chloramphenicol (klor-am-**fen**-i-kole)

Chloromycetin

Classification

Therapeutic: anti-infectives

Pregnancy Category UK

Indications

IV: Management of the following serious infections when less toxic agents cannot be used: Skin and soft-tissue infections, Intra-abdominal infections, CNS infections (including meningitis), Bacteremia. **Ophth** Management of local infections.

Action

Inhibits protein synthesis in susceptible bacteria at the level of the 50S ribosome. **Therapeutic Effects:** Bacteriostatic action. **Spectrum:** Wide variety of gram-positive aerobic organisms including: *Streptococcus pneumoniae* and other streptococci, Some enterococci (especially vancomycin-resistant). Gram-negative pathogens: *Haemophilus influenzae*, *Neisseria meningitidis*, *Salmonella*, *Sbigella*. Anaerobes: *Bacteroides fragilis*, *Prevotella melaninogenica*. Other organisms inhibited: *Rickettsia*, *Chlamydia*, *Mycoplasma*.

Pharmacokinetics

Absorption: Some systemic and intraocular absorption follows ophthalmic administration.

Distribution: Widely distributed. Crosses the blood-brain barrier with CSF levels 60% of serum values. Crosses the placenta; enters breast milk.

Metabolism and Excretion: Mostly metabolized by the liver; <10% excreted unchanged by the kidneys.

Half-life: 1.5–3.5 hr.

TIME/ACTION PROFILE (blood levels)

ROUTE	ONSET	PEAK	DURATION
IV	rapid	end of infusion	6–12 hr

Contraindications/Precautions

Contraindicated in: Hypersensitivity; Previous toxic reaction to chloramphenicol.

Use Cautiously in: Patients with severe hepatic or renal disease (↑ risk of reactions due to inability to metabolize and excrete chloramphenicol); ***OB, Lactation:*** Safety not established; ***Pedi, Geri:*** ↑ risk of toxicity due to inability to metabolize and excrete chloramphenicol).

Adverse Reactions/Side Effects

CNS: confusion, delirium, depression, headache. **EENT:** blurred vision, optic neuritis. **GI:** bitter taste (IV only), diarrhea, enterocolitis, glossitis, nausea, stomatitis, vomiting. **Derm:** rashes, urticaria. **Hemat:** APLASTIC ANEMIA, bone marrow depression, neutropenia, thrombocytopenia. **Neuro:** peripheral neuritis. **Misc:** ANGIOEDEMA, GRAY SYNDROME in newborns, fever.

Interactions

Drug-Drug: May ↑ effects of the following drugs: **oral hypoglycemic agents**, **warfarin**, and **phenytoin**. **Phenobarbital** or **rifampin** may ↓ chloramphenicol blood levels. May delay response to **vitamin B** or **folic acid** therapy. Bone marrow depression may be additive with **bone marrow-depressing agents (antineoplastics)**.

Route/Dosage

IV (Adults): 12.5 mg/kg q 6 hr (up to 100 mg/kg/day).

IV (Children): *Most infections*— 12.5mg/kg q 6 hr (maximum daily dose = 4 g). *Bacteremia/meningitis*— up to 50–100 mg/kg/day.

IV (Infants > 2 wk): 12.5 mg/kg q 6 hr (maximum daily dose = 4 g). *Bacteremia/meningitis*— up to 50–100 mg/kg/day.

IV (Neonates >7 days and >2 kg): 25 mg/kg q 12 hr.

IV (Neonates birth–7 days or ≤2 kg): 25 mg/kg once daily.

NURSING IMPLICATIONS

Assessment

- Assess for infection (vital signs, wound appearance, sputum, urine, stool, and WBC) at beginning of and throughout therapy.
- This drug should be administered systemically only to hospitalized patients or those under close medical supervision. Diagnosis should be confirmed with cultures prior to administration.
- **Assess daily for signs of bone marrow depression (petechiae, sore throat, fatigue, unusual bleeding, bruising). Patients who have impaired liver or renal function, infants, children, and the elderly are at the greatest risk of developing adverse effects.**

- **Premature Infants and Neonates: Assess for gray syndrome (abdominal distention, blue-gray skin coloring, uneven breathing, unresponsiveness, low body temperature, cyanosis, hypotension, and respiratory distress).**
- ***Lab Test Considerations:*** **Monitor CBC every 2 days throughout therapy. The drug should be stopped if anemia, reticulocytopenia, leukopenia, or thrombocytopenia develops.**
- ***Toxicity and Overdose:*** Monitor serum levels weekly, especially in low-birthweight infants, patients with impaired or immature metabolic function, or patients receiving other medications metabolized by the liver. Therapeutic levels: peak, 15–25 mcg/mL; trough, 5–10 mcg/mL. **Concentrations exceeding 25 mcg/mL increase the risk of reversible bone marrow depression and gray syndrome.**

Potential Nursing Diagnoses

Risk for infection (Indications) (Adverse Reactions)

Implementation

- Medication should be administered around the clock.

IV Administration

- **pH:** 2.5–3.5.
- **Direct IV:** Reconstitute to a 10% solution by adding 10 mL of sterile water for injection or D5W to each 1 g. Do not use preparations containing benzyl alcohol in neonates.***Concentration:*** Final concentration should not exceed 100 mg/mL. ***Rate:*** Inject slowly over at least 1 min.
- **Intermittent Infusion:** ***Diluent:*** May be further diluted in 50–100 mL of D5W, D10W, D5/0.9% NaCl, D5/0.45% NaCl, D5/0.225% NaCl, D5/LR, 0.45% NaCl, 0.9% NaCl, or LR. Solution may form crystals at low temperatures. Shake well to dissolve crystals. Do not administer cloudy solutions. ***Rate:*** Administer over 30–60 min.
- **Y-Site Compatibility:** acyclovir, amikacin, aminophylline, atracurium, atropine, aztreonam, bivalirudin, bumetanice, buprenorphine, calcium chloride, calcium gluconate, cefazolin, cefoperazone, cefotetan, cefoxitin, cefuroxime, clindamycin, cyanocobalamin, cyclophosphamide, cyclosporine, dactinomycin, daptomycin, dexamethasone, digoxin, docetaxel, enalaprilat, ephedrine, epinpehrine, epoetin alfa, ertapenem, etoposide, etoposide phosphate, fenoldopam, fentanyl, fludarabine, folic acid, foscarnet, furosemide, glycopyrrolate, granisetron, heparin, hetastarch, hydrocortisone, hydromorphone, imipenem/cilastatin, indomethacin, insulin, isoproterenol, ketorolac, lidocaine, linezolid, lorazepam, magnesium sulfate, mannitol, methylprednisolone, metoclopramide, metoprolol, metronidazole, milrinone, mitoxantrone, morphine, multivitamins, naloxone, nesiritide, nicardipine, nitroglycerin, nitroprusside, norepinephrine, octreotide, oxacillin, oxaliplatin, oxytocin, paclitaxel, palonosetron, penicillin G, pentobarbital, perphenazine, phenobarbital, phenylephrine, phytonadione, piperacillin/tazobactam, potassium chloride, propranolol, ranitidine, sodium bicarbonate, streptokinase, succinylcholine, sufentanil, tacrolimus, teniposide, theophylline, thiotepa, ticarcillin/clavulanate, tirofiban, tobramycin, vasopressin, voriconazole.
- **Y-Site Incompatibility:** amphotericin B colloidal, ascorbic acid, azathioprine, butorphanol, caspofungin, cefotaxime, ceftazidime, ceftriaxone, chlorpromazine, cimetidine, dantrolene, diazepam, diazoxide, diltiazem, diphenhydramine, dobutamine, dopamine, doxycycline, erythromycin, famotidine, ganciclovir, gemcitabine, gentamicin, haloperidol, hydralazine, hydroxyzine, mechlorethamine, metaraminol, methoxamine, methyldopate, midazolam, nafcillin, nalbuphine, ondansetron, pantoprazole, papaverine, pemetrexed, pentamidine, pentazocine, phentolamine, phenytoin, procainamide, prochlorperazine, promethazine, protamine, pyridoxime, thiamine, tigecycline, tolazoline, trimetaphan, trimethoprim/sulfamethoxazole, vancomycin, vecuronium, verapamil, vinorelbine.

Patient/Family Teaching

- Advise patient to contact health care professional immediately if signs of unusual bleeding; bruising; fever; sore throat; nausea; vomiting; diarrhea; numbness, tingling, or burning pain or weakness in hands or feet occurs. Medication should be discontinued with the onset of these symptoms.
- Reassure patient that bitter taste 15–20 sec following injection is limited to 2–3 min.
- Instruct patient to report signs of superinfection (stomatitis, perianal itching, vaginal discharge, fever).
- Emphasize the importance of follow-up exams. Bone marrow depression may develop weeks to months after drug therapy has been discontinued.

Evaluation/Desired Outcomes

- Resolution of the signs and symptoms of infection. Length of time for complete resolution depends on the organism and site of infection.

Why was this drug prescribed for your patient?