

Chloroquine (All Populations Monograph)

Indications/Dosage

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Labeled

- amebiasis
- malaria
- malaria prophylaxis

Off-Label, Recommended

- coronavirus disease 2019 (COVID-19) †
- discoid lupus erythematosus †
- severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection †

† Off-label indication

Per the manufacturer, this drug has been shown to be active against most strains of the following microorganisms either in vitro and/or in clinical infections:

Entamoeba histolytica, Plasmodium falciparum, Plasmodium malariae, Plasmodium ovale, Plasmodium vivax.

NOTE: The safety and effectiveness in treating clinical infections due to organisms with in vitro data only have not been established in adequate and well-controlled clinical trials.

This drug may also have activity against the following microorganisms:

severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

NOTE: Some organisms may not have been adequately studied during clinical trials; therefore, exclusion from this list does not necessarily negate the drug's activity against the organism.

For the treatment of uncomplicated malaria due to susceptible strains of *P. falciparum*, *P. knowlesi*†, *P. malariae*, *P. ovale*, and *P. vivax*

Oral dosage

- **Adults**

16.5 mg (10 mg base)/kg/dose [Max: 1,000 mg/dose (600 mg base/dose)] PO once, then 8.3 mg (5 mg base)/kg/dose [Max: 500 mg/dose (300 mg base/dose)] PO in 6 to 8 hours, then 8.3 mg (5 mg base)/kg/dose [Max: 500 mg/dose (300 mg base/dose)] PO once daily for 2 days.[29758] For *P. vivax* or *P. ovale*, give in combination with primaquine phosphate or tafenoquine. Guidelines recommend chloroquine for uncomplicated malaria in patients with chloroquine-sensitive *P. falciparum* or *P. vivax* or in all patients with *P. malariae*, *P. knowlesi*, or *P. ovale*.[64059]

- **Infants, Children, and Adolescents**

16.5 mg (10 mg base)/kg/dose [Max: 1,000 mg/dose (600 mg base/dose)] PO once, then 8.3 mg (5 mg base)/kg/dose [Max: 500 mg/dose (300 mg base/dose)] PO in 6 to 8 hours, then 8.3 mg (5 mg base)/kg/dose [Max: 500 mg/dose (300 mg base/dose)] PO once daily for 2 days.[29758] For *P. vivax* or *P. ovale*, give in combination with primaquine phosphate or tafenoquine. Guidelines recommend chloroquine for uncomplicated malaria in patients with chloroquine-sensitive *P. falciparum* or *P. vivax* or in all patients with *P. malariae*, *P. knowlesi*, or *P. ovale*.[64059]

For malaria prophylaxis against chloroquine-sensitive *Plasmodium* species

Oral dosage

- **Adults**

500 mg (300 mg base) PO weekly on the same day of each week, starting 2 weeks before entering the endemic area and continuing for 8 weeks after leaving the area. If it is not feasible to begin therapy before entering the endemic area, use 1,000 mg (600 mg base) as initial loading dose given in 2 divided doses 6 hours apart.[29758] Alternatively, guidelines suggest a shorter course; start the usual dosage regimen 1 to 2 weeks prior to entry into the endemic area and continue for 4 weeks after leaving the area.[63990]

- **Pregnant Female Adults[†]**

500 mg PO weekly for duration of pregnancy for *P. ovale* or *P. vivax* infections after completing acute treatment. After delivery, subsequent treatment with primaquine phosphate or tafenoquine is needed in patients without G6PD deficiency.[64059]

- **Pregnant Female Adolescents[†]**

500 mg PO weekly for duration of pregnancy for *P. ovale* or *P. vivax* infections after completing acute treatment. After delivery, subsequent treatment with primaquine phosphate or tafenoquine (16 years and older) is needed in patients without G6PD deficiency.[64059]

- **Infants, Children, and Adolescents**

8.3 mg (5 mg base)/kg/dose (Max: 300 mg base/dose) PO weekly on the same day of each week, starting 2 weeks before entering the endemic area and continuing for 8 weeks after leaving the area. If it is not feasible to begin therapy before entering the endemic area, use 16.6 mg (10 mg base)/kg/dose (Max: 600 mg base/dose) as initial loading dose given in 2 divided doses 6 hours apart.[\[29758\]](#) Alternatively, guidelines suggest a shorter course; start the usual dosage regimen 1 to 2 weeks prior to entry into the endemic area and continue for 4 weeks after leaving the area.[\[63990\]](#)

For the treatment of extraintestinal amebiasis (adjunct treatment with an effective intestinal amebicide)

Oral dosage

- **Adults**

1 g (600 mg base) PO once daily for 2 days, then 500 mg (300 mg base) PO once daily for at least 2 to 3 weeks.[\[29758\]](#)

For the treatment of discoid lupus erythematosus†

Oral dosage

- **Adults**

125 mg (75 mg base) to 250 mg (150 mg base) PO once daily, limited to no more than 3.5 to 4 mg/kg/day to minimize retinal toxicity. Chloroquine may be used with quinacrine.[\[62154\]](#)

INVESTIGATIONAL USE: For the treatment of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection†, the virus that causes coronavirus disease 2019 (COVID-19)†

Oral dosage

- **Adults**

500 mg PO twice daily for 10 days is being evaluated alone and in combination. Limited data suggest that chloroquine may inhibit the exacerbation of pneumonia, improve lung imaging findings, promote virus-negative conversion, and shorten the disease course.[\[65119\]](#) [\[65120\]](#) [\[65123\]](#) [\[65124\]](#) [\[65125\]](#) [\[65126\]](#)

Maximum Dosage Limits

- Adults

1 g (600 mg base) PO as initial dose(s) for malaria treatment or extraintestinal amebiasis; otherwise, 500 mg/dose (300 mg base/dose) PO.

- Geriatric

1 g (600 mg base) PO as initial dose(s) for malaria treatment or extraintestinal amebiasis; otherwise, 500 mg/dose (300 mg base/dose) PO.

- Adolescents

8.3 mg/kg (10 mg/kg base), not exceeding 1 g (600 mg base) PO as initial dose for malaria treatment; otherwise, 8.3 mg/kg/dose (5 mg/kg/dose base), not exceeding 500 mg/dose (300 mg base/dose) PO.

- Children

8.3 mg/kg (10 mg/kg base), not exceeding 1 g (600 mg base) PO as initial dose for malaria treatment; otherwise, 8.3 mg/kg/dose (5 mg/kg/dose base), not exceeding 500 mg/dose (300 mg base/dose) PO.

- Infants

8.3 mg/kg (10 mg/kg base) PO as initial dose for malaria treatment; otherwise, 8.3 mg/kg/dose (5 mg/kg/dose base) PO.

- Neonates

Safety and efficacy have not been established.

Patients with Hepatic Impairment Dosing

Chloroquine concentrates in the liver. However, no specific dosage adjustment guidelines are available for patients with hepatic impairment.[\[29758\]](#)

Patients with Renal Impairment Dosing

CrCl 10 mL/minute or more: No dosage adjustment necessary.

CrCl less than 10 mL/minute: Decrease dose by 50%.[\[32569\]](#)

Intermittent hemodialysis:

Decrease dose by 50%.[\[32569\]](#)

Peritoneal dialysis:

Decrease dose by 50%.[\[32569\]](#)

Continuous renal replacement therapy:

No dosage adjustment necessary.[\[32569\]](#)

† Off-label indication

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References

29758 – Aralen (chloroquine) package insert. Bridgewater, NJ: Sanofi-aventis U.S. LLC.; 2018 Oct.

32569 – Aronoff GR, Bennett WM, Berns JS, et al. Drug prescribing in renal failure: dosing guidelines for adults and children, 5th ed. Philadelphia: American College of Physicians; 2007.

62154 – Okon LG, Werth VP. Cutaneous lupus erythematosus: diagnosis and treatment. *Best Pract Res Clin Rheumatol* 2013;27:391-404.

63990 – Arguin PM, Tan KR. Chapter 3. Infectious diseases related to travel. Malaria. In. Centers for Disease Control and Prevention. 2018 Yellow Book - Traveler's Health. Atlanta: U.S. Department of Health and Human Services, Public Health Service. <https://wwwnc.cdc.gov/travel/yellowbook/2018/infectious-diseases-related-to-travel/malaria>

64059 – Centers for Disease Control and Prevention. Treatment of malaria (guidelines for clinicians). Atlanta, GA: US Department of Health and Human Services; 2019. https://www.cdc.gov/malaria/diagnosis_treatment/treatment.html.

65119 – Gao J, Tian Z, Yang X. Breakthrough: Chloroquine Phosphate Has Shown Apparent Efficacy in Treatment of COVID-19 Associated Pneumonia in Clinical Studies. *Biosci Trends* 2020 Feb 19. [Epub ahead of print]

65120 – Wang M, Cao R, Zhang L, et al. Remdesivir and Chloroquine Effectively Inhibit the Recently Emerged Novel Coronavirus (2019-nCoV) in Vitro. *Cell Res* 2020;30(3):269-271.

65123 – World Health Organization (WHO). Coronavirus: landscape analysis of therapeutics as of 17 February 2020. Accessed March 16, 2020. Available on the World Wide Web at <https://www.who.int/blueprint/priority->

[diseases/key-action/Table_of_therapeutics_Appendix_17022020.pdf?ua=1.](#)







65124 – Colson P, Rolain J, Lagier J, et al. Chloroquine and hydroxychloroquine as available weapons to fight COVID-19. *Int J Antimicrob Agents* (epub ahead of print). 2020

65125 – Dong L, Hu S, Gao J. Discovering drugs to treat coronavirus disease 2019 (COVID-19). *Drug Discov Ther* 2020;14:58-60.

65126 – Multicenter Collaboration Group of Department of Science and Technology of Guangdong Province and Health Commission of Guangdong Province for chloroquine in the treatment of novel coronavirus pneumonia. Expert consensus on chloroquine phosphate for the treatment of novel coronavirus pneumonia. *Zhonghua Jie He He Hu Xi Za Zhi* 2020 Mar;43:185-8.

How Supplied

Chloroquine Hydrochloride Solution for injection	
Aralen 50mg/ml Solution for Injection (00024-0074) (Sanofi U.S. LLC) (off market)	
Chloroquine Phosphate Oral tablet	
Chloroquine Phosphate 250mg Tablet (00143-1195) (Hikma Pharmaceuticals USA inc.) (off market)	
Chloroquine Phosphate 250mg Tablet (00143-1195) (Hikma Pharmaceuticals USA Inc.) (off market)	
Chloroquine Phosphate 250mg Tablet (00115-7056) (Impax Generics, a division of Impax Laboratories, Inc.) (off market)	
Chloroquine Phosphate 250mg Tablet (00115-2790) (Impax Generics, a division of Impax Laboratories, Inc.)	
Chloroquine Phosphate 250mg Tablet (64980-0177) (Rising Pharmaceuticals Inc)	

Chloroquine Phosphate Oral tablet	
Chloroquine Phosphate 250mg Tablet (64980-0177) (Rising Pharmaceuticals Inc) (off market)	
Chloroquine Phosphate 250mg Tablet (63304-0460) (Sun Pharmaceutical Industries, Inc.)	
Aralen 500mg Tablet (00280-0084) (Bayer Corp Consumer Care Div) (off market)	
Aralen 500mg Tablet (00024-0084) (Sanofi U.S. LLC) (off market)	
Chloroquine Phosphate 500mg Tablet (00143-2125) (Hikma Pharmaceuticals USA Inc.)	
Chloroquine Phosphate 500mg Tablet (00115-7010) (Impax Generics, a division of Impax Laboratories, Inc.)	
Chloroquine Phosphate 500mg Tablet (43063-0454) (PD-Rx Pharmaceuticals, Inc.)	
Chloroquine Phosphate 500mg Tablet (55289-0856) (PD-Rx Pharmaceuticals, Inc.)	
Chloroquine Phosphate 500mg Tablet (64980-0178) (Rising Pharmaceuticals Inc) (off market)	
Chloroquine Phosphate 500mg Tablet (64980-0178) (Rising Pharmaceuticals Inc)	
Chloroquine Phosphate 500mg Tablet (63304-0461) (Sun Pharmaceutical Industries, Inc.)	

Description/Classification

Description

Chloroquine is a 4-aminoquinoline anti-protozoal agent indicated for the treatment and prophylaxis of susceptible malaria strains and for the treatment of extraintestinal amebiasis. Chloroquine is not active against gametocytes and the exoerythrocytic forms including the hypnozoite stage of the *Plasmodium* parasites. Resistance to chloroquine is widespread. Irreversible retinal damage has been observed with use, and postmarketing cases of life-threatening and fatal cardiomyopathy, including ventricular arrhythmias and torsade de pointes (TdP), have been reported.[29758]

Although data are limited, chloroquine has shown some clinical benefit in the treatment of COVID-19 due to SARS-CoV-2. Additional data regarding clinical efficacy for COVID-19 are being evaluated.[65119][65120]

Classifications

- [General Anti-infectives Systemic](#)
 - [Antiparasitic Agents, Insecticides, and Repellants](#)
 - [Antiprotozoals](#)
 - [Agents for Amoebiasis and Other Protozoal Diseases](#)
 - [Antimalarials](#)

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References

29758 – Aralen (chloroquine) package insert. Bridgewater, NJ: Sanofi-aventis U.S. LLC.; 2018 Oct.

65119 – Gao J, Tian Z, Yang X. Breakthrough: Chloroquine Phosphate Has Shown Apparent Efficacy in Treatment of COVID-19 Associated Pneumonia in Clinical Studies. Biosci Trends 2020 Feb 19. [Epub ahead of print]

65120 – Wang M, Cao R, Zhang L, et al. Remdesivir and Chloroquine Effectively Inhibit the Recently Emerged Novel Coronavirus (2019-nCoV) in Vitro. Cell Res 2020;30(3):269-271.

Administration Information

General Administration Information

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

Route-Specific Administration

Oral Administration

- May administer with meals in patients who experience gastrointestinal side effects.[63990]

Oral Solid Formulations

- To mitigate bitter tablet taste for children, tablets may be pulverized and enclosed in gelatin capsules. If the child is unable to swallow the capsules or tablets, the gelatin capsules may be opened and the contents mixed with a small amount of something sweet, such as applesauce, chocolate syrup, or jelly.[63990]

Extemporaneous Compounding-Oral

NOTE: Chloroquine extemporaneous suspension is not FDA-approved.

Extemporaneous chloroquine suspension has been compounded using the following formulations:

- Chloroquine phosphate 15 mg/mL in 1:1 Ora-Sweet and Ora-Plus, 1:1 Ora-Sweet SF and Ora-Plus, or Cherry Syrup:
 - Pulverize three 500-mg chloroquine phosphate tablets into a fine powder in a mortar.
 - Add approximately 15 mL of vehicle, which may be a 1:1 mixture of Ora-Sweet and Ora-Plus, 1:1 mixture of Ora-Sweet SF and Ora-Plus, or cherry syrup.
 - Add the vehicle in geometric portions almost to volume and mix thoroughly after each addition.
 - Transfer the contents of the mortar to a calibrated bottle.
 - Add enough vehicle to bring the final volume to 100 mL.
 - Label "Shake Well Before Using" and "Protect from Light"
 - *Storage:* The suspension is stable for 60 days when stored without light at 5 and 25 degrees C.[62145]
- Chloroquine base 10 mg/mL in Cherry Syrup:
 - Pulverize two 500-mg chloroquine phosphate tablets in a mortar after removing the film coating.
 - Levigate with a small amount of sterile water.
 - Add by geometric proportions a significant amount of cherry syrup, and levigate until a uniform mixture is obtained.
 - Transfer the contents of the mortar to a conical graduated cylinder.
 - Add enough cherry syrup to bring the final volume to 60 mL.
 - Pour the suspension into an amber glass bottle and shake vigorously.
 - *Storage:* The suspension is stable for up to 4 weeks under refrigeration (4 degrees C), at room temperature (22 to 25 degrees C), and at 29 degrees C.[62150]
- Chloroquine base 15 mg/mL in Glycerin or Distilled Water, Cologel (Lilly), and Simple Syrup/Cherry Syrup:
 - Pulverize two 500-mg chloroquine phosphate tablets in a mortar.
 - Levigate with a small amount of glycerin or distilled water.
 - Add 13 mL of Cologel, and levigate until a uniform mixture is obtained.
 - Add by geometric proportion a significant amount of a 2:1 simple syrup/cherry syrup mixture, and levigate until a uniform mixture is obtained.
 - Transfer the contents of the mortar to a conical graduated cylinder.
 - Add enough of the syrup mixture to bring the final volume to 40 mL.
 - Pour the suspension into an amber glass bottle and shake vigorously.
 - Label "Shake Well" and "Refrigerate".
 - *Storage:* The suspension is stable for 3 days when stored in the refrigerator.[62172]

Clinical Pharmaceutics Information

From Trissel's 2™ Clinical Pharmaceutics Database

Chloroquine

1. pH Range

pH 5.5 to 6.6 (as the hydrochloride salt)

References

McEvoy GK (ed). AHFS Drug Information (current edition). Bethesda, MD: American Society of Health-System Pharmacists.

2. Stability

Chloroquine sulfate in intact containers stored as directed by the manufacturer is stable until the labeled expiration date. Infusion Solutions: Chloroquine sulfate 0.5 mg/mL in sodium chloride 0.9% was reported by Martens et al. to be stable for 24 hours at 21 degree C protected from exposure to light.

References

Anon. Manufacturer's information and labeling. (Package insert).

Martens HJ, De Goede PN, van Loenen AC. Sorption of various drugs in polyvinyl chloride, glass, and polyethylene-lined infusion containers. *Am J Hosp Pharm.* 1990; 47:369-73

3. Light Exposure

Chloroquine injection should be protected from exposure to light during long-term storage.

References

Anon. Manufacturer's information and labeling. (Package insert).

Anon. BIAM; l'Universite et l'Industrie Pharmaceutique, Banque de donnees automatisee surles medicaments (Biam), Paris, France. Accessed at: <http://www2.biam2.org>.

Anon. South African Electronic Package Inserts, Malahyde Information Systems. Accessed at <http://home.intekom.com/pharm/intramed>.

4. Filtration

Geary et al. reported that chloroquine exhibited binding to cellulose acetate filters. About 60% or more of the drug was lost from 10 mL of a chloroquine 0.32-mg/mL solution passed through Millipore and Nalgene 0.45-micron cellulose acetate filters. No drug loss occurred when the chloroquine solution was passed through a polycarbonate filter. The clinical implications, if any, of binding to filters from such a low concentration are uncertain.

References

Geary TG, Akood MA, Jensen JB. Characteristics of chloroquine binding to glass and plastic. *Am J Trop Med Hyg.* 1984; 32:19-23

5. Sorption Leaching

Geary et al. reported that chloroquine at low concentrations exhibits sorption to glass. As much as 30 to 40% was lost to glass test tubes from a 0.32 mg/mL solution. No loss due to sorption to polycarbonate, polystyrene, or polypropylene plastics was found. The clinical implications, if any, of sorption from such a low concentration are uncertain. Moreover, Martens et al. were unable to confirm this result. They found no sorption to glass bottles, polyvinyl chloride (PVC) plastic bags, and polyethylene-lined laminated bags from a chloroquine 0.5 mg/mL (as sulfate) solution.

References

D'Arcy PF. Drug interactions with medical plastics. *Drug Intell Clin Pharm.* 1983; 17:726-31

Geary TG, Akood MA, Jensen JB. Characteristics of chloroquine binding to glass and plastic. *Am J Trop Med Hyg.* 1984; 32:19-23

Martens HJ, De Goede PN, van Loenen AC. Sorption of various drugs in polyvinyl chloride, glass, and polyethylene-lined infusion containers. *Am J Hosp Pharm.* 1990; 47:369-73

6. Stability Max

Maximum reported stability period: In NS- 24 hours at room temperature

References

Martens HJ, De Goede PN, van Loenen AC. Sorption of various drugs in polyvinyl chloride, glass, and polyethylene-lined infusion containers. *Am J Hosp Pharm.* 1990; 47:369-73

Compounding Drug Information

From Trissel's 2TM Clinical Pharmaceutics Database

Chloroquine

1. Identity/Properties

Chloroquine is a white to slightly yellow, odorless crystalline powder with a bitter taste. The hydrochloride, a white crystalline substance, is prepared using hydrochloric acid. Chloroquine hydrochloride 123 mg is approximately equivalent to 100 mg of chloroquine. The phosphate is a white or almost white, odorless, hygroscopic crystalline powder with a bitter taste. Chloroquine phosphate 161 mg is approximately equivalent to 100 mg of chloroquine. Solubility: Chloroquine is only slightly soluble in water. The hydrochloride and the phosphate are freely soluble in water. The phosphate has an aqueous solubility of about 250 mg/mL but is almost insoluble in ethanol. pH: Chloroquine hydrochloride injection has a pH between 5.5 and 6.5. A 1% chloroquine phosphate solution has a pH of about 4.5.

References

Anon. Manufacturer's information and labeling. (Package insert and bulk material data sheet).

Anon. The Merck Index, Whitehouse Station, New Jersey: Merck & Co., Inc. Current edition.

Anon. Martindale The Complete Drug Reference. London: The Pharmaceutical Press. Current edition and selected information from prior editions.

Anon. The United States Pharmacopeia. Rockville, Maryland: The United States Pharmacopeial Convention. Current edition.

McEvoy GK (ed). AHFS Drug Information (current edition). Bethesda, MD: American Society of Health-System Pharmacists.

2. General Stability Info

Chloroquine products should be stored in well-closed containers. The injection (as the hydrochloride) should be stored at controlled room temperature and protected from freezing and temperatures exceeding 40degree C. The phosphate is light sensitive, discoloring upon light exposure.

References

Anon. Martindale The Complete Drug Reference. London: The Pharmaceutical Press. Current edition and selected information from prior editions.

Anon. The United States Pharmacopeia. Rockville, Maryland: The United States Pharmacopeial Convention. Current edition.

McEvoy GK (ed). AHFS Drug Information (current edition). Bethesda, MD: American Society of Health-System Pharmacists.

3. Injection, extemporaneous

Injections, like other sterile drugs, should be prepared in a suitable clean air environment using appropriate aseptic procedures. When prepared from non-sterile components, an appropriate and effective sterilization method must be employed. Allen reported on a compounded formulation of chloroquine phosphate 64.5-mg/mL injection. The injection had the following formula: Chloroquine phosphate- 6.45 g Benzyl alcohol- 2 g Sterile water for injection- qs 100 mL The recommended method of preparation is to dissolve the chloroquine phosphate powder in about 90 mL of sterile water for injection. The benzyl alcohol is then added and stirred until dissolved. Sterile water for injection sufficient to bring the volume to 100 mL is added and the solution is mixed well. The

solution is to be filtered through a suitable 0.2-micron sterilizing filter and packaged in sterile containers. If no sterility test is performed, the USP specifies a beyond-use date of 24 hours at room temperature or three days stored under refrigeration because of concern for inadvertent microbiological contamination during preparation. However, if an official USP sterility test for each batch of drug is performed, the author recommended a beyond-use date of six months at room temperature because this formula is similar or the same as a commercial medication in some countries with an expiration date of two years or more.

References

Allen LV Jr. Chloroquine phosphate 64.5-mg/mL injection. *Int J Pharmaceut Compound*. 2009; 13:154

4. Oral Liquid

Study 1: Closson reported that chloroquine hydrochloride injection (Aralen HCl, Sanofi Winthrop) was added to simple syrup to make a 20-mg/mL oral pediatric dosage form. The product was incubated at 49degree C for 63 hours; no visible changes in physical appearance or consistency occurred. The product then was frozen at -6degree C for eight hours; it became a white frozen solid and reliquified upon warming to its original colorless, slightly hazy appearance. No chemical analysis was performed. Study 2: Allen and Erickson evaluated the stability of three chloroquine phosphate 15-mg/mL oral liquids extemporaneously compounded from tablets. Vehicles used in this study were (1) an equal parts mixture of Ora-Sweet and Ora-Plus (Paddock), (2) an equal parts mixture of Ora-Sweet SF and Ora-Plus (Paddock), and (3) cherry syrup (Robinson Laboratories) mixed 1:4 with simple syrup. Three chloroquine phosphate 500-mg tablets (Sanofi Winthrop) were crushed and comminuted to fine powder using a mortar and pestle. About 15 mL of the test vehicle was added to the powder and mixed to yield a uniform paste. Additional vehicle was added geo-metrically and brought to the final volume of 100 mL, mixing thoroughly after each addition. The process was repeated for each of the three test suspension vehicles. Samples of each of the finished suspensions were packaged in 120-mL amber poly-ethylene terephthalate plastic prescription bottles and stored at 5degree C and 25degree C. Because the phosphate salt is freely soluble in water, the drug is in solution in these products. No visual changes or changes in odor were detected during the study. Stability-indicating HPLC analysis found little or no drug loss in any of the liquid products stored at either temperature after 60 days of storage. Study 3: Odusote and Nasipuri evaluated the stability of three syrup formulations (See Table 1 below) containing chloroquine phosphate 16 mg/mL prepared from bulk powder. The sucrose syrup formulation was prepared by adding the chloroquine phosphate powder and sodium benzoate to heated syrup and stirring until complete dissolution occurred. The flavor and color were then added. The other two formulations were prepared by dispersing the methylcellulose in some hot water followed by ice-cold water and subsequently keeping the mixture in a freezer. The other materials then were added and mixed well. After preparation, the syrups were packaged in amber bottles and stored at 5, 25, and 40degree C for 12 weeks. Chloroquine content was assessed spectrophotometrically. No change in chloroquine concentration and no observable physical change were found in samples from any storage temperature during storage. If clear bottles were used instead of amber, exposure to light resulted in about 6% drug loss in eight weeks. If the syrup pH was adjusted from the original pH 4.5 to 4.9 down to pH 3.5 with citric acid (used to help mask the bitter taste), the chloroquine concentration remained constant over 12 weeks at all temperatures. However, if 1% sodium carboxymethylcellulose was substituted as the viscosity agent, a white turbidity or precipitate appeared (depending on concentration) along with a sudden drop in viscosity, indicating an interaction with the chloroquine phosphate. Consequently, Odusote and Nasipuri recommended using only methylcellulose as the viscosity-imparting agent. Table 1. Chloroquine Phosphate Formulations Tested for Stability by Odusote and Nasipuri
Formula 1: Chloroquine phosphate 1.6 g Sodium benzoate 0.2 g Essence of lemon grass 0.5 mL Yellow food color 0.2 mL Sucrose syrup 84% (w/v) qs 100mL
Formula 2: Chloroquine phosphate 1.6 g Sodium

benzoate 0.2 g Saccharin sodium 0.05 g Essence of lemon grass 0.5 mL Yellow food color 0.2 mL Methylcellulose 1.12% solution qs 100 mL Formula 3: Chloroquine phosphate 1.6 g Sodium benzoate 0.2 g Talin 0.05 g Essence of lemon grass 0.5 mL Yellow food color 0.2 mL Methylcellulose 1.12% solution qs 100 mL Study 4: Mironchnick et al. attempted to determine the stability of a chloroquine phosphate suspension prepared from tablets. Although no loss of drug was found by HPLC analysis, substantial increases in drug concentration at various time points indicated a nonuniform dispersion of the drug might have existed. Study 5: Van Doorne et al. evaluated the suitability of several antimicrobial preservatives for use in chloroquine phosphate 16-mg/mL syrup containing sucrose 66%. Chloroform had been used previously, but it is carcinogenic, potentially toxic to liver and kidneys, and is volatile resulting in loss of protection over time. Benzalkonium chloride is unsuitable because of its taste and incompatibilities. The best result was obtained using sorbic acid 1.5 g/L along with citric acid 2 g/L to reduce the pH to 4. Methylparaben 1.8 g/L with propylparaben 0.2 g/L also was acceptable, although the latter system was not as effective against *Aspergillus niger*. Study 6: Chandibhamar et al. evaluated the stability of a taste-masked suspension of chloroquine. Chloroquine phosphate 1.7 g was dissolved in 40 mL of simple syrup containing glycerin 5% (v/v). Then 30 mL of hot syrup containing pamoate sodium 1.3 g and sodium bicarbonate 0.56 g was slowly mixed in at a rate of 5 mL per minute with constant stirring of 30 to 80 RPM. A precipitate of chloroquine pamoate was produced. The suspension was adjusted to pH 6.0 and sodium benzoate 100 mg, amaranth, and raspberry flavor were added. The suspension was brought to 100 mL with additional syrup. The suspension exhibited a very slow rate of sedimentation. Spectroscopic analysis found the suspension remained stable over at least 42 days at 25 degree C with over 98% of the ion pair remaining and only 1.75% of free chloroquine present. Elevated temperature of 45 degree C resulted in an approximate doubling of the rate of free chloroquine formation. Bioavailability of this suspension was comparable with chloroquine phosphate liquid.

References

- Allen LV Jr, Erickson MA. Stability of alprazolam, chloroquine phosphate, cisapride, enalapril maleate, and hydralazine hydrochloride in extemporaneously compounded oral liquids. *Am J Health-Syst Pharm.* 1998; 55:1915-20
- Chandibhammar V, Yadav MR, Murthy RSR. Studies on the development of taste-masked suspension of chloroquine. *Boll Chim Farm.* 2004; 143:377-82
- Closson RG. Liquid dosage form of chloroquine. *Drug Intell Clin Pharm.* 1988; 22:347
- Mironchnick M, Barnett E, Clarke DF, et al. Stability of chloroquine in an extemporaneously prepared suspension stored at three temperatures. *Pediatr Infect Dis J.* 1994; 13:817-8
- Oduote MO, Nasipuri RN. Effect of pH and storage conditions on the stability of a novel chloroquine phosphate syrup formulation. *Pharm Ind.* 1988; 50:367-9
- Van Doorne H, Wieringa NF, Bosch EH, et al. The suitability of some preservatives in chloroquine phosphate syrup. *Pharm Weekbl Sci Ed.* 1988; 10:170-2

5. Topical

Brouwers et al. developed a topical gel containing chloroquine phosphate for use as a microbicide against HIV-1 infection. The gel was prepared by adding a mixture of hydroxyethyl cellulose 1.6% wt/wt and glycerol 2.5% to a solution of methyl- and propylparabens 0.18% and 0.02%, respectively. When mixed, a clear and homogeneous gel formed. The pH of the gel was decreased by adding lactic acid 0.05% and adjusting to pH 4.5 by adding sodium hydroxide 1 M. Chloroquine phosphate powder was added to the gel in varying amounts of 0.3, 1.3, 3, 10, and 30 mg/g of gel and mixed

thoroughly to assure complete dissolution and uniformity. Entrapped air was removed by using reduced pressure. The completed gels were packaged in capped syringes. The gels were clear and homogeneous with an osmolality of 300 mOsm/kg, a pH of 4.6, and a viscosity of 1.4 Pa s. Samples containing chloroquine phosphate 3 mg/g were stored at 40degree C and 75% relative humidity for three months. Little or no change in gel mass, pH, and osmolality occurred. Viscosity decreased by 14%, which is similar to changes observed in previously reported observations for hydroxyethyl cellulose gels. HPLC analysis found that little or no change in chloroquine concentrations occurred over the three-month test period.

References

Brouwers J, Vermeire K, Schols D, et al. Development and in vitro evaluation of chloroquine gels as microbicides against HIV-1 infection. *Virology*. 2008; 378:306-10

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Adverse Reactions

- abdominal pain
- acute generalized exanthematous pustulosis (AGEP)
- agitation
- agranulocytosis
- alopecia
- anaphylactic shock
- anaphylactoid reactions
- angioedema
- anorexia
- anxiety
- aplastic anemia
- AV block
- blurred vision
- bundle-branch block
- cardiomyopathy
- confusion
- corneal deposits
- corneal opacification
- delirium
- depression
- diarrhea
- Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS)
- dyskinesia
- elevated hepatic enzymes
- erythema multiforme
- exfoliative dermatitis

- hair discoloration
- hallucinations
- headache
- hearing loss
- hemolysis
- hemolytic anemia
- hepatitis
- hypoglycemia
- hyporeflexia
- hypotension
- insomnia
- macular degeneration
- myasthenia
- myopathy
- nausea
- neutropenia
- night blindness
- pancytopenia
- photosensitivity
- pruritus
- psoriasis
- psychosis
- QT prolongation
- retinopathy
- scotomata
- seizures
- skin discoloration
- Stevens-Johnson syndrome
- suicidal ideation
- thrombocytopenia
- tinnitus
- torsade de pointes
- torticollis
- toxic epidermal necrolysis
- urticaria
- ventricular fibrillation
- ventricular tachycardia
- visual impairment
- vomiting
- weakness

Irreversible maculopathy and macular degeneration have been reported with chloroquine or other 4-aminoquinoline compounds during postmarketing use. Irreversible retinopathy with retinal pigment changes (bull's eye appearance) and visual field defects (paracentral scotomas) have been reported in patients receiving long-term or high-dose 4-aminoquinoline therapy. Visual impairment (i.e., blurred vision and difficulty in focusing or accommodation), nyctalopia (night blindness), scotomatous vision with field defects of paracentral, pericentral ring types, and typically temporal scotomata (e.g., difficulty in reading with words tending to disappear, seeing half an object, misty vision, and fog before the eyes), and reversible corneal opacification (corneal deposits) have been reported. For patients with significant risk factors, monitoring should include annual examinations which include best corrected distance visual acuity (BCVA), automated threshold visual field (VF), and spectral domain optical coherence tomography (SD-OCT). For individuals without significant risk factors, annual exams can usually be deferred until 5 years of treatment. Discontinue chloroquine if ocular toxicity is suspected, and monitor the patient closely as retinal changes and visual disturbances may progress after cessation of therapy.[\[29758\]](#)

Erythema multiforme, Stevens-Johnson syndrome, toxic epidermal necrolysis, exfoliative dermatitis, pleomorphic skin eruptions, skin and mucosal pigmentary changes (skin discoloration), lichen planus-like eruptions, pruritus, drug reaction with eosinophilia and systemic symptoms (DRESS), photosensitivity, hair loss (alopecia), bleaching of hair pigment (hair discoloration), urticaria, anaphylactoid reactions or anaphylactic shock, and angioedema have been reported during postmarketing use of chloroquine or other 4-aminoquinoline compounds. An acute attack of psoriasis can be precipitated by chloroquine in predisposed patients.[\[29758\]](#)

Chloroquine has been associated with acute generalized exanthematous pustulosis (AGEP). The non-follicular, pustular, erythematous rash starts suddenly and is associated with fever above 38 degrees C. Drugs are the main cause of AGEP. A period of 2 to 3 weeks after an inciting drug exposure appears necessary for a first episode of AGEP. Unintentional reexposure may cause a second episode within 2 days.[\[27736\]](#)

Hematological adverse reactions have been reported during postmarketing use of chloroquine or other 4-aminoquinoline compounds and include reversible agranulocytosis, aplastic anemia, pancytopenia, neutropenia, and thrombocytopenia. Chloroquine may cause hemolysis and hemolytic anemia in patients with glucose-6-phosphate dehydrogenase deficiency (G6PD deficiency).[\[29758\]](#)

During postmarketing use, chloroquine and/or other 4-aminoquinoline compounds have been associated with sensorimotor disorders as well as skeletal muscle myopathy or neuromyopathy leading to progressive weakness (myasthenia) and atrophy of proximal muscle groups, depressed tendon reflexes (hyporeflexia), and abnormal nerve conduction. Periodically test knee and ankle reflexes to detect any evidence of muscular weakness. Discontinue chloroquine if weakness develops.[29758]

Nerve type deafness, tinnitus, and reduced hearing (hearing loss) in patients with preexisting auditory damage have been reported during postmarketing use of chloroquine or other 4-aminoquinoline compounds. Discontinue chloroquine with any hearing defects, and monitor the patient closely.[29758]

Cardiovascular adverse reactions associated with chloroquine or other 4-aminoquinoline compounds during postmarketing include cardiomyopathy (which may result in cardiac failure and in some cases fatal outcome), electrocardiogram (ECG) changes (particularly, inversion or flattening of the T-wave with widening of the QRS complex), and hypotension. Cardiac arrhythmias, conduction disorders such as bundle-branch block and AV block, QT prolongation, torsade de pointes (TdP), ventricular arrhythmias (e.g., ventricular tachycardia, ventricular fibrillation) have been reported, including fatal cases. The risk is greater with higher doses, although cases have been reported with therapeutic doses. Chronic toxicity should be considered when conduction disorders, such as bundle-branch block or AV block, are diagnosed. Additionally, cases of cardiomyopathy resulting in cardiac failure with some cases of fatal outcome have been reported with chloroquine. Prompt discontinuation of chloroquine may prevent life-threatening complications if cardiotoxicity is suspected.[28225] [28229] [28230] [28231] [29758]

Adverse gastrointestinal effects noted with chloroquine or other 4-aminoquinoline compounds during postmarketing include hepatitis, elevated hepatic enzymes, nausea, vomiting, abdominal pain/cramps, diarrhea, and anorexia.[29758] Gastric effects can be minimized by taking chloroquine with food.[61673]

Nervous system adverse reactions associated with chloroquine or other 4-aminoquinoline compounds during postmarketing include headache (usually mild and transient), seizures, polyneuropathy, acute extrapyramidal symptoms (e.g., dystonia, dyskinesia, tongue protrusion, torticollis), and neuropsychiatric changes including psychosis, delirium, anxiety, agitation, insomnia, hallucinations, confusion, personality changes, depression, and suicidal ideation/behavior. Extrapyramidal symptoms usually resolve after treatment discontinuation and/or symptomatic treatment.[29758]

Chloroquine has been shown to cause severe hypoglycemia including loss of consciousness that could be life threatening in patients treated with or without antidiabetic medications. Monitor blood glucose and adjust treatment as necessary in patients presenting with clinical symptoms of hypoglycemia during chloroquine treatment.[29758]

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Contraindications/Precautions

Absolute contraindications are italicized.

- *chloroquine hypersensitivity*
 - *ocular disease*
 - accidental exposure
 - alcoholism
 - antimicrobial resistance
 - Asian patients
 - bradycardia
 - breast-feeding
 - cardiac arrhythmias
 - cardiac disease
 - children
 - coronary artery disease
 - diabetes mellitus
 - Fabry disease
 - females
 - G6PD deficiency
 - hearing impairment
 - heart failure
 - hepatic disease
 - hydroxychloroquine hypersensitivity
 - hypertension
 - hypocalcemia
 - hypoglycemia
 - hypokalemia
 - hypomagnesemia
 - infants
 - infertility
 - long QT syndrome
 - malnutrition
 - myocardial infarction
 - neonates
 - neurological disease
 - porphyria
 - pregnancy
 - psoriasis
 - QT prolongation
 - renal failure
 - renal impairment
 - seizure disorder
 - seizures
 - thyroid disease
-

Chloroquine is reported in the literature to be a weak genotoxic agent that may elicit both gene mutations and chromosomal/DNA breaks. Mechanisms may involve DNA intercalation or induction of oxidative stress. Both positive and negative results have been reported with in vitro reverse gene mutation assays and with in vivo animal studies. The chromosomal effects were not observed when chloroquine was administered to animals orally.[\[29758\]](#)

Antimicrobial resistance to chloroquine therapy is widespread in *P. falciparum* and is reported in *P. vivax*. Prior to chloroquine use, it should be ascertained whether chloroquine is appropriate for use based on resistance patterns. Information regarding the geographic areas where resistance to chloroquine occurs is available from the Centers for Disease Control and Prevention.[\[29758\]](#)

Use of chloroquine for indications other than acute malaria is contraindicated in patients with *ocular disease*, specifically those who have retinal or visual field changes of any etiology. Irreversible retinal damage has been observed in some patients who received chloroquine. Significant risk factors for retinal damage include daily doses of chloroquine phosphate more than 2.3 mg/kg of actual body weight, duration of use more than 5 years, subnormal glomerular filtration (renal impairment or renal failure), use of some concomitant drug products such as tamoxifen, and concurrent macular disease. Baseline ophthalmological examination should be performed

within the first year of starting chloroquine and should include best corrected distance visual acuity (BCVA), automated threshold visual field (VF) of the central 10 degrees (with retesting if an abnormality is noted), and spectral domain optical coherence tomography (SD-OCT). In Asian patients, retinal toxicity may first be noticed outside the macula, and VF testing should be performed in the central 24 degrees instead of the central 10 degrees. For patients with significant risk factors, monitoring should include annual examinations which include BCVA, VF, and SD-OCT. For individuals without significant risk factors, annual exams can usually be deferred until 5 years of treatment. Discontinue chloroquine if ocular toxicity is suspected, and monitor the patient closely as retinal changes and visual disturbances may progress after cessation of therapy.[29758] The use of chloroquine should be approached with caution in patients with Fabry disease, particularly those with ocular symptoms. The drug can cause a keratopathy that is clinically and ultrastructurally indistinguishable from keratopathy caused by Fabry disease; this drug-induced keratopathy is reversible with drug cessation. In addition, chloroquine poses a theoretical risk of decreased intracellular alpha-galactosidase A activity in Fabry disease patients. Chloroquine has been reported to induce clinical symptoms that mimic those of Fabry disease, including formation of inclusion bodies that are biochemically and ultrastructurally similar in most of the cells affected by Fabry disease (e.g., striated muscle, smooth muscle, etc.). The distinguishing factor is that the ultrastructural features of chloroquine toxicity in striated muscle, curvilinear bodies, are not present in renal cells.[30609]

Chloroquine is contraindicated in patients with known *chloroquine hypersensitivity*, or with a known allergy to 4-aminoquinolines. Patients with hydroxychloroquine hypersensitivity may have cross sensitivity to chloroquine.[29758]

Use chloroquine with caution in patients with cardiac disease or other conditions that may increase the risk of QT prolongation including cardiac arrhythmias, congenital long QT syndrome, heart failure, bradycardia (less than 50 bpm), myocardial infarction, hypertension, coronary artery disease, hypomagnesemia, hypokalemia, hypocalcemia, or in patients receiving medications known to prolong the QT interval or cause electrolyte imbalances. Females, elderly patients, patients who drink alcohol, patients with diabetes, thyroid disease, malnutrition, or hepatic dysfunction may also be at increased risk for QT prolongation.[28432] [28457] [56959] [56961] [56592] [56963] QT prolongation, torsade de pointes (TdP), and ventricular arrhythmias have been reported, including fatal cases, with chloroquine. The risk is greater with higher doses, although cases have been reported with therapeutic doses.[28225] [28229] [28230] [28231] [29758] Chronic toxicity should be considered when conduction disorders, such as bundle-branch block or AV block, are diagnosed. Additionally, cases of cardiomyopathy resulting in cardiac failure with some cases of fatal outcome have been reported with chloroquine. Prompt discontinuation of chloroquine may prevent life-threatening complications if cardiotoxicity is suspected.[29758]

Chloroquine should not be used in patients with psoriasis unless the benefit to the patient outweighs the potential risks because it may precipitate a severe attack of psoriasis.[29758]

Chloroquine should be used with caution in patients with hepatic disease or alcoholism because the drug is metabolized in the liver and accumulation can occur producing toxic effects. Patients receiving other hepatotoxic drugs also should be treated with caution.[29758]

Chloroquine should be used with caution in patients with neurological disease including preexisting hearing impairment or seizure disorder. Polyneuritis, ototoxicity, seizures, neuromyopathy, and acute extrapyramidal symptoms (dystonia, dyskinesia, tongue protrusion, torticollis) have occurred with chloroquine therapy. Symptoms of muscle weakness and response of knee and ankle reflexes should be investigated regularly. If muscle weakness, extrapyramidal symptoms, or any defects in hearing occur during chloroquine therapy, the drug should be discontinued immediately and the patient observed closely.[29758]

Chloroquine can exacerbate porphyria or may cause hemolysis in patients with glucose-6-phosphate dehydrogenase deficiency (G6PD deficiency). Use chloroquine with caution in patients with these conditions. Blood monitoring for hemolytic anemia in G6PD deficiency patients may be necessary, particularly with concomitant use of other medications associated with hemolysis.[29758]

Use chloroquine with caution in patients with hypoglycemia or diabetes mellitus. Chloroquine can cause severe, life-threatening hypoglycemia in patients with or without antidiabetic medications. Warn patients about the risk of hypoglycemia and the associated clinical signs and symptoms. Monitor blood glucose and adjust treatment as necessary in patients presenting with clinical symptoms of hypoglycemia during chloroquine treatment.[29758]

Children are especially sensitive to the 4-aminoquinoline compounds. Fatalities have been reported after accidental exposure of chloroquine; some cases involved relatively small doses (e.g., 0.75 g or 1 g in a 3-year-old child). Strongly warn patients to keep chloroquine out of the reach of pediatric patients, including neonates, infants, children, and adolescents.[29758]

Weigh the benefit of chloroquine prophylaxis or treatment of malaria against the potential risk to the fetus, and consider the drug's potential to remain in the body for several months after discontinuation of therapy.[29758] [63990] [64059] In humans at recommended doses for prophylaxis and treatment of malaria, observational studies as well as a meta-analysis, including a small number of prospective studies with chloroquine during pregnancy, have shown no increase in the rate of birth defects or spontaneous abortions.[29758] Guidelines recommend chloroquine as a treatment option for acute malaria and for prophylaxis in pregnant women during all trimesters. Chloroquine crosses the placenta, but the potential damage to the mother from malaria is greater than the drug's risk to the fetus. Weekly prophylactic doses appear to have minimal adverse effects when administered during pregnancy.[63990] [64059] Animal studies showed embryo-fetal developmental toxicity at doses 3 to 16 times the maximum recommended therapeutic dose and the potential of genotoxicity in some test systems. Autoradiographic studies have shown accumulation in the eyes and ears when chloroquine is administered at the start or end of gestation in animal studies.[29758]

Use caution when administering chloroquine to breast-feeding women. Chloroquine is excreted into breast milk. The excretion of chloroquine and the major metabolite, desethylchloroquine, in breast milk was investigated in 11 lactating mothers following a single oral dose of chloroquine (600 mg base). The maximum daily dose of the drug that the infant received from breast-feeding was about 0.7% of the maternal start dose of the drug in malaria chemotherapy. Separate chemoprophylaxis for an infant is required.[29758] However, previous American Academy of Pediatrics (AAP) recommendations consider chloroquine usually compatible with breast-feeding, and chloroquine has an established dosage in infants.[27500]

Chloroquine should be used with caution in males because animal studies suggest that infertility is possible; after 30 days of oral treatment, testosterone levels and weight of testes, epididymis, seminal vesicles, and prostate decreased.[29758]

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Mechanism of Action

Chloroquine, a 4-aminoquinoline, is an anti-protozoal agent. The precise mechanism is unknown. Chloroquine may exert its effect against *Plasmodium* species by concentrating in the acid vesicles of the parasite and by inhibiting polymerization of heme. It can also inhibit certain enzymes by its interaction with DNA. Chloroquine is not active against gametocytes and the exoerythrocytic forms including the hypnozoite stage (*P. vivax* and *P. ovale*) of the *Plasmodium* parasites. Organisms with reduced susceptibilities to hydroxychloroquine also show reduced susceptibilities to chloroquine.[29758] Although the mechanisms underlying the antiinflammatory and immunomodulatory effects of chloroquine are unknown, several possible mechanisms of action have been proposed. It is unclear if these mechanisms work similarly for rheumatic and autoimmune diseases. Potential mechanisms include reduced cytokine production, inhibition of immune effector cells, inhibition of platelet function, protection of the cell surface from external disturbances, competitive binding to nucleic acid ligands or toll-like receptors (TLRs), interference with lysosomal function, reduction of leakage of lysosomal enzymes, and interference with endosomal NADPH oxidase (NOX).[61727][61728][61729]

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Pharmacokinetics

Chloroquine is administered orally. It is widely distributed into body tissues, with higher concentrations in the liver, kidneys, spleen, and lungs. Leukocytes also concentrate the drug. Smaller amounts of the drug are found in the brain and spinal cord. Cells containing melanin in the eyes and skin bind strongly to chloroquine. The drug also concentrates in erythrocytes and is bound to platelets and granulocytes. It is about 55% bound to plasma protein.[\[29758\]](#)[\[61731\]](#)[\[62151\]](#)

Excretion of chloroquine is largely through urine, but this is a slow process and may be increased by acidification of the urine. Chloroquine undergoes appreciable degradation in the body, and the major metabolite is desethylchloroquine. Slightly more than half of a dose is excreted in urine as unchanged drug and about 25% as the major metabolite; bisdesethylchloroquine and other metabolic products are found in small amounts. A small portion of the unabsorbed drug is excreted in the feces. Elimination appears to take place in a biphasic manner. The elimination half-life is 108 to 291 hours.[\[29758\]](#)[\[61731\]](#)[\[62151\]](#)

Affected cytochrome P450 isoenzymes and drug transporters: CYP2C8, CYP2D6, CYP3A4

Chloroquine is partially metabolized in the liver and is a substrate of CYP3A4 and CYP2C8 isoenzymes.[\[62151\]](#) In vitro data show that chloroquine may be a substrate and inhibitor the CYP2D6 isoenzyme; however, clinical significance is unknown.[\[34335\]](#)[\[34353\]](#)

Route-Specific Pharmacokinetics

- **Oral Route**

After oral administration, chloroquine is rapidly and almost completely absorbed from the gastrointestinal tract.[\[29758\]](#)[\[62151\]](#) The T_{max} is 2.7 to 6.9 hours with a C_{max} of 283 to 1430 ng/mL and an AUC of 8.2 to 140 mcg x hour/mL.[\[62151\]](#) A single study showed that the AUC in patients with malaria was higher than in normal volunteers (281 vs. 122 mcg x mL/L x hour).[\[61760\]](#)

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Pregnancy/Breast-feeding

Pregnancy

Weigh the benefit of chloroquine prophylaxis or treatment of malaria against the potential risk to the fetus, and consider the drug's potential to remain in the body for several months after discontinuation of therapy.[29758] [63990] [64059] In humans at recommended doses for prophylaxis and treatment of malaria, observational studies as well as a meta-analysis, including a small number of prospective studies with chloroquine during pregnancy, have shown no increase in the rate of birth defects or spontaneous abortions.[29758] Guidelines recommend chloroquine as a treatment option for acute malaria and for prophylaxis in pregnant women during all trimesters. Chloroquine crosses the placenta, but the potential damage to the mother from malaria is greater than the drug's risk to the fetus. Weekly prophylactic doses appear to have minimal adverse effects when administered during pregnancy.[63990] [64059] Animal studies showed embryo-fetal developmental toxicity at doses 3 to 16 times the maximum recommended therapeutic dose and the potential of genotoxicity in some test systems. Autoradiographic studies have shown accumulation in the eyes and ears when chloroquine is administered at the start or end of gestation in animal studies.[29758]

Breast-Feeding

Use caution when administering chloroquine to breast-feeding women. Chloroquine is excreted into breast milk. The excretion of chloroquine and the major metabolite, desethylchloroquine, in breast milk was investigated in 11 lactating mothers following a single oral dose of chloroquine (600 mg base). The maximum daily dose of the drug that the infant received from breast-feeding was about 0.7% of the maternal start dose of the drug in malaria chemotherapy. Separate chemoprophylaxis for an infant is required.[29758] However, previous American Academy of Pediatrics (AAP) recommendations consider chloroquine usually compatible with breast-feeding, and chloroquine has an established dosage in infants.[27500]

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Interactions

Level 1 (Severe)

- Bepidil
- Cisapride
- Dronedaron
- Halofantrine
- Levomethadyl
- Mesoridazine
- Penicillamine
- Pimozide
- Sparfloxacin
- Thiethylperazine
- Thioridazine

Level 2 (Major)

- Abarelix
- Acarbose
- Acetohexamide
- Albiglutide
- Alfuzosin
- Alogliptin
- Alogliptin; Metformin
- Alogliptin; Pioglitazone
- Alpha-glucosidase Inhibitors
- Aluminum Hydroxide
- Aluminum Hydroxide; Magnesium Carbonate
- Aluminum Hydroxide; Magnesium Hydroxide
- Aluminum Hydroxide; Magnesium Hydroxide; Simethicone
- Aluminum Hydroxide; Magnesium Trisilicate
- Amiodarone
- Amitriptyline
- Amitriptyline; Chlordiazepoxide
- Amoxicillin; Clarithromycin; Lansoprazole
- Amoxicillin; Clarithromycin; Omeprazole
- Anagrelide
- Antacids
- Apomorphine
- Aripiprazole
- Arsenic Trioxide
- Artemether; Lumefantrine
- Asenapine
- Aspirin, ASA; Citric Acid; Sodium Bicarbonate
- Atomoxetine
- Azithromycin
- Bedaquiline
- Bismuth Subcitrate Potassium; Metronidazole; Tetracycline
- Bismuth Subsalicylate; Metronidazole; Tetracycline
- Botulinum Toxins
- Buprenorphine
- Buprenorphine; Naloxone
- Calcium Carbonate
- Calcium Carbonate; Magnesium Hydroxide
- Calcium Carbonate; Risedronate
- Calcium Carbonate; Simethicone
- Canagliflozin
- Canagliflozin; Metformin
- Ceritinib
- Chlorpromazine
- Chlorpropamide
- Cimetidine
- Ciprofloxacin
- Citalopram
- Clarithromycin
- Clofazimine
- Clomipramine

- Clozapine
- Codeine; Phenylephrine; Promethazine
- Codeine; Promethazine
- Crizotinib
- Cyclosporine
- Dapagliflozin
- Dapagliflozin; Metformin
- Dapagliflozin; Saxagliptin
- Dasatinib
- Degarelix
- Desflurane
- Desipramine
- Deutetrabenazine
- Dextromethorphan; Promethazine
- Dextromethorphan; Quinidine
- Dipeptidyl Peptidase-4 Inhibitors
- Disopyramide
- Dofetilide
- Dolasetron
- Dolutegravir; Rilpivirine
- Donepezil
- Donepezil; Memantine
- Doxepin
- Droperidol
- Dulaglutide
- Efavirenz
- Efavirenz; Emtricitabine; Tenofovir
- Efavirenz; Lamivudine; Tenofovir Disoproxil Fumarate
- Eliglustat
- Empagliflozin
- Empagliflozin; Linagliptin
- Empagliflozin; Linagliptin; Metformin
- Empagliflozin; Metformin
- Emtricitabine; Rilpivirine; Tenofovir alafenamide
- Emtricitabine; Rilpivirine; Tenofovir disoproxil fumarate
- Encorafenib
- Enflurane
- Entrectinib
- Eribulin
- Ertugliflozin
- Ertugliflozin; Metformin
- Ertugliflozin; Sitagliptin
- Erythromycin
- Erythromycin; Sulfisoxazole
- Escitalopram
- Exenatide
- Ezogabine
- Fingolimod
- Flecainide
- Fluconazole
- Fluoxetine
- Fluoxetine; Olanzapine
- Fluvoxamine
- Foscarnet
- Gemifloxacin
- Gemtuzumab Ozogamicin
- Gilteritinib
- Glasdegib
- Glimepiride
- Glimepiride; Pioglitazone
- Glimepiride; Rosiglitazone
- Glipizide
- Glipizide; Metformin
- Glyburide
- Glyburide; Metformin
- Goserelin
- Granisetron
- Halogenated Anesthetics
- Haloperidol
- Halothane
- Histrelin
- Hydroxychloroquine
- Hydroxyzine
- Ibutilide
- Iloperidone
- Imipramine
- Incretin Mimetics
- Inotuzumab Ozogamicin
- Insulin Aspart
- Insulin Aspart; Insulin Aspart Protamine
- Insulin Degludec
- Insulin Degludec; Liraglutide
- Insulin Detemir
- Insulin Glargine
- Insulin Glargine; Lixisenatide
- Insulin Glulisine
- Insulin Lispro
- Insulin Lispro; Insulin Lispro Protamine
- Insulin, Inhaled
- Insulins
- Isoflurane
- Isophane Insulin (NPH)
- Itraconazole
- Ivosidenib
- Ketoconazole
- Lanthanum Carbonate
- Lapatinib
- Lefamulin
- Lente Insulin
- Lenvatinib
- Leuprolide
- Leuprolide; Norethindrone
- Levofloxacin
- Linagliptin
- Linagliptin; Metformin

- Liraglutide
- Lithium
- Lixisenatide
- Lofexidine
- Loperamide
- Loperamide; Simethicone
- Lopinavir; Ritonavir
- Macimorelin
- Magnesium Hydroxide
- Maprotiline
- Mefloquine
- Meglitinides
- Meperidine; Promethazine
- Metformin
- Metformin; Pioglitazone
- Metformin; Repaglinide
- Metformin; Rosiglitazone
- Metformin; Saxagliptin
- Metformin; Sitagliptin
- Methadone
- Metronidazole
- Midostaurin
- Mifepristone
- Miglitol
- Mirtazapine
- Moxifloxacin
- Nateglinide
- Nilotinib
- Norfloxacin
- Nortriptyline
- Octreotide
- Ofloxacin
- Olanzapine
- Omeprazole; Sodium Bicarbonate
- Ondansetron
- Osimertinib
- Oxaliplatin
- Paliperidone
- Panobinostat
- Pasireotide
- Pazopanib
- Pentamidine
- Perphenazine; Amitriptyline
- Phenylephrine; Promethazine
- Pimavanserin
- Pioglitazone
- Pitolisant
- Posaconazole
- Pramlintide
- Primaquine
- Procainamide
- Promethazine
- Propafenone
- Protriptyline
- Quetiapine
- Quinidine
- Quinine
- Rabies Vaccine
- Ranolazine
- Regular Insulin
- Regular Insulin; Isophane Insulin (NPH)
- Repaglinide
- Ribociclib
- Ribociclib; Letrozole
- Rilpivirine
- Risperidone
- Romidepsin
- Rosiglitazone
- Saquinavir
- Saxagliptin
- Semaglutide
- Sertraline
- Sevoflurane
- SGLT2 Inhibitors
- Simvastatin; Sitagliptin
- Siponimod
- Sitagliptin
- Sodium Bicarbonate
- Solifenacin
- Sorafenib
- Sotalol
- Sulfonyleureas
- Sunitinib
- Tacrolimus
- Tamoxifen
- Telavancin
- Telithromycin
- Tetrabenazine
- Thiazolidinediones
- Tolazamide
- Tolbutamide
- Tolterodine
- Toremfene
- Trazodone
- Tricyclic antidepressants
- Trimipramine
- Triptorelin
- Ultralente Insulin
- Vandetanib
- Vardenafil
- Vemurafenib
- Venlafaxine
- Vigabatrin
- Voriconazole
- Vorinostat
- Ziprasidone

Level 3 (Moderate)

- Aclidinium; Formoterol
- Agalsidase Beta
- Ampicillin
- Ampicillin; Sulbactam
- Arformoterol
- Articaine; Epinephrine
- Atracurium
- Budesonide; Formoterol
- Bupivacaine
- Bupivacaine Liposomal
- Bupivacaine; Lidocaine
- Carbamazepine
- Chlorprocaine
- Cisatracurium
- Cobimetinib
- Dapsone
- Digoxin
- Doxacurium
- Fluticasone; Salmeterol
- Fluticasone; Umeclidinium; Vilanterol
- Fluticasone; Vilanterol
- Formoterol
- Formoterol; Mometasone
- Glycopyrrolate; Formoterol
- Indacaterol
- Indacaterol; Glycopyrrolate
- Interferon Alfa-2a
- Interferon Alfa-2b
- Interferon Alfa-2b; Ribavirin
- Interferon Alfa-n3
- Interferon Alfacon-1
- Interferon Beta-1a
- Interferon Beta-1b
- Interferon Gamma-1b
- Interferons
- Lidocaine
- Lomefloxacin
- Long-acting beta-agonists
- Mepivacaine
- Mepivacaine; Levonordefrin
- Mivacurium
- Neuromuscular blockers
- Olodaterol
- Pancuronium
- Peginterferon Alfa-2a
- Peginterferon Alfa-2b
- Peginterferon beta-1a
- Penicillin G Benzathine; Penicillin G Procaine
- Penicillin G Procaine
- Ponatinib
- Prilocaine
- Prilocaine; Epinephrine
- Rapacuronium
- Rocuronium
- Ropivacaine
- Salmeterol
- Succinylcholine
- Telbivudine
- Tetracaine
- Tiotropium; Olodaterol
- Trametinib
- Tubocurarine
- Umeclidinium; Vilanterol
- Vecuronium
- Yellow Fever Vaccine, Live

Level 4 (Minor)

- Albuterol
- Albuterol; Ipratropium
- Fluphenazine
- Galsulfase
- Levalbuterol
- Metaproterenol
- Perphenazine
- Pirbuterol
- Praziquantel
- Prochlorperazine
- Short-acting beta-agonists
- Terbutaline
- Trifluoperazine

Abarelix: (Major) Since abarelix can cause QT prolongation, abarelix should be used cautiously, if at all, with other drugs that are associated with QT prolongation, such as chloroquine. [\[4951\]](#) [\[4955\]](#) [\[4956\]](#) [\[5136\]](#)

Acarbose: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the alpha-glucosidase inhibitors, are coadministered. A decreased dose of the antidiabetic

agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Acetohexamide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Acclidinium; Formoterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Agalsidase Beta: (Moderate) Theoretically, there is a possible drug interaction between agalsidase beta and chloroquine due to a risk of decreased intracellular alpha galactosidase A activity induced by chloroquine. [4144]

Albiglutide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the incretin mimetics, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Albuterol: (Minor) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Albuterol; Ipratropium: (Minor) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Alfuzosin: (Major) Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously with chloroquine include alfuzosin. Based on electrophysiology studies performed by the manufacturer, alfuzosin has a slight effect to

prolong the QT interval. The QT prolongation appeared less with alfuzosin 10 mg than with 40 mg. [28229] [28230] [28231] [28261]

Alogliptin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Alogliptin; Metformin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Alogliptin; Pioglitazone: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the thiazolidinediones, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Alpha-glucosidase Inhibitors: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the alpha-glucosidase inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Aluminum Hydroxide: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30285]

Aluminum Hydroxide; Magnesium Carbonate: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30285]

Aluminum Hydroxide; Magnesium Hydroxide: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30285]

Aluminum Hydroxide; Magnesium Hydroxide; Simethicone: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30285]

Aluminum Hydroxide; Magnesium Trisilicate: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30285]

Amiodarone: (Major) The concomitant use of amiodarone and other drugs known to prolong the QT interval should only be done after careful assessment of risks versus benefits. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). If possible, avoid coadministration of amiodarone and chloroquine. Amiodarone, a Class III antiarrhythmic agent, is associated with a well-established risk of QT prolongation and TdP. Although the frequency of TdP is less with amiodarone than with other Class III agents, amiodarone is still associated with a risk of TdP. Due to the extremely long half-life of amiodarone, a drug interaction is possible for days to weeks after discontinuation of amiodarone. [28224] [28229] [28230] [28231] [28432] [28457]

Amitriptyline: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as tricyclic antidepressants (TCAs), with caution. Chloroquine is associated with an increased risk of QT

prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tricyclic antidepressants share pharmacologic properties similar to the Class IA antiarrhythmic agents and may prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). [28225] [28229] [28230] [28231] [28415] [28416] [29758]

Amitriptyline; Chlordiazepoxide: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as tricyclic antidepressants (TCAs), with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tricyclic antidepressants share pharmacologic properties similar to the Class IA antiarrhythmic agents and may prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). [28225] [28229] [28230] [28231] [28415] [28416] [29758]

Amoxicillin; Clarithromycin; Lansoprazole: (Major) Concurrent use of chloroquine and clarithromycin should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Administration of clarithromycin has resulted in prolongation of the QT interval and TdP. Chloroquine is also associated with an increased risk of QT prolongation and TdP. [28225] [28229] [28230] [28231] [28238]

Amoxicillin; Clarithromycin; Omeprazole: (Major) Concurrent use of chloroquine and clarithromycin should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Administration of clarithromycin has resulted in prolongation of the QT interval and TdP. Chloroquine is also associated with an increased risk of QT prolongation and TdP. [28225] [28229] [28230] [28231] [28238]

Ampicillin: (Moderate) In a study of healthy volunteers, chloroquine significantly reduced the bioavailability of ampicillin. Administer oral ampicillin 2 hours before or 2 hours after chloroquine. The reduction of ampicillin bioavailability could be attributed to slower gastric emptying and enhancement of gut motility produced by chloroquine. [29758] [61761]

Ampicillin; Sulbactam: (Moderate) In a study of healthy volunteers, chloroquine significantly reduced the bioavailability of ampicillin. Administer oral ampicillin 2 hours before or 2 hours after chloroquine. The reduction of ampicillin bioavailability could be attributed to slower gastric emptying and enhancement of gut motility produced by chloroquine. [29758] [61761]

Anagrelide: (Major) Torsades de pointes (TdP) and ventricular tachycardia have been reported during post-marketing use of anagrelide. A cardiovascular examination, including an ECG, should be obtained in all patients prior to initiating anagrelide therapy. Monitor patients during anagrelide therapy for cardiovascular effects and evaluate as necessary. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously and with close monitoring with anagrelide include chloroquine. [28229] [28230] [28231] [30163]

Antacids: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30285]

Apomorphine: (Major) Concurrent use of chloroquine and apomorphine should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Chloroquine administration is associated with an increased risk of QT prolongation and TdP. Limited data indicate that QT prolongation is also possible with apomorphine administration; the change in QTc interval is not significant in most patients receiving dosages within the manufacturer's guidelines. In one study, a single mean dose of 5.2 mg (range 2 to 10 mg) prolonged the QT interval by about 3 msec. However, large increases (> 60 msec from pre-dose) have occurred in two patients receiving 6 mg doses. Doses ≤ 6 mg SC are associated with minimal increases in QTc; doses > 6 mg SC do not provide additional clinical benefit and are not recommended. [28229] [28230] [28231] [28661]

Arformoterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes

(TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Aripiprazole: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as aripiprazole, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsades de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. QT prolongation has occurred during therapeutic use of aripiprazole and following overdose. [28229] [28230] [28231] [29758] [42845] [53394] [60196]

Arsenic Trioxide: (Major) Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. QT prolongation should be expected with the administration of arsenic trioxide. TdP and complete atrioventricular block have been reported. [28226] [28229] [28230] [28231]

Artemether; Lumefantrine: (Major) Artemether; lumefantrine is associated with prolongation of the QT interval and should be avoided in combination with other QT prolonging drugs, such as chloroquine. Consider ECG monitoring if other QT prolonging drugs must be used with or after artemether; lumefantrine treatment. Chloroquine is associated with an increased risk of QT prolongation and torsades de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [29758] [35401]

Articaine; Epinephrine: (Moderate) Coadministration of articaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue articaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [28996]

Asenapine: (Major) Asenapine has been associated with QT prolongation. According to the manufacturer of asenapine, the drug should be avoided in combination with other agents also known to have this effect, such as chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. [28229] [28230] [28231] [36343]

Aspirin, ASA; Citric Acid; Sodium Bicarbonate: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30284] [30285]

Atomoxetine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as atomoxetine, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsades de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. QT prolongation has occurred during therapeutic use of atomoxetine and following overdose. [11209] [28229] [28230] [28231] [28405] [29758] [59321]

Atracurium: (Moderate) Chloroquine may affect presynaptic and postsynaptic myoneural function and potentiate the neuromuscular blocking action of neuromuscular blockers. [31129]

Azithromycin: (Major) The need to coadminister chloroquine with other drugs known to prolong the QT interval, such as azithromycin, should be done with a careful assessment of risks versus benefits and should be avoided when possible. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP). Cases of QT prolongation and TdP have been reported during post-marketing use of azithromycin. [28229] [28230] [28231] [28855] [43974]

Bedaquiline: (Major) Concurrent use of chloroquine and bedaquiline should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). A careful assessment of risks vs. benefits should be considered prior to coadministration. Bedaquiline has been reported to prolong the QT interval. Prior to initiating bedaquiline, obtain serum electrolyte concentrations and a baseline electrocardiogram (ECG). An ECG should also be performed at least 2, 12, and 24 weeks after starting bedaquiline therapy. Chloroquine is also associated with an increased risk of QT prolongation and TdP. [28229] [28230] [28231] [52746]

Bepridil: (Severe) Bepridil administration is associated with a well-established risk of QT prolongation and torsades de pointes. Patients receiving other drugs which have the potential for QT prolongation, such as chloroquine, have an increased risk of developing proarrhythmias during bepridil therapy. [4951] [4953] [4955] [4956]

Bismuth Subcitrate Potassium; Metronidazole; Tetracycline: (Major) Potential QT prolongation has been reported in limited case reports with metronidazole. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously and with close monitoring with metronidazole include chloroquine. [28229] [28230] [28231] [57377] [57378]

Bismuth Subsalicylate; Metronidazole; Tetracycline: (Major) Potential QT prolongation has been reported in limited case reports with metronidazole. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously and with close monitoring with metronidazole include chloroquine. [28229] [28230] [28231] [57377] [57378]

Botulinum Toxins: (Major) One study reported that chloroquine antagonized the actions of botulinum toxins (e.g., abobotulinumtoxinA, incobotulinumtoxinA, onabotulinumtoxinA, and rimabotulinumtoxinB). The study suggested that chloroquine may prevent internalization by inhibiting toxin binding at the cell membrane or inhibit lysosomal processing of the toxin in the cell interior. [26411]

Budesonide; Formoterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Bupivacaine Liposomal: (Moderate) Coadministration of bupivacaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue bupivacaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [52331]

Bupivacaine: (Moderate) Coadministration of bupivacaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue bupivacaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to

supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [52331]

Bupivacaine; Lidocaine: (Moderate) Coadministration of bupivacaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue bupivacaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [52331] (Moderate) Coadministration of lidocaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue lidocaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [43383]

Buprenorphine: (Major) Buprenorphine should be avoided in combination with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). Buprenorphine has also been associated with QT prolongation and has a possible risk of torsade de pointes (TdP). FDA-approved labeling for some buprenorphine products recommend avoiding use with Class 1A and Class III antiarrhythmic medications while other labels recommend avoiding use with any drug that has the potential to prolong the QT interval. If coadministration is necessary, carefully assess the risks versus benefits of concurrent use. [28229] [28230] [28231] [41235] [59321] [60270]

Buprenorphine; Naloxone: (Major) Buprenorphine should be avoided in combination with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). Buprenorphine has also been associated with QT prolongation and has a possible risk of torsade de pointes (TdP). FDA-approved labeling for some buprenorphine products recommend avoiding use with Class 1A and Class III antiarrhythmic medications while other labels recommend avoiding use with any drug that has the potential to prolong the QT interval. If coadministration is necessary, carefully assess the risks versus benefits of concurrent use. [28229] [28230] [28231] [41235] [59321] [60270]

Calcium Carbonate: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30284] [30285]

Calcium Carbonate; Magnesium Hydroxide: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30284] [30285] (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30285]

Calcium Carbonate; Risedronate: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30284] [30285]

Calcium Carbonate; Simethicone: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30284] [30285]

Canagliflozin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Canagliflozin; Metformin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic

agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Carbamazepine: (Moderate) Chloroquine may antagonize the activity of carbamazepine. Dose adjustments of carbamazepine may be required if chloroquine is added or removed from an existing carbamazepine regimen. [4743]

Ceritinib: (Major) Avoid coadministration of ceritinib with chloroquine if possible due to the risk of QT prolongation. If concomitant use is unavoidable, periodically monitor ECGs and electrolytes; an interruption of ceritinib therapy, dose reduction, or discontinuation of therapy may be necessary if QT prolongation occurs. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Concentration-dependent QT prolongation has also occurred with ceritinib treatment. [28229] [28230] [28231] [34353] [57094]

Chlorprocaine: (Moderate) Coadministration of chlorprocaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue chlorprocaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [29062]

Chlorpromazine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as chlorpromazine, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Chlorpromazine, a phenothiazine, is associated with an established risk of QT prolongation and TdP. [28229] [28230] [28231] [28415] [29758] [43065] [43715]

Chlorpropamide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Cimetidine: (Major) Avoid concomitant use of chloroquine and cimetidine, Cimetidine can inhibit the metabolism and increase the serum concentrations of chloroquine. [29758] [34335] [34353] [61759] [61760]

Ciprofloxacin: (Major) Due to an increased risk for QT prolongation and torsade de pointes (TdP), caution is advised when administering chloroquine with ciprofloxacin. Chloroquine administration is associated with an increased risk of QT prolongation and TdP. The need to coadminister chloroquine with other drugs associated with QT prolongation and TdP, such as ciprofloxacin, should be done with a careful assessment of risks versus benefits and should be avoided when possible. [28229] [28230] [28231] [43411]

Cisapride: (Severe) Coadministration of cisapride and chloroquine is contraindicated due to the risk for serious adverse events, such as QT prolongation and torsade de pointes (TdP). QT prolongation and ventricular arrhythmias, including TdP and death, have been reported with cisapride. Chloroquine is also associated with an established risk of QT prolongation and TdP. Concurrent use may result in additive effects on the QT interval. [28229] [28230] [28231] [47221]

Cisatracurium: (Moderate) Chloroquine may affect presynaptic and postsynaptic myoneural function and potentiate the neuromuscular blocking action of neuromuscular blockers. [31129]

Citalopram: (Major) According to the manufacturer, concurrent use of citalopram with other drugs that prolong the QT interval, such as chloroquine, is not recommended. If concurrent therapy is considered essential, ECG monitoring is recommended. Citalopram causes dose-dependent QT interval prolongation. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [28269] [29758]

Clarithromycin: (Major) Concurrent use of chloroquine and clarithromycin should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Administration of clarithromycin has resulted in prolongation of the QT interval and TdP. Chloroquine is also associated with an increased risk of QT prolongation and TdP. [28225] [28229] [28230] [28231] [28238]

Clofazimine: (Major) Monitor ECGs for QT prolongation when clofazimine is administered with chloroquine. QT prolongation and torsade de pointes (TdP) have been reported in patients receiving clofazimine in combination with QT prolonging medications. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [63936]

Clomipramine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as tricyclic antidepressants (TCAs), with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tricyclic antidepressants share pharmacologic properties similar to the Class IA antiarrhythmic agents and may prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). [28225] [28229] [28230] [28231] [28415] [28416] [29758]

Clozapine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as clozapine, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Treatment with clozapine has been associated with QT prolongation, TdP, cardiac arrest, and sudden death. [28229] [28230] [28231] [28262] [29758]

Cobimetinib: (Moderate) Concurrent use of chloroquine and cobimetinib is not recommended as there is an increased risk of retinal toxicity. [29758] [60281]

Codeine; Phenylephrine; Promethazine: (Major) Promethazine carries a possible risk of QT prolongation. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously and with close monitoring with promethazine include chloroquine. [28225] [28229] [28230] [28231] [55578]

Codeine; Promethazine: (Major) Promethazine carries a possible risk of QT prolongation. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously and with close monitoring with promethazine include chloroquine. [28225] [28229] [28230] [28231] [55578]

Crizotinib: (Major) Avoid coadministration of crizotinib with chloroquine due to the risk of QT prolongation. If concomitant use is unavoidable, monitor ECGs for QT prolongation and monitor electrolytes. An interruption of therapy, dose reduction, or discontinuation of therapy may be necessary for crizotinib patients if QT prolongation occurs. Crizotinib has been associated with concentration-dependent QT prolongation. Chloroquine is also associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [29758] [34335] [34353] [45458]

Cyclosporine: (Major) Close monitoring of serum cyclosporine concentrations is recommended during coadministration of chloroquine. Sudden increases in cyclosporine concentrations have been reported after the addition of chloroquine. Discontinue chloroquine if necessary. [29758]

Dapagliflozin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Dapagliflozin; Metformin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be

necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Dapagliflozin; Saxagliptin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Dapsone: (Moderate) Coadministration of dapsone with chloroquine may increase the risk of developing methemoglobinemia. Advise patients to discontinue treatment and seek immediate medical attention with any signs or symptoms of methemoglobinemia. [60612]

Dasatinib: (Major) Avoid coadministration of chloroquine with dasatinib if possible, due to the risk of QT prolongation and torsade de pointes (TdP). Chloroquine administration is associated with an increased risk of QT prolongation and TdP. In vitro studies have shown that dasatinib has the potential to prolong cardiac ventricular repolarization (prolong QT interval). Coadministration may further increase the risk of QT prolongation and torsade de pointes. [28229] [28230] [28231] [32387]

Degarelix: (Major) Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. If coadministration is necessary, use caution. [28229] [28230] [28231] [46869]

Desflurane: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as halogenated anesthetics, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Halogenated anesthetics can prolong the QT interval. [28229] [28230] [28231] [28457] [28458] [28754] [28755] [28756] [29758]

Desipramine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as tricyclic antidepressants (TCAs), with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tricyclic antidepressants share pharmacologic properties similar to the Class IA antiarrhythmic agents and may prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). [28225] [28229] [28230] [28231] [28415] [28416] [29758]

Deutetrabenazine: (Major) For patients taking more than 24 mg/day of deutetrabenazine with chloroquine, assess the QTc interval before and after increasing the dosage of either medication. Coadminister chloroquine with other drugs known to prolong the QT interval with caution. Clinically relevant QTc prolongation may occur with deutetrabenazine. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [61845]

Dextromethorphan; Promethazine: (Major) Promethazine carries a possible risk of QT prolongation. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously and with close monitoring with promethazine include chloroquine. [28225] [28229] [28230] [28231] [55578]

Dextromethorphan; Quinidine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as quinidine, with caution. Chloroquine is associated with an increased risk of QT prolongation

and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Quinidine administration is also associated with QT prolongation and TdP. [28229] [28230] [28231] [29758] [42280] [47357]

Digoxin: (Moderate) Digoxin serum concentrations have been reported to increase when hydroxychloroquine was added. Although this interaction has not been reported with chloroquine in published literature, chloroquine may similarly increase the plasma concentration of digoxin. For patients on a stable digoxin regimen and initiating chloroquine, no initial dose adjustment of either drug has been advised; however, serum digoxin concentrations should be monitored and used for digoxin dose titration as clinically necessary [30287] [60957]

Dipeptidyl Peptidase-4 Inhibitors: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Disopyramide: (Major) Chloroquine and disopyramide are both associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. [28228] [28229] [28230] [28231]

Dofetilide: (Major) Coadministration of dofetilide and chloroquine is not recommended as concurrent use may increase the risk of QT prolongation. Dofetilide, a Class III antiarrhythmic agent, is associated with a well-established risk of QT prolongation and torsade de pointes (TdP). Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28221] [28229] [28230] [28231] [28432] [28457]

Dolasetron: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as dolasetron, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Dolasetron has been associated with a dose-dependent prolongation in the QT, PR, and QRS intervals on an electrocardiogram. [28229] [28230] [28231] [29758] [34353] [42844] [55935]

Dolutegravir; Rilpivirine: (Major) Concurrent use of chloroquine and rilpivirine should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Supratherapeutic doses of rilpivirine (75 to 300 mg/day) have caused QT prolongation. Chloroquine administration is also associated with an increased risk of QT prolongation and TdP. [28229] [28230] [28231] [44376]

Donepezil: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as donepezil, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Case reports indicate that QT prolongation and TdP can occur during donepezil therapy. Donepezil is considered a drug with a known risk of TdP. [28229] [28230] [28231] [29758] [59321] [59322]

Donepezil; Memantine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as donepezil, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Case reports indicate that QT prolongation and TdP can occur during donepezil therapy. Donepezil is considered a drug with a known risk of TdP. [28229] [28230] [28231] [29758] [59321] [59322]

Doxacurium: (Moderate) Chloroquine may affect presynaptic and postsynaptic myoneural function and potentiate the neuromuscular blocking action of neuromuscular blockers. [31129]

Doxepin: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as tricyclic antidepressants (TCAs), with caution. Chloroquine is associated with an increased risk of QT prolongation and

torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tricyclic antidepressants share pharmacologic properties similar to the Class IA antiarrhythmic agents and may prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). [28225] [28229] [28230] [28231] [28415] [28416] [29758]

Dronedarone: (Severe) Concomitant use of dronedarone and chloroquine is contraindicated. Dronedarone administration is associated with a dose-related increase in the QTc interval. The increase in QTc is approximately 10 milliseconds at doses of 400 mg twice daily (the FDA-approved dose) and up to 25 milliseconds at doses of 1600 mg twice daily. Although there are no studies examining the effects of dronedarone in patients receiving other QT prolonging drugs, coadministration of such drugs may result in additive QT prolongation. The concomitant use of dronedarone with other drugs that prolong the QTc may induce Torsade de Pointes (TdP) and is contraindicated. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). [28229] [28230] [28231] [36101]

Droperidol: (Major) Droperidol should be administered with extreme caution to patients receiving other agents that may prolong the QT interval. Droperidol administration is associated with an established risk for QT prolongation and torsades de pointes (TdP). Any drug known to have potential to prolong the QT interval should not be coadministered with droperidol. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously with droperidol include chloroquine. [28229] [28230] [28231] [28235] [28236] [28237] [28737] [51289]

Dulaglutide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the incretin mimetics, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Efavirenz: (Major) QT prolongation has been observed with the use of efavirenz. Consider alternatives to efavirenz when coadministering with a drug with a known risk of torsade de pointes (TdP), such as chloroquine. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [28442] [29758]

Efavirenz; Emtricitabine; Tenofovir: (Major) QT prolongation has been observed with the use of efavirenz. Consider alternatives to efavirenz when coadministering with a drug with a known risk of torsade de pointes (TdP), such as chloroquine. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [28442] [29758]

Efavirenz; Lamivudine; Tenofovir Disoproxil Fumarate: (Major) QT prolongation has been observed with the use of efavirenz. Consider alternatives to efavirenz when coadministering with a drug with a known risk of torsade de pointes (TdP), such as chloroquine. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [28442] [29758]

Eliglustat: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as eliglustat, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Eliglustat is predicted to cause PR, QRS, and/or QT prolongation at significantly elevated plasma concentrations. [28229] [28230] [28231] [29758] [57803]

Empagliflozin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Empagliflozin; Linagliptin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Empagliflozin; Linagliptin; Metformin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Empagliflozin; Metformin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Emtricitabine; Rilpivirine; Tenofovir alafenamide: (Major) Concurrent use of chloroquine and rilpivirine should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Supratherapeutic doses of rilpivirine (75 to 300 mg/day) have caused QT prolongation. Chloroquine administration is also associated with an increased risk of QT prolongation and TdP. [28229] [28230] [28231] [44376]

Emtricitabine; Rilpivirine; Tenofovir disoproxil fumarate: (Major) Concurrent use of chloroquine and rilpivirine should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Supratherapeutic doses of rilpivirine (75 to 300 mg/day) have caused QT prolongation. Chloroquine administration is also associated with an increased risk of QT prolongation and TdP. [28229] [28230] [28231] [44376]

Encorafenib: (Major) Avoid coadministration of encorafenib and chloroquine due to QT prolongation. If concurrent use cannot be avoided, monitor ECGs for QT prolongation and monitor electrolytes; correct hypokalemia and hypomagnesemia prior to treatment. Encorafenib is associated with dose-dependent prolongation of the QT interval. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [63317]

Enflurane: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as halogenated anesthetics, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Halogenated anesthetics can prolong the QT interval. [28229] [28230] [28231] [28457] [28458] [28754] [28755] [28756] [29758]

Entrectinib: (Major) Avoid coadministration of entrectinib with chloroquine due to the risk of QT prolongation. Entrectinib has been associated with QT prolongation. Chloroquine is associated with an increased risk of QT

prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [4567]

Eribulin: (Major) Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously with chloroquine include eribulin. If coadministration is necessary, ECG monitoring is recommended; closely monitor the patient for QT interval prolongation. [28229] [28230] [28231] [42449]

Ertugliflozin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Ertugliflozin; Metformin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Ertugliflozin; Sitagliptin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Erythromycin: (Major) Concurrent use of chloroquine and erythromycin should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Both chloroquine and erythromycin have been associated with an increased risk of QT prolongation and TdP. [28229] [28230] [28231] [43258]

Erythromycin; Sulfisoxazole: (Major) Concurrent use of chloroquine and erythromycin should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Both chloroquine and erythromycin have been associated with an increased risk of QT prolongation and TdP. [28229] [28230] [28231] [43258]

Escitalopram: (Major) Escitalopram has been associated with QT prolongation. Coadministration with other drugs that have a possible risk for QT prolongation and torsade de pointes (TdP), such as chloroquine, should be done with caution and close monitoring. [28229] [28230] [28231] [28270]

Exenatide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the incretin mimetics, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Ezogabine: (Major) Concurrent use of chloroquine and ezogabine is not recommended as there is an increased risk of retinal toxicity, QT prolongation, and torsade de pointes (TdP). Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Ezogabine has been associated with QT prolongation. [28229] [28230] [28231] [29758] [44800]

Fingolimod: (Major) Fingolimod initiation results in decreased heart rate and may prolong the QT interval. After the first fingolimod dose, overnight monitoring with continuous ECG in a medical facility is advised for patients taking QT prolonging drugs with a known risk of torsades de pointes (TdP). Fingolimod has not been studied in patients treated with drugs that prolong the QT interval, but drugs that prolong the QT interval have been associated with cases of TdP in patients with bradycardia. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously with fingolimod include chloroquine. [28229] [28230] [28231]

Flecainide: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as flecainide, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Flecainide is a Class IC antiarrhythmic associated with a possible risk for QT prolongation and/or TdP; flecainide increases the QT interval, but largely due to prolongation of the QRS interval. Although causality for TdP has not been established for flecainide, patients receiving concurrent drugs which have the potential for QT prolongation may have an increased risk of developing proarrhythmias. [23774] [28229] [28230] [28231] [28752] [29758]

Fluconazole: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as fluconazole, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Fluconazole has been associated with QT prolongation and rare cases of TdP. [28229] [28230] [28231] [28674] [29758]

Fluoxetine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as fluoxetine, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. QT prolongation and TdP have been reported in patients treated with fluoxetine. [28229] [28230] [28231] [29758] [32127] [44058]

Fluoxetine; Olanzapine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as fluoxetine, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. QT prolongation and TdP have been reported in patients treated with fluoxetine. [28229] [28230] [28231] [29758] [32127] [44058] (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as olanzapine, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Limited data, including some case reports, suggest that olanzapine may be associated with a significant prolongation of the QTc interval. [28229] [28230] [28231] [28785] [29758] [32732] [32734] [32745] [32746]

Fluphenazine: (Minor) Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Fluphenazine may prolong the QT interval. [11191] [11209] [28229] [28230] [28231] [28415]

Fluticasone; Salmeterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Fluticasone; Umeclidinium; Vilanterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Fluticasone; Vilanterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Fluvoxamine: (Major) There may be an increased risk for QT prolongation and torsade de pointes (TdP) during concurrent use of fluvoxamine and chloroquine. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. QT prolongation and TdP have been reported during postmarketing use of fluvoxamine. [28229] [28230] [28231] [50507]

Formoterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Formoterol; Mometasone: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Foscarnet: (Major) When possible, avoid concurrent use of foscarnet with other drugs known to prolong the QT interval, such as chloroquine. Foscarnet has been associated with postmarketing reports of both QT prolongation and torsade de pointes (TdP). Chloroquine administration is also associated with an increased risk of QT prolongation and TdP. If these drugs are administered together, obtain an electrocardiogram and electrolyte concentrations before and periodically during treatment. [28229] [28230] [28231] [28377]

Galsulfase: (Minor) Theoretically, there is a possible drug interaction between galsulfase and medications which may impact lysosomal efficacy. Both chloroquine and hydroxychloroquine are weak bases that accumulate in acidic lysosomes because of ion trapping. The subsequent elevation of lysosomal pH results in lysosomal enzyme inhibition. Although these drugs have been clinically shown to interact with other MPS treatments, it is unknown if they will have any effect on the efficacy of galsulfase. [4144]

Gemifloxacin: (Major) Coadministration of chloroquine and gemifloxacin should be done only after careful assessment of risks versus benefits and should be avoided when possible. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP). Gemifloxacin may also prolong the QT interval in some patients. The maximal change in the QTc interval occurs approximately 5 to 10 hours following oral administration of gemifloxacin. The likelihood of QTc prolongation may increase with increasing dose of the drug; therefore, the recommended dose should not be exceeded especially in patients with renal or hepatic impairment where the Cmax and AUC are slightly higher. [28229] [28230] [28231] [28419] [28420] [28424]

Gemtuzumab Ozogamicin: (Major) Use gemtuzumab ozogamicin and chloroquine together with caution due to the potential for additive QT interval prolongation and risk of torsade de pointes (TdP). If these agents are used together, obtain an ECG and serum electrolytes prior to the start of gemtuzumab and as needed during treatment. Although QT interval prolongation has not been reported with gemtuzumab ozogamicin, it has been reported with other drugs that contain calicheamicin. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [62292]

Gilteritinib: (Major) Use caution and monitor for evidence of QT prolongation if concurrent use of gilteritinib and chloroquine is necessary. Gilteritinib has been associated with QT prolongation. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [63787]

Glasdegib: (Major) Avoid coadministration of glasdegib with chloroquine due to the potential for additive QT prolongation. If coadministration cannot be avoided, monitor patients for increased risk of QT prolongation with increased frequency of ECG monitoring. Glasdegib therapy may result in QT prolongation and ventricular arrhythmias including ventricular fibrillation and ventricular tachycardia. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [63777]

Glimepiride: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Glimepiride; Pioglitazone: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the thiazolidinediones, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Glimepiride; Rosiglitazone: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the thiazolidinediones, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Glipizide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Glipizide; Metformin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Glyburide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Glyburide; Metformin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Glycopyrrolate; Formoterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Goserelin: (Major) Consider whether the benefits of androgen deprivation therapy (i.e., goserelin) outweigh the potential risks of QT prolongation in patients receiving chloroquine. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Androgen deprivation therapy may also prolong the QT/QTc interval. [28229] [28230] [28231] [28592]

Granisetron: (Major) Avoid coadministration of chloroquine with granisetron if possible, due to the risk of QT prolongation and torsade de pointes (TdP). Chloroquine administration is associated with an increased risk of QT prolongation and TdP. Granisetron has also been associated with QT prolongation. Coadministration may further increase the risk of QT prolongation and torsade de pointes. [28229] [28230] [28231] [31723]

Halofantrine: (Severe) Chloroquine is considered to be associated with an increased risk for QT prolongation and torsades de pointes. The need to co-administer chloroquine with drugs known to prolong the QT interval, such as halofantrine, should be done with a careful assessment of risks versus benefits, and should be avoided when possible. [4951] [4968]

Halogenated Anesthetics: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as halogenated anesthetics, with caution. Chloroquine is associated with an increased risk of QT

prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Halogenated anesthetics can prolong the QT interval. [28229] [28230] [28231] [28457] [28458] [28754] [28755] [28756] [29758]

Haloperidol: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as haloperidol, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. QT prolongation and TdP have been observed during haloperidol treatment. Excessive doses (particularly in the overdose setting) or IV administration of haloperidol may be associated with a higher risk of QT prolongation. [23500] [23779] [28225] [28229] [28230] [28231] [28307] [28415] [28416] [29758]

Halothane: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as halogenated anesthetics, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Halogenated anesthetics can prolong the QT interval. [28229] [28230] [28231] [28457] [28458] [28754] [28755] [28756] [29758]

Histrelin: (Major) Consider whether the benefits of androgen deprivation therapy (i.e., histrelin) outweigh the potential risks of QT prolongation in patients receiving chloroquine. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Androgen deprivation therapy may also prolong the QT/QTc interval. [28229] [28230] [28231] [30369]

Hydroxychloroquine: (Major) Avoid coadministration of hydroxychloroquine and chloroquine due to therapeutic duplication as well as increased risk of retinal toxicity, QT prolongation, and torsade de pointes (TdP). Hydroxychloroquine prolongs the QT interval. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Both drugs are associated with irreversible retinal toxicity. [28229] [28230] [28231] [29758] [41806]

Hydroxyzine: (Major) Caution is recommended if hydroxyzine is administered with chloroquine due to the potential for additive QT prolongation and risk of torsade de pointes (TdP). Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Postmarketing data indicate that hydroxyzine causes QT prolongation and torsade de pointes. [28229] [28230] [28231] [47129]

Ibutilide: (Major) Ibutilide administration can cause QT prolongation and torsades de pointes (TdP); proarrhythmic events should be anticipated. The potential for proarrhythmic events with ibutilide increases with the coadministration of other drugs that prolong the QT interval. Chloroquine administration is associated with an increased risk of QT prolongation and TdP. The need to coadminister chloroquine and ibutilide should be done with a careful assessment of risks versus benefits and should be avoided when possible. [28229] [28230] [28231] [41830]

Iloperidone: (Major) According to the manufacturer, since iloperidone may prolong the QT interval, it should be avoided in combination with other agents also known to have this effect, such as chloroquine. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [29758] [36146]

Imipramine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as tricyclic antidepressants (TCAs), with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tricyclic antidepressants share pharmacologic properties similar to the Class IA antiarrhythmic agents and may prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). [28225] [28229] [28230] [28231] [28415] [28416] [29758]

Incretin Mimetics: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the incretin mimetics, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Indacaterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Indacaterol; Glycopyrrolate: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Inotuzumab Ozogamicin: (Major) Avoid coadministration of inotuzumab ozogamicin with chloroquine due to the potential for additive QT interval prolongation and risk of torsade de pointes (TdP). If coadministration is unavoidable, obtain an ECG and serum electrolytes prior to the start of treatment, after treatment initiation, and periodically during treatment. Inotuzumab has been associated with QT interval prolongation. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [62245]

Insulin Aspart: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Insulin Aspart; Insulin Aspart Protamine: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Insulin Degludec: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Insulin Degludec; Liraglutide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the incretin mimetics, are coadministered. A decreased dose of the antidiabetic

agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Insulin Detemir: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Insulin Glargine: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Insulin Glargine; Lixisenatide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the incretin mimetics, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Insulin Glulisine: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Insulin Lispro: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Insulin Lispro; Insulin Lispro Protamine: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Insulin, Inhaled: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Insulins: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Interferon Alfa-2a: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Interferon Alfa-2b: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Interferon Alfa-2b; Ribavirin: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Interferon Alfacon-1: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Interferon Alfa-n3: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Interferon Beta-1a: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Interferon Beta-1b: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Interferon Gamma-1b: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Interferons: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Isoflurane: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as halogenated anesthetics, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Halogenated anesthetics can prolong the QT interval. [28229] [28230] [28231] [28457] [28458] [28754] [28755] [28756] [29758]

Isophane Insulin (NPH): (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Itraconazole: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as itraconazole, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Itraconazole has also been associated with prolongation of the QT interval. [28229] [28230] [28231] [29758] [40233] [57441]

Ivosidenib: (Major) Avoid coadministration of ivosidenib with chloroquine due to an increased risk of QT prolongation. If concomitant use is unavoidable, monitor ECGs for QTc prolongation and monitor electrolytes; correct any electrolyte abnormalities as clinically appropriate. An interruption of therapy and dose reduction of ivosidenib may be necessary if QT prolongation occurs. Prolongation of the QTc interval and ventricular arrhythmias have been reported in patients treated with ivosidenib. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231]

Ketoconazole: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as ketoconazole, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Ketoconazole has also been associated with prolongation of the QT interval. [27982] [28229] [28230] [28231] [29758]

Lanthanum Carbonate: (Major) Oral compounds known to interact with antacids, like chloroquine, should not be taken within 4 hours of dosing with lanthanum carbonate. If these agents are used concomitantly, space the dosing intervals appropriately. Monitor serum concentrations and clinical condition. [29758] [30284] [30285] [44406]

Lapatinib: (Major) Monitor ECGs for QT prolongation and monitor electrolytes if coadministration of lapatinib with chloroquine is necessary; correct electrolyte abnormalities prior to treatment. Lapatinib has been associated with concentration-dependent QT prolongation; ventricular arrhythmias and torsade de pointes (TdP) have been reported in postmarketing experience with lapatinib. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [33192]

Lefamulin: (Major) Avoid coadministration of lefamulin with chloroquine as concurrent use may increase the risk of QT prolongation. If coadministration cannot be avoided, ECG monitoring is recommended during treatment. Lefamulin has a concentration dependent QTc prolongation effect. The pharmacodynamic interaction potential to prolong the QT interval of the electrocardiogram between lefamulin and other drugs that effect cardiac conduction is unknown. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [64576]

Lente Insulin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Lenvatinib: (Major) Avoid coadministration of lenvatinib with chloroquine due to the risk of QT prolongation. Prolongation of the QT interval has been reported with lenvatinib therapy. Chloroquine is also associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [58782]

Leuprolide: (Major) Consider whether the benefits of androgen deprivation therapy (i.e., leuprolide) outweigh the potential risks of QT prolongation in patients receiving chloroquine. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Androgen deprivation therapy may also prolong the QT/QTc interval. [28229] [28230] [28231] [43800]

Leuprolide; Norethindrone: (Major) Consider whether the benefits of androgen deprivation therapy (i.e., leuprolide) outweigh the potential risks of QT prolongation in patients receiving chloroquine. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Androgen deprivation therapy may also prolong the QT/QTc interval. [28229] [28230] [28231] [43800]

Levalbuterol: (Minor) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Levofloxacin: (Major) Concurrent use of chloroquine and levofloxacin should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Levofloxacin has been associated with prolongation of the QT interval and infrequent cases of arrhythmia. Additionally, rare cases of TdP have been spontaneously reported during postmarketing surveillance in patients receiving levofloxacin. Chloroquine is also associated with an increased risk of QT prolongation and TdP. [28229] [28230] [28231] [28421]

Levomethadyl: (Severe) Levomethadyl is associated with an established risk of QT prolongation and/or torsades de pointes and is contraindicated in combination with other agents that may prolong the QT interval, such as chloroquine. [4951] [4955] [4956] [4957] [5081]

Lidocaine: (Moderate) Coadministration of lidocaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue lidocaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [43383]

Linagliptin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Linagliptin; Metformin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Liraglutide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the incretin mimetics, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Lithium: (Major) Lithium should be used cautiously and with close monitoring with chloroquine. Lithium has been associated with QT prolongation. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. [28229] [28230] [28231] [59809] [59810] [59811]

Lixisenatide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the incretin mimetics, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Lofexidine: (Major) Monitor ECG if lofexidine is coadministered with chloroquine due to the potential for additive QT prolongation and torsade de pointes (TdP). Lofexidine prolongs the QT interval. In addition, there are postmarketing reports of TdP. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [63161]

Lomefloxacin: (Moderate) Lomefloxacin has been associated with QT prolongation and infrequent cases of arrhythmia. Other medications which may prolong the QT interval, such as chloroquine, should be used cautiously when given concurrently with lomefloxacin. [4951]

Long-acting beta-agonists: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses

and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Loperamide: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as loperamide, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. At high doses, loperamide has been associated with serious cardiac toxicities, including syncope, ventricular tachycardia, QT prolongation, TdP, and cardiac arrest. [28229] [28230] [28231] [29758] [30106] [60864]

Loperamide; Simethicone: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as loperamide, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. At high doses, loperamide has been associated with serious cardiac toxicities, including syncope, ventricular tachycardia, QT prolongation, TdP, and cardiac arrest. [28229] [28230] [28231] [29758] [30106] [60864]

Lopinavir; Ritonavir: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as lopinavir; ritonavir, with caution as this may result in additive QT prolongation. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Lopinavir; ritonavir is also associated with QT prolongation. [28229] [28230] [28231] [28341] [29758]

Macimorelin: (Major) Avoid concurrent administration of macimorelin with drugs that prolong the QT interval, such as chloroquine. Use of these drugs together may increase the risk of developing torsade de pointes-type ventricular tachycardia. Sufficient washout time of drugs that are known to prolong the QT interval prior to administration of macimorelin is recommended. Treatment with macimorelin has been associated with an increase in the corrected QT (QTc) interval. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [62723]

Magnesium Hydroxide: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30285]

Maprotiline: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as maprotiline, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Maprotiline has been reported to prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). Cases of long QT syndrome and TdP tachycardia have been described with maprotiline use, but rarely occur when the drug is used alone in normal prescribed doses and in the absence of other known risk factors for QT prolongation. Limited data are available regarding the safety of maprotiline in combination with other QT-prolonging drugs. [28225] [28229] [28230] [28231] [28759] [29758]

Mefloquine: (Major) Due to the potential for QT prolongation and torsade de pointes (TdP), caution is advised when administering chloroquine with mefloquine. In addition, concurrent use may result in seizures. There is evidence that the use of halofantrine after mefloquine causes a significant lengthening of the QTc interval. Mefloquine alone has not been reported to cause QT prolongation; however due to the lack of clinical data, mefloquine should be used with caution in patients receiving drugs that prolong the QT interval. Chloroquine is associated with an increased risk of QT prolongation and TdP. [28229] [28230] [28231] [28301]

Meglitinides: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the meglitinides, are coadministered. A decreased dose of the antidiabetic agent may be

necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Meperidine; Promethazine: (Major) Promethazine carries a possible risk of QT prolongation. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously and with close monitoring with promethazine include chloroquine. [28225] [28229] [28230] [28231] [55578]

Mepivacaine: (Moderate) Coadministration of mepivacaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue mepivacaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [29100]

Mepivacaine; Levonordefrin: (Moderate) Coadministration of mepivacaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue mepivacaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [29100]

Mesoridazine: (Severe) Mesoridazine is associated with a well-established risk of QT prolongation and torsades de pointes. Chloroquine may prolong the QT interval. Mesoridazine is generally considered contraindicated for use along with agents that, when combined with a phenothiazine, may prolong the QT interval, cause orthostatic hypotension and/or torsade de pointes. [4951] [4955] [4956] [4957] [5022] [5145] [5831]

Metaproterenol: (Minor) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umecclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Metformin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Metformin; Pioglitazone: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the thiazolidinediones, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Metformin; Repaglinide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the meglitinides, are coadministered. A decreased dose of the antidiabetic agent

may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Metformin; Rosiglitazone: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the thiazolidinediones, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Metformin; Saxagliptin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Metformin; Sitagliptin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including metformin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758] (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Methadone: (Major) The need to coadminister methadone with drugs known to prolong the QT interval, such as chloroquine, should be done with extreme caution and a careful assessment of treatment risks versus benefits. Methadone is considered to be associated with an increased risk for QT prolongation and torsade de pointes (TdP), especially at higher doses (more than 200 mg/day but averaging approximately 400 mg/day in adult patients). Most cases involve patients being treated for pain with large, multiple daily doses of methadone, although cases have been reported in patients receiving doses commonly used for maintenance treatment of opioid addiction. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [28319] [28320] [28321] [28322] [29758] [33136]

Metronidazole: (Major) Potential QT prolongation has been reported in limited case reports with metronidazole. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously and with close monitoring with metronidazole include chloroquine. [28229] [28230] [28231] [57377] [57378]

Midostaurin: (Major) Avoid the concomitant use midostaurin and chloroquine if possible; both drugs have been reported to increase the QT interval. If these drugs are used together, consider obtaining electrocardiograms to monitor the QT interval. In clinical trials, QT prolongation was reported in patients who received midostaurin as single-agent therapy or in combination with cytarabine and daunorubicin. Chloroquine administration is associated with an increased risk of QT prolongation and torsade de pointes. [28229] [28230] [28231] [61906]

Mifepristone: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as mifepristone, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Mifepristone has been associated with dose-dependent prolongation of the QT interval. To minimize the risk of QT prolongation, the lowest effective dose of mifepristone should always be used. [28229] [28230] [28231] [29758] [48697]

Migliitol: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the alpha-glucosidase inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Mirtazapine: (Major) There may be an increased risk for QT prolongation and torsade de pointes (TdP) during concurrent use of mirtazapine and chloroquine. Coadminister with caution. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Cases of QT prolongation, TdP, ventricular tachycardia, and sudden death have been reported during postmarketing use of mirtazapine. The majority of reports have occurred in the setting of mirtazapine overdose or in patients with other risk factors for QT prolongation, including concomitant use of other medications associated with QT prolongation. [28229] [28230] [28231] [40942]

Mivacurium: (Moderate) Chloroquine may affect presynaptic and postsynaptic myoneural function and potentiate the neuromuscular blocking action of neuromuscular blockers. [31129]

Moxifloxacin: (Major) Concurrent use of chloroquine and moxifloxacin should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Chloroquine is associated with an increased risk of QT prolongation and TdP. Moxifloxacin has also been associated with prolongation of the QT interval. Additionally, post-marketing surveillance has identified very rare cases of ventricular arrhythmias including TdP, usually in patients with severe underlying proarrhythmic conditions. The likelihood of QT prolongation may increase with increasing concentrations of moxifloxacin, therefore the recommended dose or infusion rate should not be exceeded. [28229] [28230] [28231] [28423]

Nateglinide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the meglitinides, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Neuromuscular blockers: (Moderate) Chloroquine may affect presynaptic and postsynaptic myoneural function and potentiate the neuromuscular blocking action of neuromuscular blockers. [31129]

Nilotinib: (Major) Avoid the concomitant use of nilotinib and chloroquine; significant prolongation of the QT interval may occur. Sudden death and QT prolongation have been reported in patients who received nilotinib therapy. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [29758] [58766]

Norfloxacin: (Major) Concurrent use of chloroquine and norfloxacin should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Chloroquine is associated with an increased risk of QT prolongation and TdP. Quinolones have also been associated with QT prolongation and TdP. For norfloxacin specifically, extremely rare cases of TdP were reported during post-marketing surveillance. These reports generally involved patients with concurrent medical conditions or concomitant medications that may have been contributory. [28225] [28229] [28230] [28231] [28432] [28457] [29818]

Nortriptyline: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as tricyclic antidepressants (TCAs), with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tricyclic antidepressants share pharmacologic properties similar to the Class IA antiarrhythmic agents and may prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). [28225] [28229] [28230] [28231] [28415] [28416] [29758]

Octreotide: (Major) Avoid coadministration of chloroquine with octreotide if possible, due to the risk of QT prolongation and torsade de pointes (TdP). Chloroquine administration is associated with an increased risk of QT prolongation and TdP. Arrhythmias, sinus bradycardia, and conduction disturbances have occurred during octreotide therapy warranting more cautious monitoring during octreotide administration in higher risk patients with cardiac disease. Since bradycardia is a risk factor for development of TdP, the potential occurrence of bradycardia during octreotide administration could theoretically increase the risk of TdP in patients receiving drugs that prolong the QT interval. [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[28432\]](#) [\[29113\]](#) [\[30624\]](#)

Ofloxacin: (Major) Concurrent use of chloroquine and ofloxacin should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Chloroquine administration is associated with an increased risk of QT prolongation and TdP. Some quinolones, including ofloxacin, have also been associated with QT prolongation. Additionally, post-marketing surveillance for ofloxacin has identified very rare cases of TdP. [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[30738\]](#)

Olanzapine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as olanzapine, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Limited data, including some case reports, suggest that olanzapine may be associated with a significant prolongation of the QTc interval. [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[28785\]](#) [\[29758\]](#) [\[32732\]](#) [\[32734\]](#) [\[32745\]](#) [\[32746\]](#)

Olodaterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[28318\]](#) [\[33925\]](#) [\[41231\]](#) [\[44979\]](#)

Omeprazole; Sodium Bicarbonate: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [\[29758\]](#) [\[30284\]](#) [\[30285\]](#)

Ondansetron: (Major) Avoid coadministration of chloroquine with ondansetron if possible, due to the risk of QT prolongation and torsade de pointes (TdP). Chloroquine administration is associated with an increased risk of QT prolongation and TdP. Ondansetron has been associated with a dose-related increase in the QT interval and postmarketing reports of TdP. If ondansetron and chloroquine must be coadministered, ECG monitoring is recommended. [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[31266\]](#) [\[32722\]](#) [\[34335\]](#) [\[34353\]](#)

Osimertinib: (Major) Avoid coadministration of chloroquine with osimertinib if possible due to the risk of QT prolongation and torsade de pointes (TdP). If concomitant use is unavoidable, periodically monitor ECGs for QT prolongation and monitor electrolytes; an interruption of osimertinib therapy with dose reduction or discontinuation of therapy may be necessary if QT prolongation occurs. Concentration-dependent QTc prolongation occurred during clinical trials of osimertinib. Chloroquine is associated with dose-dependent QT prolongation and TdP; fatalities have been reported. [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[60297\]](#)

Oxaliplatin: (Major) Avoid coadministration of oxaliplatin with chloroquine if possible due to the risk of additive QT prolongation. If unavoidable, monitor ECGs and electrolytes periodically during therapy; correct electrolyte abnormalities prior to administration of oxaliplatin. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). QT prolongation and ventricular arrhythmias including fatal TdP have been reported with oxaliplatin use in post-marketing experience. [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[28415\]](#) [\[41958\]](#)

Paliperidone: (Major) According to the manufacturer, since paliperidone may prolong the QT interval, it should be avoided in combination with other agents also known to have this effect, such as chloroquine. Torsade de pointes (TdP) and ventricular fibrillation have been reported in the setting of paliperidone overdose. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. If coadministration is considered necessary and the patient has known risk factors for cardiac disease or arrhythmias, close monitoring is essential. [28229] [28230] [28231] [29758] [40936]

Pancuronium: (Moderate) Chloroquine may affect presynaptic and postsynaptic myoneural function and potentiate the neuromuscular blocking action of neuromuscular blockers. [31129]

Panobinostat: (Major) QT prolongation has been reported with panobinostat therapy in patients with multiple myeloma in a clinical trial; use of panobinostat with other agents that prolong the QT interval is not recommended. Obtain an electrocardiogram at baseline and periodically during treatment. Hold panobinostat if the QTcF increases to ≥ 480 milliseconds during therapy; permanently discontinue if QT prolongation does not resolve. Drugs with a possible risk for QT prolongation and torsade de pointes that should be used cautiously and with close monitoring with panobinostat include chloroquine. [28229] [28230] [28231] [58821]

Pasireotide: (Major) The need to coadminister chloroquine with pasireotide should be done with a careful assessment of risks versus benefits and should be avoided when possible. Coadministration may have additive effects on the prolongation of the QT interval. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). [28229] [28230] [28231]

Pazopanib: (Major) Coadministration of pazopanib and other drugs that prolong the QT interval, such as chloroquine, is not advised; pazopanib has been reported to prolong the QT interval. If pazopanib and the other drug must be continued, closely monitor the patient for QT interval prolongation. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [29758] [37098]

Peginterferon Alfa-2a: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Peginterferon Alfa-2b: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Peginterferon beta-1a: (Moderate) Concurrent use of chloroquine and interferons is not recommended as there is an increased risk of retinal toxicity. [29758] [47391]

Penicillamine: (Severe) Antimalarials have adverse reactions similar to those of penicillamine. Concomitant use is contraindicated because of the increased risk of developing severe hematologic and renal toxicity. [5567]

Penicillin G Benzathine; Penicillin G Procaine: (Moderate) Coadministration of penicillin G procaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue penicillin G procaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [31217]

Penicillin G Procaine: (Moderate) Coadministration of penicillin G procaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue penicillin G procaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [31217]

Pentamidine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as pentamidine, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Systemic pentamidine has also been associated with QT prolongation. [23620] [23778] [28229] [28230] [28231] [28419] [28879] [29758]

Perphenazine: (Minor) Perphenazine is associated with a possible risk for QT prolongation. Theoretically, perphenazine may increase the risk of QT prolongation if coadministered with other drugs that have a risk of QT prolongation, such as chloroquine. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [28415] [29758]

Perphenazine; Amitriptyline: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as tricyclic antidepressants (TCAs), with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tricyclic antidepressants share pharmacologic properties similar to the Class IA antiarrhythmic agents and may prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). [28225] [28229] [28230] [28231] [28415] [28416] [29758] (Minor) Perphenazine is associated with a possible risk for QT prolongation. Theoretically, perphenazine may increase the risk of QT prolongation if coadministered with other drugs that have a risk of QT prolongation, such as chloroquine. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [28415] [29758]

Phenylephrine; Promethazine: (Major) Promethazine carries a possible risk of QT prolongation. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously and with close monitoring with promethazine include chloroquine. [28225] [28229] [28230] [28231] [55578]

Pimavanserin: (Major) Pimavanserin may cause QT prolongation and should generally be avoided in patients receiving other medications known to prolong the QT interval, such as chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). Coadministration may increase the risk for QT prolongation. [28229] [28230] [28231] [60748]

Pimozide: (Severe) Pimozide is associated with a well-established risk of QT prolongation and torsade de pointes (TdP). Because of the potential for TdP, use of chloroquine with pimozide is contraindicated. [28225] [28229] [28230] [28231] [43463]

Pioglitazone: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the thiazolidinediones, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Pirbuterol: (Minor) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Pitolisant: (Major) Avoid coadministration of pitolisant with chloroquine as concurrent use may increase the risk of QT prolongation. Pitolisant prolongs the QT interval. Chloroquine is associated with an increased risk of QT

prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[64562\]](#)

Ponatinib: (Moderate) Concurrent use of chloroquine and ponatinib is not recommended as there is an increased risk of retinal toxicity. [\[29758\]](#) [\[52603\]](#)

Posaconazole: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as posaconazole, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Posaconazole has been associated with prolongation of the QT interval as well as rare cases of (TdP). [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[29758\]](#) [\[32723\]](#)

Pramlintide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including pramlintide, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [\[29758\]](#)

Praziquantel: (Minor) Concomitant administration of chloroquine and praziquantel can reduce praziquantel bioavailability and maximum serum concentrations. The mechanism of the interaction is not certain. Clinicians should be alert to the possibility of praziquantel failure if chloroquine is used. [\[27846\]](#) [\[29758\]](#)

Prilocaine: (Moderate) Coadministration of prilocaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue prilocaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [\[29064\]](#)

Prilocaine; Epinephrine: (Moderate) Coadministration of prilocaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue prilocaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [\[29064\]](#)

Primaquine: (Major) Due to the potential for QT interval prolongation with primaquine, caution is advised with other drugs that prolong the QT interval. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously and with close monitoring with primaquine include chloroquine. [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[41984\]](#)

Procainamide: (Major) Chloroquine and procainamide are both associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. [\[28229\]](#) [\[28230\]](#) [\[28231\]](#)

Prochlorperazine: (Minor) Chloroquine is considered to be associated with an increased risk for QT prolongation and torsades de pointes. Co-administration of chloroquine with drugs that have a possible risk for QT prolongation and TdP, such as prochlorperazine, should be done with a careful assessment of risks versus benefits, and should be avoided when possible. [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[28415\]](#)

Promethazine: (Major) Promethazine carries a possible risk of QT prolongation. Drugs with a possible risk for QT prolongation and TdP that should be used cautiously and with close monitoring with promethazine include chloroquine. [\[28225\]](#) [\[28229\]](#) [\[28230\]](#) [\[28231\]](#) [\[55578\]](#)

Propafenone: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as propafenone, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de

pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Propafenone is a Class IC antiarrhythmic which increases the QT interval, but largely due to prolongation of the QRS interval. [28229] [28230] [28231] [28287] [29758]

Protriptyline: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as tricyclic antidepressants (TCAs), with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tricyclic antidepressants share pharmacologic properties similar to the Class IA antiarrhythmic agents and may prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). [28225] [28229] [28230] [28231] [28415] [28416] [29758]

Quetiapine: (Major) Concurrent use of quetiapine and chloroquine should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Chloroquine administration is associated with an increased risk of QT prolongation and TdP. Limited data, including some case reports, suggest that quetiapine may also be associated with a significant prolongation of the QTc interval in rare instances. [28229] [28230] [28231] [29118] [33068] [33072] [33074]

Quinidine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as quinidine, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Quinidine administration is also associated with QT prolongation and TdP. [28229] [28230] [28231] [29758] [42280] [47357]

Quinine: (Major) Avoid concurrent use of quinine with other drugs that may cause QT prolongation and torsade de pointes (TdP), such as chloroquine. Quinine has been associated with QT prolongation and rare cases of TdP. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [29758] [31403]

Rabies Vaccine: (Major) If administered concurrently, antimalarials can impair the immunologic response to the rabies vaccine, thereby, decreasing its protective effect. If possible, administration of antimalarials should be avoided during use of the rabies vaccine for postexposure prophylaxis. When antimalarials must be administered to persons also receiving the rabies vaccine for postexposure prophylaxis, a serum rabies antibody titer should be obtained on day 14 (day of the 4th vaccination) to ensure an acceptable antibody response has been induced. [40848] [40849]

Ranolazine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as ranolazine, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Ranolazine is associated with dose- and plasma concentration-related increases in the QTc interval. Although there are no studies examining the effects of ranolazine in patients receiving other QT prolonging drugs, coadministration of such drugs may result in additive QT prolongation. [28229] [28230] [28231] [29758] [31938]

Rapacuronium: (Moderate) Chloroquine may affect presynaptic and postsynaptic myoneural function and potentiate the neuromuscular blocking action of neuromuscular blockers. [31129]

Regular Insulin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Regular Insulin; Isophane Insulin (NPH): (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic

agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Repaglinide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the meglitinides, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Ribociclib: (Major) Ribociclib should be avoided in patients receiving medications known to prolong the QT interval, such as chloroquine. Ribociclib has been shown to prolong the QT interval in a concentration-dependent manner. These ECG changes occurred within the first four weeks of treatment and were reversible with dose interruption. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [29758] [61816]

Ribociclib; Letrozole: (Major) Ribociclib should be avoided in patients receiving medications known to prolong the QT interval, such as chloroquine. Ribociclib has been shown to prolong the QT interval in a concentration-dependent manner. These ECG changes occurred within the first four weeks of treatment and were reversible with dose interruption. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [29758] [61816]

Rilpivirine: (Major) Concurrent use of chloroquine and rilpivirine should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Supratherapeutic doses of rilpivirine (75 to 300 mg/day) have caused QT prolongation. Chloroquine administration is also associated with an increased risk of QT prolongation and TdP. [28229] [28230] [28231] [44376]

Risperidone: (Major) When possible, avoid the coadministration of chloroquine with other drugs known to prolong the QT interval, such as risperidone. If coadministration is chosen, and the patient has known risk factors for cardiac disease or arrhythmia, then the patient should be closely monitored clinically. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Risperidone has been associated with a possible risk for QT prolongation and/or torsade de pointes (TdP). Reports of QT prolongation and TdP during risperidone therapy are noted by the manufacturer, primarily in the overdose setting. [22256] [28229] [28414] [29758] [59321]

Rocuronium: (Moderate) Chloroquine may affect presynaptic and postsynaptic myoneural function and potentiate the neuromuscular blocking action of neuromuscular blockers. [31129]

Romidepsin: (Major) Romidepsin has been reported to prolong the QT interval. If romidepsin must be coadministered with another drug that prolongs the QT interval, such as chloroquine, appropriate cardiovascular monitoring precautions should be considered, such as the monitoring of electrolytes and ECGs at baseline and periodically during treatment. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. [28229] [28230] [28231] [37292]

Ropivacaine: (Moderate) Coadministration of ropivacaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue ropivacaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [52330]

Rosiglitazone: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the thiazolidinediones, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Salmeterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Saquinavir: (Major) Concurrent use of chloroquine and saquinavir should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). If no acceptable alternative therapy is available, perform a baseline ECG prior to initiation of concomitant therapy and carefully follow monitoring recommendations. Saquinavir boosted with ritonavir increases the QT interval in a dose-dependent fashion, which may increase the risk for serious arrhythmias such as TdP. Chloroquine is also associated with an increased risk of QT prolongation and TdP. [28229] [28230] [28231] [28995]

Saxagliptin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Semaglutide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the incretin mimetics, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Sertraline: (Major) Use caution and monitor patients for QT prolongation when administering chloroquine with sertraline. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. QTc prolongation and TdP have been reported during postmarketing use of sertraline; most cases had confounding risk factors. The risk of sertraline-induced QT prolongation is generally considered to be low in clinical practice. Its effect on QTc interval is minimal (typically less than 5 msec), and the drug has been used safely in patients with cardiac disease (e.g., recent myocardial infarction, unstable angina, chronic heart failure). [28229] [28230] [28231] [28343] [64391] [64392] [64394] [64395] [64396]

Sevoflurane: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as halogenated anesthetics, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Halogenated anesthetics can prolong the QT interval. [28229] [28230] [28231] [28457] [28458] [28754] [28755] [28756] [29758]

SGLT2 Inhibitors: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the SGLT2 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Short-acting beta-agonists: (Minor) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de

pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Simvastatin; Sitagliptin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Siponimod: (Major) In general, do not initiate treatment with siponimod in patients receiving chloroquine due to the potential for QT prolongation. Consult a cardiologist regarding appropriate monitoring if siponimod use is required. Siponimod therapy prolonged the QT interval at recommended doses in a clinical study. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [64031]

Sitagliptin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the dipeptidyl peptidase-4 inhibitors, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Sodium Bicarbonate: (Major) Chloroquine absorption may be reduced by antacids. Administer chloroquine and antacids at least 4 hours apart. [29758] [30284] [30285]

Solifenacin: (Major) Solifenacin should be used cautiously and with close monitoring with chloroquine. Solifenacin has been associated with dose-dependent prolongation of the QT interval. Torsades de pointes (TdP) has been reported with post-marketing use, although causality was not determined. Chloroquine administration is associated with an increased risk of QT prolongation and TdP. The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. [28229] [28230] [28231] [30515]

Sorafenib: (Major) Monitor ECGs for QT prolongation and monitor electrolytes if coadministration of sorafenib with chloroquine is necessary; correct any electrolyte abnormalities. An interruption or discontinuation of sorafenib therapy may be necessary if QT prolongation occurs. Sorafenib has been associated with QT prolongation. Chloroquine is also associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [31832]

Sotalol: (Major) Sotalol administration is associated with QT prolongation and torsades de pointes (TdP). Proarrhythmic events should be anticipated after initiation of therapy and after each upward dosage adjustment. Chloroquine administration is associated with an increased risk of QT prolongation and TdP. The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. [28229] [28230] [28231] [28234]

Sparfloxacin: (Severe) Sparfloxacin is associated with an established risk for QT prolongation and torsades de pointes and is contraindicated in patients receiving these drugs or other drugs that can cause QT prolongation including chloroquine. [4951] [4955] [4956] [4957] [4958] [5507]

Succinylcholine: (Moderate) Chloroquine may affect presynaptic and postsynaptic myoneural function and potentiate the neuromuscular blocking action of neuromuscular blockers. [31129]

Sulfonylureas: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Sunitinib: (Major) Monitor patients for QT prolongation if coadministration of chloroquine with sunitinib is necessary. Sunitinib can cause dose-dependent QT prolongation, which may increase the risk for ventricular arrhythmias, including torsades de points (TdP). Chloroquine is also associated with an increased risk of dose-dependent QT prolongation and TdP; fatalities have been reported. [28229] [28230] [28231]

Tacrolimus: (Major) Avoid coadministration of chloroquine with tacrolimus if possible, due to the risk of QT prolongation and torsade de pointes (TdP). Chloroquine administration is associated with an increased risk of QT prolongation and TdP. Tacrolimus has also been associated with QT prolongation and TdP. Coadministration may further increase the risk of QT prolongation and torsade de pointes. [28229] [28230] [28231] [28611] [55401] [60497]

Tamoxifen: (Major) Use caution if coadministration of chloroquine with tamoxifen is necessary due to the risk of QT prolongation. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tamoxifen has also been reported to prolong the QT interval, usually in overdose or when used in high doses. Rare case reports of QT prolongation have also been described when tamoxifen is used at lower doses. [28229] [28230] [28231] [61870] [61871] [61872] [63589]

Telavancin: (Major) Concurrent use of chloroquine and telavancin should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Both chloroquine and telavancin are associated with QT prolongation, while chloroquine is also associated with an increased risk for TdP. [28229] [28230] [28231] [36615]

Telbivudine: (Moderate) The risk of myopathy may be increased if chloroquine is coadministered with telbivudine. Monitor patients for any signs or symptoms of unexplained muscle pain, tenderness, or weakness, particularly during periods of upward dosage titration. [9671]

Telithromycin: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as telithromycin, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Telithromycin is associated with QT prolongation and TdP. [28156] [28229] [28230] [28231] [29758]

Terbutaline: (Minor) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Tetrabenazine: (Major) The manufacturer recommends avoiding concurrent use of tetrabenazine with other drugs known to prolong QT, such as chloroquine. Tetrabenazine causes a small increase in the corrected QT interval (QTc). Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [29758] [34389]

Tetracaine: (Moderate) Coadministration of tetracaine with oxidizing agents, such as chloroquine, may increase the risk of developing methemoglobinemia. Monitor patients closely for signs and symptoms of methemoglobinemia if coadministration is necessary. If methemoglobinemia occurs or is suspected, discontinue tetracaine and any other oxidizing agents. Depending on the severity of symptoms, patients may respond to supportive care; more severe symptoms may require treatment with methylene blue, exchange transfusion, or hyperbaric oxygen. [31353]

Thiazolidinediones: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the thiazolidinediones, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Thiethylperazine: (Severe) Chloroquine is considered to be associated with an increased risk for QT prolongation and torsades de pointes. The need to co-administer chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits, and should be avoided when possible. Drugs which have been reported to prolong the QT interval include the phenothiazines. [4951] [4955] [4956] [4957] [5022] [5145]

Thioridazine: (Severe) Thioridazine is associated with a well-established risk of QT prolongation and torsades de pointes (TdP). Thioridazine is considered contraindicated for use along with agents that, when combined with a phenothiazine, may prolong the QT interval and increase the risk of TdP, and/or cause orthostatic hypotension. Because of the potential for TdP, use of chloroquine with thioridazine is contraindicated. [28225] [28229] [28230] [28231] [28293] [43069]

Tiotropium; Olodaterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Tolazamide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Tolbutamide: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including the sulfonylureas, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Tolterodine: (Major) Concurrent use of chloroquine and tolterodine should be avoided due to an increased risk for QT prolongation and torsade de pointes (TdP). The need to coadminister these drugs should be done with a careful assessment of risks versus benefits. Chloroquine administration is associated with an increased risk of QT prolongation and TdP. Tolterodine has been associated with dose-dependent prolongation of the QT interval, especially in poor CYP2D6 metabolizers. [28229] [28230] [28231] [31112]

Toremifene: (Major) Avoid coadministration of chloroquine with toremifene if possible due to the risk of additive QT prolongation. If concomitant use is unavoidable, closely monitor ECGs for QT prolongation and monitor electrolytes; correct hypokalemia or hypomagnesemia prior to administration of toremifene. Toremifene has been shown to prolong the QTc interval in a dose- and concentration-related manner. Chloroquine is also

associated with a risk of dose-dependent QT prolongation and torsade de pointes (TdP); fatalities have been reported. [28229] [28230] [28231] [28822]

Trametinib: (Moderate) Concurrent use of chloroquine and trametinib is not recommended as there is an increased risk of retinal toxicity. [29758] [60372]

Trazodone: (Major) The manufacturer recommends avoiding trazodone in patients receiving other drugs that increase the QT interval, such as chloroquine. Trazodone can prolong the QT/QTc interval at therapeutic doses. In addition, there are postmarketing reports of torsade de pointes (TdP). Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [29758] [38831]

Tricyclic antidepressants: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as tricyclic antidepressants (TCAs), with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tricyclic antidepressants share pharmacologic properties similar to the Class IA antiarrhythmic agents and may prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). [28225] [28229] [28230] [28231] [28415] [28416] [29758]

Trifluoperazine: (Minor) Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval, such as trifluoperazine, should be done with a careful assessment of risks versus benefits and should be avoided when possible. [28229] [28230] [28231] [28415]

Trimipramine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as tricyclic antidepressants (TCAs), with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Tricyclic antidepressants share pharmacologic properties similar to the Class IA antiarrhythmic agents and may prolong the QT interval, particularly in overdose or with higher-dose prescription therapy (elevated serum concentrations). [28225] [28229] [28230] [28231] [28415] [28416] [29758]

Triptorelin: (Major) Consider whether the benefits of androgen deprivation therapy (i.e., triptorelin) outweigh the potential risks of QT prolongation in patients receiving chloroquine. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Androgen deprivation therapy may also prolong the QT/QTc interval. [28229] [28230] [28231] [45411]

Tubocurarine: (Moderate) Chloroquine may affect presynaptic and postsynaptic myoneural function and potentiate the neuromuscular blocking action of neuromuscular blockers. [31129]

Ultralente Insulin: (Major) Careful monitoring of blood glucose is recommended when chloroquine and antidiabetic agents, including insulin, are coadministered. A decreased dose of the antidiabetic agent may be necessary as severe hypoglycemia has been reported in patients treated concomitantly with chloroquine and an antidiabetic agent. [29758]

Umeclidinium; Vilanterol: (Moderate) Beta-agonists should be used cautiously and with close monitoring with chloroquine. Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Beta-agonists may be associated with adverse cardiovascular effects including QT interval prolongation, usually at higher doses and/or when associated with hypokalemia. This risk may be more clinically significant with long-acting beta-agonists (i.e., formoterol, arformoterol, indacaterol, olodaterol, salmeterol, umeclidinium; vilanterol) than with short-acting beta-agonists. Beta-agonists should be administered with caution to patients being treated with drugs known to prolong the QT interval because the action of beta-agonists on the cardiovascular system may be potentiated. [28229] [28230] [28231] [28318] [33925] [41231] [44979]

Vandetanib: (Major) Avoid coadministration of vandetanib with chloroquine due to an increased risk of QT prolongation and torsade de pointes (TdP). If concomitant use is unavoidable, monitor ECGs for QT prolongation and monitor electrolytes; correct hypocalcemia, hypomagnesemia, and/or hypomagnesemia prior to vandetanib administration. An interruption of vandetanib therapy or dose reduction may be necessary for QT prolongation. Vandetanib can prolong the QT interval in a concentration-dependent manner; TdP and sudden death have been reported in patients receiving vandetanib. Chloroquine is also associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [43901]

Vardenafil: (Major) The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits. Chloroquine is associated with an increased risk of QT prolongation and torsades de pointes (TdP). Consider the potential for additive QT effects if vardenafil is administered with chloroquine. Vardenafil is associated with QT prolongation. Both therapeutic and supratherapeutic doses of vardenafil produce an increase in QTc interval. [28216] [28229] [59321]

Vecuronium: (Moderate) Chloroquine may affect presynaptic and postsynaptic myoneural function and potentiate the neuromuscular blocking action of neuromuscular blockers. [31129]

Vemurafenib: (Major) Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval should be done with a careful assessment of risks versus benefits and should be avoided when possible. Vemurafenib has been associated with QT prolongation. If coadministration is necessary, ECG monitoring is recommended; closely monitor the patient for QT interval prolongation. [28229] [28230] [28231] [45335] [4951] [4955] [4956]

Venlafaxine: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as venlafaxine, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Venlafaxine administration is associated with a possible risk of QT prolongation; TdP has been reported with postmarketing use. [28229] [28230] [28231] [29758] [33715]

Vigabatrin: (Major) Vigabatrin should not be used with chloroquine due to potential retinal toxicity associated with both drugs, unless the benefits of treatment clearly outweigh the risks. [29758] [36250]

Voriconazole: (Major) Coadminister chloroquine with other drugs known to prolong the QT interval, such as voriconazole, with caution. Chloroquine is associated with an increased risk of QT prolongation and torsade de pointes (TdP); fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. Voriconazole has been associated with QT prolongation and rare cases of TdP. [28158] [28229] [28230] [28231] [29758]

Vorinostat: (Major) Chloroquine administration is associated with an increased risk of QT prolongation and torsades de pointes (TdP). The need to coadminister chloroquine with drugs known to prolong the QT interval, such as vorinostat, should be done with a careful assessment of risks versus benefits and should be avoided when possible. [28229] [28230] [28231] [32789]

Yellow Fever Vaccine, Live: (Moderate) According to the manufacturer, the yellow fever vaccine, live has been administered concurrently with the antimalarial drug chloroquine. Health care provider should monitor for any impairment in the immunologic response to the yellow fever vaccine when these medications are given concurrently. [43604]

Ziprasidone: (Major) Concomitant use of ziprasidone and chloroquine should be avoided due to the potential for additive QT prolongation. Clinical trial data indicate that ziprasidone causes QT prolongation; there are postmarketing reports of torsade de pointes (TdP) in patients with multiple confounding factors. Chloroquine is associated with an increased risk of QT prolongation and TdP; fatalities have been reported. The risk of QT prolongation is increased with higher chloroquine doses. [28229] [28230] [28231] [28233]

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Monitoring Parameters




- CBC
- ophthalmologic exam

IV Compatibility of Chloroquine with:

Legend

-  = Compatible
-  = Incompatible
-  = Results uncertain, variable or dependent on conditions
- ND = No Data Available

From Trissel's 2TM Clinical Pharmaceutics Database 

	Admixture	Syringe	Y-Site Administration	For Dilution
Normal saline- Sodium chloride 0.9%	ND	ND	ND	
Promethazine hydrochloride			ND	ND

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US Drug Names

- Aralen

Global Drug names

Argentina

- Nivaquine - (Sanofi-Aventis)

Australia

- Chlorquin - (Aspen)
- Nivaquine - (Rhone-Poulenc Rorer)

Austria

- Resochin - (Bayer)

Belgium

- Nivaquine - (Sanofi)

Brazil

- Clopirim - (Quimioterapica)
- Diclokin - (Kinder)
- Difosquin - (Vitamed)
- Palux - (Biolab Sanus)
- Quinacris - (Cristalia)

Canada

- Aralen - (Sanofi Synthelabo)

Czech Republic

- Delagil - (ICN)

Denmark

- Malarex - (Actavis)

Finland

- Heliopar - (Orion)

France

- Nivaquine - (Sanofi-Aventis)
- Nopalu - (Pharmacie Centrale des Armees)
- Savarine - (AstraZeneca)

Germany

- Arthrabas - (Tosse)
- Resochin - (Bayer)
- Weimerquin - (Biokanol)

Greece

- Avloclor - (IFET)
- Demoquine - (Demo)
- Savarine - (IFET (IΦET))

Hong Kong

- Chlorocin - (Deltapharm)
- Chlorquin - (Fisons)
- Syncoquin - (Synco)

Hungary

- Delagil - (PharmaSwiss)

India

- Bitaquine - (Bombay Tablet)
- Cadiquin - (Zydus)
- Chlorolex - (Lexica)
- Clokit - (Indoco)
- Cloquin - (Indoco)
- C-Quin - (Ikon)
- Emquin - (Merck)
- E-Vivax - (Themis Medicare)
- Idiquin - (Indian Drugs)
- Ingaquine - (Inga)
- Jagquin - (Jagsonpal)
- La-Quin - (Stadmed)
- Lariago - (Ipca)
- Larover - (Aglowmed)
- Malaquin - (PC India)
- Maliago - (Cipla)
- Maligon - (Unijules)
- Malswift - (Ind-Swift)
- Melubrin - (Ranbaxy)
- Neoquine - (Neon)
- Nivaquine-P - (Piramal)
- Paraquin - (Shreya)
- Resochin - (Bayer)

Indonesia

- Avloclor - (AstraZeneca)
- Malarex - (Actavis)
- Mexaquin - (Konimex)
- Resochin - (Bayer)
- Riboquin - (Dexa)

Ireland

- Avloclor - (AstraZeneca)
- Nivaquine - (Rhone-Poulenc Rorer)

Israel

- Aralen - (Sanofi Winthrop)
- Avloclor - (Zeneca)

Italy

- Dichinalex - (Recordati)

Mexico

- Aralen - (Sanofi-Aventis)
- Klorokin - (Zerboni)
- Maclorex - (Alpharma)
- Paluken - (Kener)

Netherlands

- Nivaquine - (Sanofi-Aventis)

New Zealand

- Chlorquin - (Healthcare Logistics)
- Nivaquine - (Aventis)

Philippines

- Aralen - (Sanofi Synthelabo)
- Chlorofoz - (Am-Europharma)
- Chloromax - (Oboi)
- Clorkin - (Doctors)

Poland

- Arechin - (Polfa Pabianice)

Portugal

- Resochina - (BayHealth)

Russian Federation

- Delagil - (ICN)

Singapore

- Avloclor - (AstraZeneca)
- Malarex - (Danone Dumex)

South Africa

- Anoclor - (Rolab)
- Daraclor - (Glaxo Wellcome)
- Daramal - (GSK)
- Daramal-Paludrine - (Zeneca)
- Mirquin - (Mirren)
- Nivaquine - (Winthrop)
- Plasmoquine - (Medchem)
- Promal - (Propan)

Spain

- Cidanchin - (Cidan)
- Resochin - (Kern)

Switzerland

- Chlorochin - (Streuli)
- Nivaquine - (Sanofi-Aventis)
- Pharmaquine - (Pharma Plus)
- Resochine - (Bayer)

Thailand

- Chewoquine - (Chew)
- Diroquine - (Atlantic)
- Genocin - (General Drugs)
- Malacin - (ANB)
- Maliaquine - (Sriprasit)
- Nitaquin - (Utopian)
- P-Roquine - (PP Lab)
- Sinmoquin - (SSP)

Turkey

- Kutlu - (Keymen)

Ukraine

- Delagil - (Meda)

United Kingdom

- Avloclor - (Alliance)
- Malarivon - (Wallace Mfg Chem.)
- Malaviron - (Wallace Mfg Chem.)
- Nivaquine - (Sanofi-Aventis)