

Aims: To describe contraindications and potential adverse effects of medications with higher risk in pediatrics.

Drug	Risk/Rationale	Recommendation	Strength of Recommendation	Quality of Evidence
Atazanavir	Kernicterus	Caution in neonates unless pharmacogenetic testing is used	Weak	Very low
Benzocaine	Methemoglobinemia	Avoid in < 24 months for teething or pharyngitis	Strong	High
Camphor	Seizures	Caution in children	Weak	Low
Carbinoxamine	Death	Avoid in < 1 year	Strong	Low
Ceftriaxone	Kernicterus	Caution in neonates	Weak	Very low
Chloramphenicol	Gray baby syndrome	Avoid in neonates unless serum concentration monitoring is used	Strong	High
Chlorhexidine	Chemical burn	Caution in very low birth weight neonates	Strong	Low
Codeine	Respiratory depression, death	Avoid in children unless pharmacogenetic testing is used	Strong	High
Darunavir	Seizures, death	Avoid in < 3 years or < 10 kg	Strong	Very low
Daptomycin	Neuromuscular and skeletal adverse events	Caution in < 1 year	Weak	Very low
Dicloxacillin	Kernicterus	Caution in neonates	Weak	Very low
Dicyclomine	Apnea	Avoid in < 6 months	Strong	Low
Difluprednate	Increased intraocular pressure	Caution in children	Weak	Low
Diphenoxylate and atropine	Respiratory depression, death	Avoid in < 6 years	Strong	Moderate

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Dopamine antagonists Chlorpromazine Fluphenazine Haloperidol Metoclopramide Perphenazine Pimozide Prochlorperazine Promethazine Trifluoperazine Trimethobenzamide	Acute dystonia (dyskinesia); increased risk of respiratory depression, extravasation, and death with intravenous use	Avoid in < 24 months Caution in children	Strong: Chlorpromazine Fluphenazine Haloperidol Perphenazine Pimozide Prochlorperazine Promethazine Trifluoperazine Weak: Metoclopramide Trimethobenzamide	Moderate
Gentamicin ophthalmic ointment	Severe ocular reactions	Avoid in neonates	Strong	High
Hexachlorophene	Neurotoxicity	Avoid in neonates	Strong	High
Indinavir	Nephrolithiasis	Avoid in children	Strong	High
	Hyperbilirubinemia	Avoid in neonates	Strong	Low
Ivermectin (oral)	Encephalopathy	Avoid in < 1 year	Weak	Low
Lamotrigine	Serious skin rashes	Caution in children; titration needed	Strong	High
Lidocaine 2% viscous	Seizures, arrhythmia, death (due to CNS depression, seizures, or dysrhythmias)	Avoid in < 24 months for teething	Strong	High
Linaclotide	Death from dehydration	Avoid in < 6 years	Weak	Very low
Lindane	Seizure, spasm	Avoid in < 10 years or < 50 kg	Moderate	Low
Loperamide	Ileus, lethargy	Avoid in < 24 months for acute infectious diarrhea	Strong	High

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Macrolides Azithromycin Erythromycin (oral and intravenous)	Hypertrophic pyloric stenosis	Avoid in neonates, unless treating <i>Bordetella pertussis</i> (azithromycin), or <i>Chlamydia trachomatis pneumonia</i> (azithromycin and erythromycin) Consider risk/benefit ratio when using for ureaplasma (azithromycin)	Strong	High
Malathion	Increased absorption (organophosphate poisoning)	Avoid in < 1 year	Weak	Very low
Meperidine	Respiratory depression	Avoid in neonates Caution in children	Strong	High
Midazolam	Severe intraventricular hemorrhage, periventricular leukomalacia, or death	Avoid in very low birth weight neonates	Strong	High
Mineral oil, oral	Lipid pneumonitis	Avoid in < 1 year	Strong	Low
Naloxone	Seizure	Avoid in neonates for postpartum resuscitation	Strong	High
Nitrofurantoin	Hemolytic anemia	Avoid in neonates	Weak	Very low
Olanzapine	Metabolic syndrome (weight gain, hyperlipidemia, hyperglycemia)	Caution long-term use (> 24 weeks) in children	Strong	High
Opium tincture	Respiratory depression	Avoid in neonates Caution in children	Strong	High
Paregoric	Gasping syndrome, seizures, CNS depression, hypoglycemia	Avoid in children	Strong	High
Plecanatide	Death from dehydration	Avoid in < 6 years	Weak	Very low
Propofol	Propofol-related infusion syndrome; higher rate in children than adults because higher relative doses of propofol are needed, especially in status epilepticus	Avoid doses > 4 mg/kg/hr for greater than 48 hours	Strong	Moderate

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Salicylates Aspirin Bismuth subsalicylate Choline magnesium Trisalicylate Magnesium salicylate Methenamine, sodium Phosphate monobasic, phenyl salicylate, methylene blue, and hyoscyamine Methyl salicylate (topical) Salicylic acid Salsalate	Reye's syndrome	Caution in children with suspicion of viral illness (influenza and varicella)	Weak	Very low
Sodium phosphate solution, rectal (enema)	Electrolyte abnormalities, acute kidney injury, arrhythmia, death	Avoid in < 24 months	Strong	High
Sodium polystyrene sulfonate	Colonic perforation	Avoid in very low birth weight neonates	Weak	Low
Sulfonamides Silver sulfadiazine Sulfadiazine Sulfamethoxazole	Kernicterus	Avoid in neonates except as adjunctive therapy with pyrimethamine as a treatment of congenital toxoplasmosis (sulfadiazine)	Weak	Very low
Tetracyclines Demeclocycline Tetracycline	Tooth discoloration (demeclocycline and tetracycline)	Caution in < 8 years	Strong	High
	Enamel hypoplasia (tetracycline)	Caution in < 8 years	Strong	High
	Retardation of skeletal development and bone growth in premature neonates (tetracycline)	Caution in neonates	Strong	Moderate

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Excipients With Known or Potential Harms When Used in Pediatric Patients

Excipient	Rationale	Recommendation	Strength of Recommendation	Quality of Evidence
Benzyl alcohol, sodium benzoate, benzoic acid	Gasping syndrome	Avoid exposure of > 99 mg/kg/day in neonates (with the exception of sodium phenylacetate/sodium benzoate used for the treatment of urea cycle disorders)	Strong	High
Ethanol/ethyl alcohol (excludes ethanol lock)	CNS depression, hypoglycemia	Caution in < 6 years; maximum of 5% vol/vol ethanol with clinician supervision	Strong	Moderate
Isopropyl alcohol	Chemical burn	Caution in very low birth weight neonates	Strong	Low
Methylparaben, propylparaben	Kernicterus	Caution in < 2 months	Strong	Very low
Phenylalanine	Cognitive and behavioral problems	Avoid in children with an unknown phenylketonuria test	Strong	High
Polysorbate 80	E-Ferol syndrome	Avoid in < 1 year (any amount)	Strong	High
Propylene glycol	Lactic acidosis, CNS depression, hypoglycemia, hemolysis, seizure	Avoid doses > 3 g/day in neonates; caution doses > 34 mg/kg/day in neonates	Strong	Moderate

Meyers RS, Thackray J, Matson KL, McPherson C, Lubsch L, Hellinga RC, Hoff, DS. Key Potentially Inappropriate Drugs in Pediatrics: The KIDs List. J Pediatr Pharmacol Ther [Internet]. 2020 [cited 2020 Aug 26];25(3):175–91. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/32265601>.
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Topical corticosteroids (medium, high and very high potency)	Adrenal suppression; higher rate of systemic absorption in children than adults	Avoid in < 1 year for diaper dermatitis	Strong	Low
Tramadol	Respiratory depression	Caution in children unless pharmacogenomic testing is used	Weak	Low
Tricyclic antidepressants Desipramine Imipramine	Sudden cardiac death	Avoid in children (desipramine) Caution in children (imipramine)	Strong	High (desipramine) Moderate (imipramine)
Valproic acid and derivatives	Pancreatitis, fatal hepatotoxicity	Avoid in < 24 months Caution in < 6 years	Strong	High
Verapamil	Asystole	Avoid in < 1 year	Weak	Low

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