg/5mL Extended-Release Suspension (Orange)
- Delsym Cough + Chest Congestion DM Liquid
- Delsym Cough Maximum Strength Fast Release Caplet

- Delsym DM Children's Cough + Chest Congestion Solution
- DESGEN 5mg-50mg-2.5mg/1mL Pediatric Drops
- DESGEN DM 10mg-100mg-5mg/5mL Solution (Grape)
- DESGEN DM 10mg-200mg-30mg Tablet
- Dextromethorphan Bulk powder
- Dextromethorphan Hydrobromide 10mg/5mL, Guaifenesin 100mg/5mL Oral solution
- Dextromethorphan Hydrobromide 10mg/5mL, Guaifenesin 100mg/5mL Oral syrup
- Dextromethorphan Hydrobromide 10mg/5mL, Guaifenesin 200mg/5mL Oral solution
- Dextromethorphan Hydrobromide 15mg Oral capsule, liquid filled
- Dextromethorphan Hydrobromide 15mg/5mL, Promethazine Hydrochloride 6.25mg/5mL Oral solution
- Dextromethorphan Hydrobromide 15mg/5mL, Promethazine Hydrochloride 6.25mg/5mL Oral syrup
- Dextromethorphan Hydrobromide 18mg/15mL, Guaifenesin 200mg/15mL, Phenylephrine Hydrochloride 10mg/15mL Oral solution
- Dextromethorphan Hydrobromide 20mg, Guaifenesin 400mg Oral tablet
- Dextromethorphan Hydrobromide 20mg/10mL, Guaifenesin 200mg/10mL Oral solution
- Dextromethorphan Hydrobromide 20mg/20mL, Guaifenesin 200mg/20mL Oral solution
- Dextromethorphan Hydrobromide 28mg/5mL, Guaifenesin 388mg/5mL, Phenylephrine Hydrochloride 10mg/5mL Oral solution
- Dextromethorphan Hydrobromide 60mg, Guaifenesin 1,200mg Oral tablet, extended release
- Dextromethorphan Hydrobromide 7.5mg/5mL, Pyrilamine Maleate 7.5mg/5mL Oral solution
- Dextromethorphan Hydrobromide Bulk powder
- Dextromethorphan Hydrobromide/Guaifenesin 60mg-1,200mg Extended-Release Tablet
- Dextromethorphan Polistirex 30mg/5mL Oral suspension, extended release
- Diabetic Tussin DM 10mg-100mg/5ml Solution
- Diabetic Tussin DM Maximum Strength 10mg-200mg/5ml Solution
- Diabetic Tussin DM Maximum Strength 10mg-200mg/5ml Solution
- Doctor Manzanilla DM 20mg-10mg-2.5mg/5mL Syrup (Bubble Gum)
- Dometuss DMX 200mg-30mg-10mg/5mL Liquid
- ElixSure Cough DM 7.5mg/5ml Solution
- Entre-Cough 15mg-30mg-175mg/5mL Liquid
- Equaline Cough & Chest Congestion Tussin DM 20mg-200mg/20mL Solution

- Equaline Cough DM Dextromethorphan Polistirex 30mg/5ml Extended-Release Suspension (Orange)
- Equaline Non-Drowsy Tussin Cough and Chest Congestion DM 20mg-200mg/10mL Solution
- Equaline Tussin Cough & Chest Congestion DM Max 20mg-400mg/20mL Solution
- Equate Adult Tussin DM Max Maximum Strength Cough & Chest Congestion 20-400mg/20mL Solution
- Equate Children's Cough DM 12 Hour Extended-Release Suspension (Orange)
- Equate Cough DM 12 Hour 30mg/5mL Extended-Release Suspension (Orange)
- Equate DM Cough & Chest Congestion Non-Drowsy 20mg-200mg/20mL Solution (Raspberry)
- Equate Mucus DM Maximum Strength 1200mg-60mg Extended-Release Tablet
- Equate Mucus Relief DM 12 Hour 30mg-600mg Extended-Release Tablet
- Equate Mucus Relief DM 30mg-600mg Extended-Release Tablet
- Equate Mucus Relief DM 600mg-30mg Extended-Release Tablet
- Equate Mucus Relief DM 60mg-1200mg Maximum Strength Extended-Release Tablet
- Equate Mucus Relief DM Maximum Strength 400mg-20mg/20mL Liquid
- Equate Nighttime Tussin DM MAX Maximum Strength 30mg-12.5mg/20mL Solution
- Equate Tussin DM Max 20mg-400mg/20mL Solution (Raspberry)
- ExeFen-DMX 400mg-60mg-20mg Tablet
- ExeFen-DMX 780mg-80mg-40mg Sustained-Release Tablet
- FATHER JOHN'S MEDICINE Cough Suppressant 10mg/5ml Syrup
- Foster & Thrive 12 Hour Cough Relief 30mg/5mL Extended-Release Suspension (Orange)
- Foster & Thrive Adult Tussin CF Multi-Symptom Cold 20mg-200mg-10mg/10mL Solution
- Foster & Thrive Adult Tussin DM Cough & Chest Congestion 20mg-200mg/20mL Solution
- Foster & Thrive Adult Tussin DM Cough & Chest Congestion Non-Drowsy 20mg-200mg/20mL Solution (Raspberry)
- Foster & Thrive Chest Congestion Relief DM 20mg-400mg Caplet
- Foster & Thrive Tussin DM 20mg-200mg/20mL Solution
- Foster & Thrive Tussin DM MAX Cough & Chest Congestion 20mg-400mg/20mL Solution (Raspberry Menthol)
- G-SUPRESS DX 5mg-50mg-2.5mg/1mL Pediatric Drops (Cherry)
- G-TRON PED 15mg-350mg-10mg/5mL Solution (Grape)
- G-Tusicof 20mg/5mL-400mg/5mL-10mg/5mL Oral Solution
- G-ZYNCOF 20mg-400mg/5mL Solution
- Geri-Tussin DM 10mg-100mg/5mL Liquid
- GERI-TUSSIN DM 20mg-200mg/10mL Liquid

- Giltuss Children's Cough & Chest Congestion 10mg-100mg/5mL Solution (Honey Lemon)
- Giltuss Children's Cough & Chest Congestion 5mg-100mg/5mL Solution (Raspberry)
- Giltuss Children's Cough & Cold 7.5mg-150mg-5mg/2.5mL Solution (Cherry)
- Giltuss Cough & Chest Congestion Maximum Strength 20mg-200mg/10mL Solution (Honey Lemon)
- Giltuss Cough & Cold 15mg-300mg-10mg/5mL Solution (Cherry)
- Giltuss Cough & Cold 29mg-390mg-10mg Tablet
- Giltuss Diabetic Cough & Cold 20mg-200mg/10mL Solution (Grape)
- Giltuss DM Children's Cough 8hr 15mg/5ml Solution (Honey Lemon)
- Giltuss DM Cough 8hr Maximum Strength 30mg/10ml Solution (Honey Lemon)
- Giltuss HBP Cough & Chest Congestion 20mg-200mg/10mL Solution (Raspberry)
- Giltuss Total Release 390mg-29mg-10mg Tablet
- Giltuss TR 388mg-28mg-10mg Tablet
- GNP 8 Hour Cough Gels 15mg Liquid Filled Capsule
- GNP Adult Dye-Free Tussin DM Cough & Chest Congestion 20mg-200mg/20mL Solution (Cherry Menthol)
- GNP Adult Sugar-Free Tussin DM Cough & Chest Congestion 20mg-200mg/20mL Solution
- GNP Adult Tussin CF Cough and Cold Solution
- GNP Adult Tussin CF MAX Multi-Symptom Cold Solution
- GNP Adult Tussin DM Cough & Chest Congestion 20mg-200mg/20mL Solution
- GNP Adult Tussin DM Cough and Chest Congestion Sugar-Free Solution
- GNP Adult Tussin DM Max Cough and Chest Congestion Solution (Mixed Berry)
- GNP Adult Tussin DM MAX Nighttime Cough Solution
- GNP Adult Tussin DM Maximum Strength Cough and Chest Congestion Solution
- GNP Adult Tussin Long-Acting Cough Suppressant 30mg/10ml Solution
- GNP Children's Cough 5mg-100mg/5mL Liquid (Cherry)
- GNP Children's Mucus Relief Multi-Symptom Cold Liquid (Very Berry)
- GNP Children's Triacting Day Time Cold & Cough Solution
- GNP Cough DM ER 12 Hour 30mg/5mL Extended-Release Suspension (Grape)
- GNP Cough DM ER 12 Hour 30mg/5mL Extended-Release Suspension (Orange)
- GNP Cough NightTime 15mg-6.25mg/15ml Solution (Cherry)
- GNP Cough Relief 15mg/5mL Liquid (Orange)
- GNP Cough Relief Long-Acting 15mg/5ml Solution (Grape)
- GNP Cough Relief Long-Acting 15mg/5ml Solution (Orange)
- GNP Fast Maximum Severe Congestion & Cough Maximum Strength Solution
- GNP Mucus DM 1200mg-60mg Maximum Strength Extended-Release Tablet
- GNP Mucus Relief DM 20mg-400mg Tablet
- GNP Mucus Relief DM Cough 20mg-400mg Tablet

- GNP Mucus Relief DM Max 400mg-20mg/20mL Liquid
- GNP Mucus Relief Severe Congestion & Cough 20mg-400mg-10mg/20mL Maximum Strength Liquid
- GNP Tussin DM 20mg-400mg Tablet
- GNP Tussin DM MAX Cough & Chest Congestion Non-Drowsy 20mg-400mg/20mL Liquid (Raspberry Menthol)
- GoodSense Children's Cough DM 30mg/5mL Extended-Release Suspension (Orange)
- GoodSense Children's Mucus Relief Multi-Symptom Cold 5mg-100mg-2.5mg/5mL Liquid (Berry)
- GoodSense Cough DM 12 Hour 30mg/5mL Extended-Release Suspension (Orange)
- GoodSense Mucus DM 12 Hour 600mg-30mg Extended-Release Tablet
- GoodSense Mucus DM 12 Hour Maximum Strength 1200mg-60mg Extended-Release Tablet
- GoodSense Mucus Relief Severe Congestion & Cough 20mg-400mg-10mg/20mL Maximum Strength Liquid
- GoodSense Tussin CF Cough and Cold Solution
- GoodSense Tussin CF Multi-Symptom Cold Solution
- GoodSense Tussin DM Cough & Chest Congestion Solution (Fruit)
- GoodSense Tussin DM Cough & Chest Congestion Solution (Raspberry)
- GoodSense Tussin DM Cough and Chest Congestion Solution
- GoodSense Tussin DM Cough Sugar-Free 20mg-200mg/10mL Solution
- GoodSense Tussin DM Cough Sugar-Free Solution
- Guaiasorb DM 10mg-100mg/5mL Solution
- GUAIASORB DM 20mg-200mg/10mL Solution
- HEB Rx Act Tussin CF Cough & Cold CF Non-Drowsy Liquid
- HEB Tussin DM Cough & Chest Congestion Liquid
- Histex-DM 20mg-10mg-2.5mg/5ml Syrup
- HISTEX-DM 20mg-30mg-2.5mg/5mL Syrup
- Humibid DM 30mg-600mg Extended-Release Tablet
- KinderMed Kid's Cough & Congestion 5mg-100mg/5mL Solution (Berry)
- Kirkland Mucus DM 1200mg-60mg Maximum Strength Extended-Release Tablet
- Kroger Tussin DM 20mg-200mg/10mL Solution
- Leader Adult Tussin CF Cough & Cold Liquid
- Leader Adult Tussin CF MAX Multi-Symptom Cold 10mg-200mg-5mg/5ml Liquid
- Leader Adult Tussin DM Cough + Chest Congestion DM 20mg-200mg/10mL Solution
- Leader Adult Tussin DM MAX Cough & Chest Congestion 10mg-200mg/5ml Solution (Mixed Berry)
- Leader Adult Tussin Multi-Symptom Cold CF 20mg-200mg-10mg/10mL Solution
- Leader Chest Congestion Relief DM 20mg-400mg Tablet

- Leader Children's Cough DM 12 Hour 30mg/5mL Extended-Release Suspension (Orange)
- Leader Children's Mucus Relief Cough 5mg-100mg/5mL Liquid (Cherry)
- Leader Children's Mucus Relief Cough 5mg-100mg/5mL Liquid (Cherry)
- Leader Children's Mucus Relief Multi-Symptom Cold 5mg-100mg-2.5mg/5mL Solution (Berry)
- Leader Children's Multi-Symptom Cold Liquid (Very Berry)
- Leader Cough DM 12 Hour 30mg/5mL Extended-Release Suspension (Grape)
- Leader Cough DM 12 Hour 30mg/5ml Extended-Release Suspension (Orange)
- Leader Cough DM 12 Hour 30mg/5ml Extended-Release Suspension (Orange)
- Leader Intense Cough Reliever Extra Strength 20mg-300mg/5mL Solution
- Leader Mucus Relief DM 12 Hour Maximum Strength 60mg-1,200mg Extended-Release Tablet
- Leader Mucus Relief DM 30mg-600mg Tablet
- Leader Mucus Relief DM Maximum Strength 20mg-400mg/20ml Solution
- Leader Mucus-DM 1200mg-60mg Extended-Release Tablet
- Leader Tussin DM Cough + Chest Congestion DM Maximum Strength 20mg-400mg/20mL Solution (Menthol-Berry)
- Lortuss DM 15mg-6.25mg-30mg/5ml Liquid
- MAXTussin DM 20mg-200mg/10mL Solution (Cherry)
- MICLARA DM 20mg-10mg-2.5mg/5mL Liquid (Bubble Gum)
- Mucinex Children's 5mg-100mg Dissolving Granules (Orange Creme)
- Mucinex Children's Cough & Congestion 5mg-100mg-2.5mg/5mL Liquid (Very Berry)
- Mucinex Children's Cough 5mg-100mg/5mL Liquid (Cherry)
- Mucinex Children's FREEFROM Multi-Symptom Cold & Stuffy Nose 5mg-100mg-2.5mg/5mL Solution (Honey Berry)
- Mucinex Children's Multi-Symptom Cold 5mg-100mg-2.5mg/5mL Liquid (Very Berry)
- Mucinex DM 30mg-600mg Extended-Release Tablet
- Mucinex DM 30mg-600mg Extended-Release Tablet
- Mucinex DM Maximum Strength 60mg-1200mg Extended-Release Tablet
- Mucinex DM Maximum Strength 60mg-1200mg Extended-Release Tablet
- Mucinex DM Maximum Strength Extended-Release Tablet
- Mucinex Fast Max DM Max Maximum Strength 20mg-400mg/20mL Solution (Honey & Berry)
- Mucinex Fast-Max DM Max 400mg-20mg/20mL Solution
- Mucinex Fast-Max Kickstart Severe Congestion & Cough Maximum Strength 20mg-400mg/20mL Liquid (Menthol)
- Mucinex Fast-Max Severe Congestion & Cough Maximum Strength 10mg-200mg Liquid Gel Capsule

- Mucinex Fast-Max Severe Congestion & Cough Maximum Strength 10mg-200mg-5mg Caplet
- Mucinex Fast-Max Severe Congestion & Cough Maximum Strength Solution
- Mucinex Freefrom Severe Congestion & Cough Solution (Honey & Berry)
- Mucinex HBP and Diabetes Safe Cough & Congestion Liquid Gel Capsule
- Mucinex INSTASOOTH Sore Throat + Cough Relief 5mg-2mg Lozenge (Mint Flavor)
- Mucolyte-DM 100mg-10mg/5mL Liquid (Cherry)
- Mucosa DM 20mg-400mg Tablet
- Mucus Relief DM 20mg-400mg Tablet
- Mucus Relief DM 30mg-600mg Extended-Release Tablet
- Mucus Relief DM Cough 20mg-400mg Tablet
- Mucus Relief DM ER 12 Hour 600mg-30mg Extended-Release Tablet
- NeoTuss S/F 30mg-200mg/5mL Liquid (Grape Mint)
- Nivanex DMX 15mg-380mg-10mg Tablet
- Nuedexta 20mg-10mg Capsule
- NUEDEXTA 20mg-10mg Capsule
- PECGEN DMX 10mg-187mg/5mL Solution (Cherry Raspberry)
- PECGEN PSE 10mg-187mg-30mg/5mL Solution (Grape)
- PHARBINEX-DM 400mg-20mg Tablet
- Poly-Hist DM 10mg-5mg-25mg/5ml Liquid
- Poly-Vent DM 20mg-380mg-60mg Tablet
- POLYTUSSIN DM 7.5mg-5mg-12.5mg/5mL Liquid (Cotton Candy)
- Premier Value Chest Congestion and Cough Relief 20mg-400mg Caplet
- Premier Value Children's Mucus Relief Cough 5mg-100mg/5ml Liquid (Cherry)
- Premier Value Children's Multi-Symptoms Cold Liquid (Very Berry)
- Premier Value Cough Relief 15mg Softgel
- Premier Value Cough Relief 15mg/5ml Solution (Grape)
- Premier Value Cough Relief 15mg/5ml Solution (Orange)
- Premier Value DM MAX Maximum Strength 400mg-20mg/20mL Solution
- Premier Value Night-Time Cough Solution (Cherry)
- Premier Value Severe Congestion & Cough MAX Maximum Strength Solution
- Premier Value Tussin CF 10mg-100mg-5mg/5ml Liquid
- Premier Value Tussin Cough Long-Acting 15mg/5ml Solution
- Premier Value Tussin Cough Long-Acting 30mg/10ml Solution
- Premier Value Tussin Cough Sugar Free 10mg-100mg/5ml Solution
- Premier Value Tussin DM Max Solution
- Premier Value Tussin DM Sugar-Free Solution
- Premier Value Tussin DM Syrup
- PRES GEN 10mg-200mg-5mg/5mL Solution (Cherry)
- PRES GEN 5mg-75mg-2.5mg/5mL Pediatric Syrup (Orange)

- Publix Tussin CF 10mg-100mg-5mg/5ml Liquid
- Publix Tussin DM Cough & Chest Congestion Solution
- Q-Tussin DM 10mg-100mg/5mL Syrup
- Quality Choice Adult Tussin DM Cough & Chest Congestion Sugar Free 10mg-100mg/5ml Non-Drowsy Solution
- Quality Choice Children's Cough Relief 15mg/5mL Solution (Grape)
- Quality Choice Children's Mucus & Cough Relief 5mg-100mg/5mL Liquid (Cherry)
- Quality Choice Cough Relief 15mg/5mL Liquid (Orange)
- Quality Choice Long Acting Cough 15mg Softgel
- Quality Choice Mucus Relief DM 20mg-400mg Caplet
- Quality Choice Mucus Relief DM Max Solution
- Quality Choice Mucus Relief DM Maximum Strength 60mg-1200mg Extended-Release Tablet
- Quality Choice Mucus Relief Severe Congestion & Cough 20mg-400mg-10mg/20mL Maximum Strength Liquid
- Quality Choice Nighttime Cough 30mg-12.5mg/30mL Liquid (Cherry)
- Quality Choice NightTime Cough Relief 30mg-12.5mg/30mL Solution (Cherry)
- Quality Choice Tussin CF Multi-Symptom Cold 20mg-200mg-10mg/10mL Solution
- Quality Choice Tussin DM Cough & Chest Congestion 20mg-200mg/10mL Solution
- Quality Choice Tussin DM Cough & Chest Congestion Sugar Free 10mg-100mg/5mL Solution
- RITE AID Adult Tussin DM Cough & Chest Congestion 20mg-200mg/10mL Solution
- RITE AID Adult Tussin DM Max Cough & Chest Congestion 20mg-400mg/10mL Solution
- RITE Aid Adult Tussin Long-Acting Cough Suppressant 30mg/10mL Solution
- RITE Aid Adult Tussin Multi-Symptom Cold CF Solution
- RITE AID Children's Mucus Relief Cough 5mg-100mg/5mL Liquid (Cherry)
- RITE AID Cough DM 12 Hour 30mg/5ml Extended-Release Suspension (Orange)
- RITE AID Mucus Relief Cough and Congestion DM 20mg-400mg Tablet
- RITE AID Nighttime Cough Relief 30mg-12.5mg/30ml Liquid (Cherry)
- RITE AID Tussin Cough & Cold CF Non-Drowsy Liquid
- RITE AID Tussin Cough Relief Softgels
- RITE AID Tussin DM Cough & Chest Congestion Sugar Free 10mg-100mg/5mL Solution
- Robafen Adult CF Multi-Symptom Cold Liquid
- Robafen DM Cough & Chest Congestion 20mg-200mg/10mL Solution
- Robafen DM Cough & Chest Congestion 20mg-200mg/20mL Solution
- Robafen DM Cough 20mg-200mg/20mL Sugar Free & Dye Free Solution (Cool Mint)
- Robafen DM Cough Formula
- Robafen DM Cough Sugar-Free Solution

- Robitussin Adult Cough + Chest Congestion DM Max 20mg-400mg/20mL Maximum Strength Solution
- Robitussin Adult Cough + Chest Congestion DM Max Maximum Strength 20mg-400mg/20mL Solution
- Robitussin Adult Cough + Chest Congestion DM Solution
- Robitussin Adult Cough + Chest Congestion DM Sugar-Free Solution
- Robitussin Adult DM Nighttime Cough Maximum Strength Liquid
- Robitussin Adult Elderberry Cough + Chest Congestion DM Max 20mg-400mg/20mL Maximum Strength Solution
- Robitussin Adult Long Acting Cough 15mg Soft Chew (Berry)
- Robitussin CF Children's Cough & Cold Liquid (Grape)
- Robitussin Children's Cough Relief 12 Hour Extended-Release Suspension (Orange)
- Robitussin Children's Day and Night Cough & Chest Congestion DM Solution (Honey)
- Robitussin Children's Honey Cough & Congestion DM Solution
- Robitussin Cough + Congestion DM Maximum Strength Liquid Filled Capsule
- Robitussin Cough Relief 12 Hour Extended-Release Suspension (Grape)
- Robitussin Cough Relief 12 Hour Extended-Release Suspension (Orange)
- Robitussin Daytime/Nighttime Cough + Chest Congestion DM/Cough DM Maximum Strength Solution
- Robitussin Honey Cough + Chest Congestion DM Maximum Strength Solution
- Robitussin Honey Nighttime Cough DM Maximum Strength Solution
- Robitussin Medi-Soothers Cough+Sore Throat Medicated Lozenges (Elderberry)
- Robitussin Medi-Soothers Cough+Sore Throat Medicated Lozenges (Honey Lemon)
- Safetussin DM 10mg-100mg/5mL Liquid
- Safetussin PM Night Time Cough Relief 7.5mg-3.125mg/5mL Solution
- Scot-Tussin Diabetes CF 10mg/5ml Solution
- Scot-Tussin Senior 15mg-200mg/5ml Solution
- Scot-Tussin Senior 15mg-200mg/5ml Solution
- Select Brand Cough Control DM MAX Solution
- Select Brand Cough Control DM Sugar Free Solution
- SORBUGEN NR 15mg-150mg/7.5mL Solution (Grape)
- Sorbutuss NR 10mg-100mg/7.5mL Solution
- Sudafed PE Children's Cold and Cough Solution (Grape)
- Sudatex-DM 40mg-400mg-20mg Tablet
- SudaTex-DM 60mg-580mg-30mg Sustained-Release Tablet
- Sunmark Adult Tussin DM Cough + Chest Congestion Solution (Raspberry)
- Sunmark Tussin CF Cold and Cough Non-Drowsy Liquid
- SUPPRESS DM 5mg-50mg/1mL Pediatric Drops
- SUPPRESS DX 5mg-50mg-2.5mg/1mL Pediatric Drops (Cherry)
- Today's Health Chest Congestion Relief DM 20mg-400mg Tablet

- Today's Health Tussin CF Cough and Cold 10mg-100mg-5mg/5ml Liquid
- Today's Health Tussin DM Cough & Chest Congestion Formula
- Today's Health Tussin DM Cough Sugar Free Formula
- Top Care Children's Daytime Triacting Cold & Cough Solution (Cherry)
- Top Care Children's Mucus Relief Cough 5mg-100mg/5ml Liquid (Cherry)
- Top Care Day Time Cough 15mg/15ml Solution
- Top Care Mucus DM 30mg-600mg Extended-Release Tablet
- Top Care Tussin CF 10mg-100mg-5mg/5ml Liquid
- Top Care Tussin Cough Suppressant Long-Acting 15mg/5ml Solution
- Top Care Tussin DM 10mg-100mg/5ml Solution
- Top Care Tussin DM Max Cough & Chest Congestion Suspension
- TopCare Chest Congestion Relief & Cough Relief DM 20mg-400mg Tablet
- TopCare Children's Multi-Symptom Cold Mucus Relief 5mg-100mg-2.5mg/5mL Solution
- TopCare Cough DM ER 12 Hour 30mg/5ml Extended-Release Suspension (Orange)
- TopCare Mucus Relief DM Maximum Strength 20mg-400mg/20mL Solution
- TopCare Tussin DM Max Maximum Strength 20mg-400mg/20mL Solution
- Triaminic Long-Acting Cough 7.5mg/5ml Solution
- TRISPEC DMX 10mg-187mg/5mL Liquid
- TRISPEC DMX 10mg-187mg/5mL Pediatric Drops
- TRISPEC PSE 10mg-187mg-30mg/5mL Liquid
- TRISPEC PSE 10mg-187mg-30mg/5mL Pediatric Drops
- TUSICOF 20mg-400mg-10mg Caplet
- TUSICOF 20mg-400mg-10mg/5mL Solution
- TUSNEL 15mg-200mg-30mg/5mL Liquid (Grape)
- TUSNEL 30mg-400mg-60mg Caplet
- Tusnel Diabetic 10mg-100mg/5mL Liquid (Apple Banana)
- TUSNEL DM 2.5mg-25mg-7.5mg/mL Pediatric Drops
- Tusnel DM Cough Suppressant 20mg/5mL-400mg/5mL-10mg/5mL Oral Solution (Cherry Menthol)
- TUSNEL DM PEDIATRIC 5mg-75mg-2.5mg/5mL Liquid (Cotton Candy)
- TUSNEL-DM Pediatric 2.5-25-1.25mg/mL Drops
- Tussi-Bid 1200mg-60mg Extended-Release Tablet
- TUSSI-PRES 5mg-75mg-2.5mg/5mL Pediatric Syrup (Orange)
- TUSSI-PRESS 10mg-200mg-5mg/5mL Oral Solution
- Tussin DM 10mg-100mg/5mL Solution
- Tussin DM 20mg-200mg/10mL Solution
- Tussin DM Max 20mg-400mg/20mL Solution
- TUSSLIN 7.5mg-88mg-2.5mg/1mL Pediatric Drops
- Tusso-DMR 288mg-7mg-14mg Capsule

- VanaCof DM 18mg-200mg-10mg/15mL Liquid
- VanaCof DMX 18mg-396mg-10mg/15mL Liquid
- Vicks DayQuil Cough 15mg/15ml Liquid (Pineapple)
- Vicks DayQuil Mucus Control DM 10mg-200mg/15ml Solution (Citrus Blend)
- Vicks DayQuil/NyQuil Cough Combo Pack
- Vicks NyQuil Cough 30mg-12.5mg/30ml Liquid (Cherry)
- Wal-Tussin Adult DM Max Daytime/Nighttime Combo Pack (Raspberry Menthol)
- Wal-Tussin Cold & Congestion Softgel
- Wal-Tussin Cough and Cold CF Solution
- Wal-Tussin Cough Long-Acting Liquid
- Wal-Tussin Cough Softgel
- Wal-Tussin DM Cough & Chest Congestion Liquid
- Wal-Tussin DM Cough & Chest Congestion Sugar Free Liquid (Cherry Menthol)
- Wal-Tussin DM Cough and Chest Congestion Liquid
- Wal-Tussin DM Max Softgel
- Wal-Tussin DM Max Solution (Raspberry Menthol)
- Walgreens Adult Tussin DM Cough & Chest Congestion Non-Drowsy 20mg-200mg/20mL Solution
- Walgreens Children's Cough 5mg-100mg/5mL Liquid (Cherry)
- Walgreens Children's Cough DM 12 Hour 30mg/5mL Extended-Release Suspension (Grape)
- Walgreens Children's Cough DM 12 Hour 30mg/5mL Extended-Release Suspension (Grape)
- Walgreens Children's Cough DM 12 Hour 30mg/5mL Extended-Release Suspension (Orange)
- Walgreens Children's Daytime/Nighttime Cold & Cough Combo Pack
- Walgreens Children's Mucus Congestion & Cough Relief 5mg-100mg-2.5mg/5mL Liquid (Berry)
- Walgreens Children's Plus Multi-Symptom Cold Liquid
- Walgreens Cough & Chest Congestion DM Maximum Strength 20mg-400mg/20mL Solution (Cherry)
- Walgreens Cough DM 12 Hour 30mg/5mL Extended-Release Suspension (Grape)
- Walgreens Cough DM 12 Hour 30mg/5mL Extended-Release Suspension (Orange)
- Walgreens DM Max 20mg-400mg/20mL Liquid
- Walgreens HBP Chest Congestion and Cough SoftGel
- Walgreens Mucus Relief DM 12 Hour 30mg-600mg Extended-Release Tablet
- Walgreens Mucus Relief DM 12 Hour 600mg-30mg Extended-Release Tablet
- Walgreens Mucus Relief DM 12 Hour Maximum Strength 1,200mg-60mg Extended-Release Tablet
- Walgreens Mucus Relief DM 12 Hour Maximum Strength Extended-Release Tablet

- Walgreens Mucus Relief DM 20mg-400mg Tablet
- Walgreens Mucus Relief DM 20mg-400mg/20mL Maximum Strength Solution (Honey & Berry)
- Walgreens Mucus Relief DM Cough 20mg-400mg Tablet
- Walgreens Mucus Relief DM Maximum Strength 1200mg-60mg Extended-Release Tablet
- Walgreens Mucus Relief Severe Congestion & Cough 20mg-400mg-10mg/20mL Maximum Strength Liquid
- Walgreens Mucus Relief Severe Congestion & Cough 20mg-400mg-10mg/20mL Maximum Strength Liquid (Mint)
- Walgreens NightTime Cough 12.5mg-30mg/30mL Liquid (Cherry)
- Walgreens Rest Easy NightTime Cough Liquid (Cherry)
- Walgreens Severe Congestion & Cough 20mg-400mg-10mg/20mL Maximum Strength Liquid
- Zotex DMX 775mg-57.5mg Tablet
- Zotex LAX 550mg-20mg-25mg Tablet
- Zotex-EX 350mg-12mg-15mg Caplet
- ZYNCOF 20mg-400mg Tablet
- ZYNCOF 20mg-400mg/5mL Solution

Dosage Adjustment Guidelines

Hepatic Impairment

Dextromethorphan is extensively metabolized by the liver and should be used with caution in patients with severe hepatic disease because of possible increased drug concentrations. However, no dosage adjustments are recommended in the product labels when used as a nonprescription cough suppressant.

Renal Impairment

No dosage adjustments are needed; renal elimination is not a significant elimination pathway for dextromethorphan.

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