In the USA, the following dose modifications are recommended: After an initial dose of 750 mg daily.

- CC 20 to 49 mL/minute: subsequent doses are 750 mg every 48 hours
- · CC up to 19 mL/minute (including haemodialysis and continuous peritoneal dialysis patients): subsequent doses are 500 mg every 48 hours

After an initial dose of 500 mg daily,

- · CC 20 to 49 mL/minute: subsequent doses are 250 mg every 24 hours
- · CC up to 19 mL/minute (including haemodialysis and continuous peritoneal dialysis patients): subsequent doses are 250 mg every 48 hours

After an initial dose of 250 mg daily,

· CC 10 to 19 mL/minute: subsequent doses are 250 mg every 48 hours

A pharmacokinetic study in 10 critically ill patients undergoing continuous renal replacement therapy with either venovenous haemofiltration or haemodiafiltration suggested that a dose of either levofloxacin 250 mg every 24 hours or 500 mg every 48 hours would be suitable in such situations.1

1. Malone RS, et al. Pharmacokinetics of levofloxacin and ciprofloxacin during continuous renal replacement therapy in critically ill patients. *Antimicrob Agents Chemother* 2001; **45**: 2949–54.

Peptic ulcer disease. For mention of the potential use of levofloxacin in eradication regimens for Helicobacter pylori, see p.1702.

References.

- 1. Gisbert JP, Morena F. Systematic review and meta-analysis: levofloxacin-based rescue regimens after Helicobacter pylori treatment failure. *Aliment Pharmacol Ther* 2006; **23:** 35–44.
- Gisbert JP, et al. First-line triple therapy with levofloxacin for Helicobacter pylori eradication. Aliment Pharmacol Ther 2007; 26: 495–500.
- Rispo A, et al. Levofloxacin in first-line treatment of Helico-bacter pylori infection. Helicobacter 2007; 12: 364–5.
- 4. Perna F, et al. Levofloxacin-based triple therapy for Helicobacter pylori re-treatment: role of bacterial resistance. *Dig Liver Dis* 2007; **39:** 1001–5.
- 5. Zullo A, et al. Helicobacter pylori eradication with either quadruple regimen with lactoferrin or levofloxacin-based triple therapy: a multicentre study. *Dig Liver Dis* 2007; **39:** 806–10.
- 6. Yee YK, et al. Clinical trial: levofloxacin-based quadruple therapy was inferior to traditional quadruple therapy in the treatment of resistant Helicobacter pylori infection. Aliment Pharmacol Ther 2007; 26: 1063-7.

Preparations

Proprietary Preparations (details are given in Part 3)

Arg.: Floxlevo; Grepiflox; Leflumax; Levaquin; Septibiotic; Tavanic; Teraquin; Ultraquin; Uniflox; Valiflox; Austria: Tavanic; Belg.: Tavanic; Braz.: Levaquin; Levotac; Levoxin; Tamiram; Tavanic; Canad.: Levaquin; Chile: Auxxil; Medibiox; Novacilina; Quinobiot; Recamicina; Tavanic; C.: Oftaquix; Tavanic; Denm.: Oftaquix; Fin.: Oftaquix; Tavanic; Fr.: Tavanic; Ger.: Tavanic; Ger.: Tavanic; Leflox; Levocide; Levoff; Levoflox; Luf; Tavanic; Indon.: Armolev; Cravit; Cravox; Difloxin; Farlev; Lefos; Levoflox; Levorlex; Macradia; Niciae; Midiae; Port. Tavanic; Indon.: Armolev, Cravit; Cravox, Difloxin; Farlev, Lefos, Levocin; Levores; Levovid; Levoxal; Lexa; Lovequin; Mosardal; Nislev; Nufalev, Prolecin; Prolevox; Reskuin; Rinvox; Tevox; Volequin; Voxin; Inl.: Tavanic; Israel: Levo; Tavanic; Israel: Levo; Tavanic; Israel: Levo; Tavanic; Israel: Levosci, Mex.: Eleguine; Ran-Levo; Tavanic; Neth.: Oftaquix; Prixar; Tavanic; Philipp.: Floxel; Levox; Oftaquix; Pol.: Oftaquix, Port.: Oftaquix; Rus.: Lefoxin (Λeφοκιμν+ί); Tavanic; Tasanic; Singapore: Cravit; Spain: Tavanic; Swed.: Oftaquix; Tavanic; Switz.: Tavanic; Thal.: Cravit; Lefoxin; Turk.: Cravit; Tavanic; UAE: Jenoquine; UK: Oftaquix; Tavanic; USA: Iquix; Levaquin; Quixin; Venez.: Levaquin; Proxime: Tavanic; Vaixin; vaguin: Proxime: Tavanic.

Multi-ingredient: India: Levoflox Oz Kit.

Lincomycin (BAN, USAN, rINN)

Lincomicina; Lincomycine; Lincomycinum; Linkomycin; Linkomysiini; U-10149. Methyl 6-amino-6,8-dideoxy-N-[(2S,4R)-1-methyl-4-propylprolyl]- I-thio-α-D-erythro-D-galacto-octopyranoside.

Линкомишин

 $C_{18}H_{34}N_2O_6S = 406.5.$ CAS — 154-21-2.

ATC - 101 FF02. ATC Vet - QJ01FF02.

Lincomycin Hydrochloride (BANM, rINNM)

Hidrocloruro de lincomicina; Lincomycine, chlorhydrate de; Lincomycini hydrochloridum: Lincomycini Hydrochloridum Monohydricum: Linkomicin-hidroklorid: Linkomicino hidrochloridas: Linkomisin Hidroklorür; Linkomycin hydrochlorid monohydrát; Linkomycinhydroklorid; Linkomycyny chlorowodorek; Linkomysiinihydrokloridi; Lyncomycini Hydrochloridum; NSC-70731. Lincomycin hydrochloride monohydrate.

Линкомицина Гидрохлорид

 $C_{18}H_{34}N_2O_6S,HCI,H_2O = 461.0.$

CAS — 859-18-7 (anhydrous lincomyciii liyalocii. 7179-49-9 (lincomycin hydrochloride, monohydrate). 859-18-7 (anhydrous lincomycin hydrochloride); ATC — JOIÈFO2.

ATC Vet — QJ01FF02.

Pharmacopoeias. In Chin., Eur. (see p.vii), Jpn, US, and Viet. Ph. Eur. 6.2 (Lincomycin Hydrochloride). An antimicrobial substance produced by Streptomyces lincolnensis var. lincolnensis or by any other means. A white or almost white crystalline powder. It contains not more than 5% of lincomycin B. Very soluble in water; slightly soluble in alcohol; very slightly soluble in acetone. A 10% solution in water has a pH of 3.5 to 5.5. Store at a temperature not exceeding 30° in airtight containers.

USP 31 (Lincomycin Hydrochloride). A white or practically white crystalline powder, odourless or with a faint odour. Freely soluble in water; very slightly soluble in acetone; soluble in dimethylformamide. pH of a 10% solution in water is between 3.0 and 5.5. Store in airtight containers.

Incompatibility. Solutions of lincomycin hydrochloride have an acid pH and incompatibility may be expected with alkaline preparations, or with drugs unstable at low pH.

Adverse Effects, Treatment, and Precautions

As for Clindamycin, p.251.

Hypersensitivity reactions such as skin rashes, urticaria, and angioedema may be less frequent with lincomycin than with clindamycin. Other adverse effects reported rarely with lincomycin include aplastic anaemia, pancytopenia, tinnitus, and vertigo.

Lincomycin should be used with caution in patients with hepatic or renal impairment; consideration should be given to decreasing the dosage frequency and serum concentrations should be monitored during high-dose therapy. Reduced doses may be necessary in those with severe renal impairment (see below).

Interactions

As for Clindamycin, p.251.

Absorption of lincomycin is reduced by adsorbent antidiarrhoeals and cyclamate sweeteners.

Antimicrobial Action

As for Clindamycin, p.252, but it is less potent. There is complete cross-resistance between clindamycin and lincomycin. Some cross-resistance with erythromycin, including a phenomenon known as dissociated crossresistance or macrolide effect, has been reported.

Pharmacokinetics

About 20 to 30% of an oral dose of lincomycin is rapidly absorbed from the gastrointestinal tract; after a 500-mg dose, peak plasma concentrations of about 2 to 3 micrograms/mL are reached within 2 to 4 hours. Food markedly reduces the rate and extent of absorption. An intramuscular injection of 600 mg produces average peak plasma concentrations of between 11 and 12 micrograms/mL at 60 minutes and a 2-hour intravenous infusion of 600 mg produces an average of about 16 micrograms/mL

The biological half-life of lincomycin is about 5 hours and may be prolonged in hepatic or renal impairment. Serum half-life may be doubled in patients with hepatic impairment and up to 3 times longer in those with severe renal impairment. Lincomycin is widely distributed in the tissues including bone and body fluids but diffusion into the CSF is poor, although it may be slightly better when the meninges are inflamed. It diffuses across the placenta and is distributed into breast

Lincomycin is partially inactivated in the liver; unchanged drug and metabolites are excreted in the urine, bile, and faeces. Lincomycin is not effectively removed from the blood by haemodialysis or peritoneal dialysis.

Uses and Administration

Lincomycin is a lincosamide antibacterial with actions and uses similar to those of its chlorinated derivative, clindamycin (p.252). Clindamycin is usually preferred to lincomycin because of its greater activity and better absorption, although the usefulness of both drugs is limited by the risk of pseudomembranous colitis.

Lincomycin is given orally or parenterally as the hydrochloride but doses are expressed in terms of the base; 1.13 g of lincomycin hydrochloride is equivalent to about 1 g of lincomycin. The usual adult oral dose is 500 mg 3 or 4 times daily, taken at least 1 or 2 hours before or after food. It is given parenterally by intramuscular injection in a dose of 600 mg once or twice daily, or by slow intravenous infusion in a dose of 0.6 to 1 g two or three times daily. Higher intravenous doses have been given in very severe infections, up to a total daily dose of about 8 g. For intravenous use, lincomycin 1 g should be diluted in not less than 100 mL of diluent and infused over at least 1 hour.

For details of reduced doses in renal impairment, see

For details of doses in infants and children, see below. Lincomycin hydrochloride may be given by subconjunctival injection in a dose equivalent to 75 mg of lincomycin.

Administration in children. The usual oral dose of lincomycin for infants and children aged 1 month and over is 30 to 60~mg/kg daily in divided doses. It is given parenterally to those over 1 month old in a dose of 10 to 20 mg/kg daily in divided doses by intramuscular injection or intravenous infusion.

For suggested doses in children with renal impairment see below.

Administration in renal impairment. Doses of lincomycin may need to be reduced in patients with severe renal impairment; a reduction down to 25 to 30% of the usual dose (see above) may be appropriate.

Preparations

BP 2008: Lincomycin Capsules; Lincomycin Injection; **USP 31:** Lincomycin Hydrochloride Capsules; Lincomycin Hydrochloride Syrup; Lincomycin Injection.

Proprietary Preparations (details are given in Part 3)

Arg.: Frademicina; Austral.: Lincocin; Belg.: Lincocin; Braz.: Frademicina; Framicin†; Linatron; Lincoflan; Lincomiral; Lincomyn†; Lincoplax†; Lincociax†; Lincovax; Lindemicina; Neo Linco; Canad.: Lincocin; Chile: Lincocin; Cz.: Lincocin†; Neloren; Fr.: Lincocine; Ger.: Albiotic†; Gr.: Lincocin; Pecasolin; Hong Kong: Lincocin; Medoglycin†; India: Lynx; Indon.: Biolincom; Ethilin; Linco; Lincocin; Lincophar; Lincyn; Lintropsin; Nichomycin; Percocyn; Pritaline; Tamcocin; Tismamisin; Zumalin; Ral.: Lincocin; Malaysia: Linco; Lincos; Medoglycin; Mex.: Libiocid; Limidras; Linbac; Lincocin; Lincopar; Lincover; Lisonin; Princol; Rimsalin; Yectolin; Philipp.: Adlyns; Lincocin; Pol.: Lincocin; Neloren; Port.: Lincocina; Rus.: Neloren (Нелорен); S.Afr.: Lincocin; Singapore: Lincocin; Spain; Cillimicina; Lincocin; Thai.: Linco; Lincocilin; Lincocin; Lincogin†; Lincolan; Lincomax; Lincomay†; Lincono; Lingo; Linmycin; Utolincomycin; Turk.: Lincocin; Lincomed; Linkoles; Linkosol; Linosin; USA: Lincocin; Lincorex†; Venez.: Bekalen†; Formicina;

Multi-ingredient: Arg.: Nicozinc.

Linezolid (BAN, USAN, rINN)

Linetsolidi; Linézolide; Linezolidum; PNU-100766; U-100766. N-{[(S)-3-(3-Fluoro-4-morpholinophenyl)-2-oxo-5-oxazolidinyl]methyl}acetamide.

Линезолид

 $C_{16}H_{20}FN_3O_4 = 337.3.$ CAS — 165800-03-3.

ATC - 101XX08.

ATC Vet - QJ01XX08.

Incompatibility and stability. References.

1. Zhang Y, et al. Compatibility and stability of linezolid injection admixed with three quinolone antibiotics. Ann Pharmacother 2000; 34: 996-1001.