WHO Model List of Essential Medicines for Children

6th List
(March 2017)

Status of this document

This is a reprint of the text on the WHO Medicines website

http://www.who.int/medicines/publications/essentialmedicines/en/

6th edition

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Explanatory notes

This Model List is intended for use for children up to 12 years of age.

The **core list** presents a list of minimum medicine needs for a basic health-care system, listing the most efficacious, safe and cost-effective medicines for priority conditions. Priority conditions are selected on the basis of current and estimated future public health relevance, and potential for safe and cost-effective treatment.

The **complementary list** presents essential medicines for priority diseases, for which specialized diagnostic or monitoring facilities, and/or specialist medical care, and/or specialist training are needed. In case of doubt medicines may also be listed as complementary on the basis of consistent higher costs or less attractive cost–effectiveness in a variety of settings.

The **square box symbol (□)** is primarily intended to indicate similar clinical performance within a pharmacological class. The listed medicine should be the example of the class for which there is the best evidence for effectiveness and safety. In some cases, this may be the first medicine that is licensed for marketing; in other instances, subsequently licensed compounds may be safer or more effective. Where there is no difference in terms of efficacy and safety data, the listed medicine should be the one that is generally available at the lowest price, based on international drug price information sources.

Therapeutic equivalence is indicated only on the basis of reviews of efficacy and safety and when consistent with WHO clinical guidelines. National lists should not use a similar symbol and should be specific in their final selection, which would depend on local availability and price.

The format and numbering of the 20th WHO Model List of Essential Medicines have been retained but, as indicated in the text, some sections have been deleted because they contain medicines that are not relevant for children.

a indicates that there is an age or weight restriction on use of the medicines; the details for each medicine are in Table 1.1 of Annex 1.

The presence of an entry on the Essential Medicines List carries no assurance as to pharmaceutical quality. It is the responsibility of the relevant national or regional drug regulatory authority to ensure that each product is of appropriate pharmaceutical quality (including stability) and that when relevant, different products are interchangeable.

For recommendations and advice concerning all aspects of the quality assurance of medicines see the WHO Medicines website http://www.who.int/medicines/areas/quality_safety/quality_assurance/en/.

Medicines and dosage forms are listed in alphabetical order within each section and there is no implication of preference for one form over another. Standard treatment guidelines should be consulted for information on appropriate dosage forms.

The main terms used for dosage forms in the Essential Medicines List can be found in Table 1.2 of Annex 1.
Definitions of many of these terms and pharmaceutical quality requirements applicable to the different categories are published in the current edition of *The International Pharmacopoeia* http://www.who.int/medicines/publications/pharmacopoeia.

1. ANAESTHETICS, PREOPERATIVE MEDICINES AND MEDICAL GASES	
1.1 General anaesthetics and oxygen	
1.1.1 Inhalational medicines	
halothane	**Inhalation.**
isoflurane	**Inhalation.**
nitrous oxide	**Inhalation.**
oxygen	**Inhalation** (medical gas).
1.1.2 Injectable medicines	
ketamine	**Injection:** 50 mg (as hydrochloride)/mL in 10-mL vial.
propofol *	**Injection:** 10 mg/mL; 20 mg/mL. * Thiopental may be used as an alternative depending on local availability and cost.
1.2 Local anaesthetics	
☐ bupivacaine	**Injection:** 0.25%; 0.5% (hydrochloride) in vial. **Injection for spinal anaesthesia:** 0.5% (hydrochloride) in 4-mL ampoule to be mixed with 7.5% glucose solution.
☐ lidocaine	**Injection:** 1%; 2% (hydrochloride) in vial. **Injection for spinal anaesthesia:** 5% (hydrochloride) in 2-mL ampoule to be mixed with 7.5% glucose solution. **Topical forms:** 2% to 4% (hydrochloride).
lidocaine + epinephrine (adrenaline)	**Dental cartridge:** 2% (hydrochloride) + epinephrine 1:80 000. **Injection:** 1%; 2% (hydrochloride **or** sulfate) + epinephrine 1:200 000 in vial.
1.3 Preoperative medication and sedation for short-term procedures	
atropine	**Injection:** 1 mg (sulfate) in 1-mL ampoule.
☐ midazolam	**Injection:** 1 mg/mL. **Oral liquid:** 2 mg/mL. **Tablet:** 7.5 mg; 15 mg.
morphine	**Injection:** 10 mg (sulfate **or** hydrochloride) in 1-mL ampoule.

1.4 Medical gases	
oxygen*	**Inhalation** For use in the management of hypoxaemia. *No more than 30% oxygen should be used to initiate resuscitation of neonates less than or equal to 32 weeks of gestation.
2. MEDICINES FOR PAIN AND PALLIATIVE CARE	
2.1 Non-opioids and non-steroidal anti-inflammatory medicines (NSAIMs)	
ibuprofen **a**	**Oral liquid:** 200 mg/5 mL. **Tablet:** 200 mg; 400 mg; 600 mg. **a** Not in children less than 3 months.
paracetamol*	**Oral liquid:** 120 mg/5 mL; 125 mg/5 mL. **Suppository:** 100 mg. **Tablet:** 100 mg to 500 mg. * Not recommended for anti-inflammatory use due to lack of proven benefit to that effect.
2.2 Opioid analgesics	
☐ morphine*	**Granules (slow release; to mix with water):** 20 mg to 200 mg (morphine sulfate). **Injection:** 10 mg (morphine hydrochloride or morphine sulfate) in 1-mL ampoule. **Oral liquid:** 10 mg (morphine hydrochloride or morphine sulfate)/5 mL. **Tablet (slow release):** 10 mg – 200mg (morphine hydrochloride or morphine sulfate). **Tablet (immediate release):** 10 mg (morphine sulfate). *Alternatives limited to hydromorphone and oxycodone.
Complementary list	
*methadone**	***Tablet:*** *5 mg; 10 mg (as hydrochloride).* ***Oral liquid:*** *5mg/ 5mL; 10mg/ 5mL (as hydrochloride).* ***Concentrate for oral liquid:*** *5 mg/ mL; 10mg/ mL (as hydrochloride)* **For the management of cancer pain.*
2.3 Medicines for other symptoms common in palliative care	
amitriptyline	**Tablet:** 10 mg; 25 mg.
cyclizine	**Injection:** 50 mg/mL. **Tablet:** 50 mg.

dexamethasone	**Injection:** 4 mg/mL in 1-mL ampoule (as disodium phosphate salt). **Oral liquid:** 2 mg/5 mL. **Tablet:** 2 mg.
diazepam	**Injection:** 5 mg/mL. **Oral liquid:** 2 mg/5 mL. **Rectal solution:** 2.5 mg; 5 mg; 10 mg. **Tablet:** 5 mg; 10 mg.
docusate sodium	**Capsule:** 100 mg. **Oral liquid:** 50 mg/5 mL.
fluoxetine **a**	**Solid oral dosage form:** 20 mg (as hydrochloride). **a** >8 years.
hyoscine hydrobromide	**Injection:** 400 micrograms/mL; 600 micrograms/mL. **Transdermal patches:** 1 mg/72 hours.
lactulose	**Oral liquid:** 3.1–3.7 g/5 mL.
midazolam	**Injection:** 1 mg/mL; 5 mg/mL. **Oral liquid:** 2mg/mL. **Solid oral dosage form:** 7.5 mg; 15 mg.
ondansetron **a**	**Injection:** 2 mg base/mL in 2-mL ampoule (as hydrochloride). **Oral liquid:** 4 mg base/5 mL. **Solid oral dosage form:** Eq 4 mg base; Eq 8 mg base. **a** >1 month.
senna	**Oral liquid:** 7.5 mg/5 mL.
3. ANTIALLERGICS AND MEDICINES USED IN ANAPHYLAXIS	
dexamethasone	**Injection:** 4 mg/mL in 1-mL ampoule (as disodium phosphate salt).
epinephrine (adrenaline)	**Injection:** 1 mg (as hydrochloride **or** hydrogen tartrate) in 1-mL ampoule.
hydrocortisone	**Powder for injection:** 100 mg (as sodium succinate) in vial.
☐ loratadine *	**Oral liquid:** 1 mg/mL. **Tablet:** 10 mg. *There may be a role for sedating antihistamines for limited indications.
☐ prednisolone	**Oral liquid:** 5 mg/mL. **Tablet:** 5 mg; 25 mg.

4. ANTIDOTES AND OTHER SUBSTANCES USED IN POISONINGS	
4.1 Non-specific	
charcoal, activated	**Powder.**
4.2 Specific	
acetylcysteine	**Injection:** 200 mg/mL in 10-mL ampoule. **Oral liquid:** 10%; 20%.
atropine	**Injection:** 1 mg (sulfate) in 1-mL ampoule.
calcium gluconate	**Injection:** 100 mg/mL in 10-mL ampoule.
naloxone	**Injection:** 400 micrograms (hydrochloride) in 1-mL ampoule.
Complementary List	
deferoxamine	***Powder for injection:*** *500 mg (mesilate) in vial.*
dimercaprol	***Injection in oil:*** *50 mg/mL in 2-mL ampoule.*
fomepizole	***Injection:*** *5 mg/mL (sulfate) in 20-mL ampoule or 1 g/mL (base) in 1.5-mL ampoule.*
sodium calcium edetate	***Injection:*** *200 mg/mL in 5-mL ampoule.*
succimer	***Solid oral dosage form:*** *100 mg.*
5. ANTICONVULSANTS/ANTIEPILEPTICS	
carbamazepine	**Oral liquid:** 100 mg/5 mL. **Tablet (chewable):** 100 mg; 200 mg. **Tablet (scored):** 100 mg; 200 mg.
diazepam	**Gel or rectal solution:** 5 mg/mL in 0.5 mL; 2-mL; 4-mL tubes.
lamotrigine*	**Tablet:** 25 mg; 50 mg; 100 mg; 200 mg. **Tablet (chewable, dispersible**): 2 mg; 5 mg; 25 mg; 50 mg; 100 mg; 200 mg. *as adjunctive therapy for treatment-resistant partial or generalized seizures.
☐ lorazepam	**Parenteral formulation:** 2 mg/mL in 1-mL ampoule; 4 mg/mL in 1-mL ampoule.
midazolam	**Solution for oromucosal administration:** 5 mg/mL; 10 mg/mL **Ampoule*:** 1 mg/ mL; 10 mg/mL *for buccal administration when solution for oromucosal administration is not available

phenobarbital	**Injection:** 200 mg/mL (sodium). **Oral liquid:** 15 mg/5 mL. **Tablet:** 15 mg to 100 mg.
phenytoin	**Injection:** 50 mg/mL in 5-mL vial (sodium salt). **Oral liquid:** 25 mg to 30 mg/5 mL.* **Solid oral dosage form:** 25 mg; 50 mg; 100 mg (sodium salt). **Tablet (chewable):** 50 mg. * The presence of both 25 mg/5 mL and 30 mg/5 mL strengths on the same market would cause confusion in prescribing and dispensing and should be avoided.
valproic acid (sodium valproate)	**Oral liquid:** 200 mg/5 mL. **Tablet (crushable):** 100 mg. **Tablet (enteric-coated):** 200 mg; 500 mg (sodium valproate).
Complementary List	
ethosuximide	***Capsule:*** *250 mg.* ***Oral liquid:*** *250 mg/5 mL.*
valproic acid (sodium valproate)	***Injection:*** *100 mg/ mL in 4- mL ampoule; 100 mg/ mL in 10- mL ampoule.*
6. ANTI-INFECTIVE MEDICINES	
6.1 Anthelminthics	
6.1.1 Intestinal anthelminthics	
albendazole	**Tablet (chewable):** 400 mg.
ivermectin	**Tablet (scored):** 3 mg.
levamisole	**Tablet:** 50 mg; 150 mg (as hydrochloride).
mebendazole	**Tablet (chewable):** 100 mg; 500 mg.
niclosamide	**Tablet (chewable):** 500 mg.
praziquantel	**Tablet:** 150 mg; 600 mg.
pyrantel	**Oral liquid:** 50 mg (as embonate **or** pamoate)/mL. **Tablet (chewable):** 250 mg (as embonate **or** pamoate).

6.1.2 Antifilarials	
albendazole	**Tablet (chewable):** 400 mg.
diethylcarbamazine	**Tablet:** 50 mg; 100 mg (dihydrogen citrate).
ivermectin	**Tablet (scored):** 3 mg.
6.1.3 Antischistosomals and other antitrematode medicines	
praziquantel	**Tablet:** 600 mg.
triclabendazole	**Tablet:** 250 mg.
Complementary List	
*oxamniquine**	***Capsule:*** *250 mg.* ***Oral liquid:*** *250 mg/5 mL.* ** Oxamniquine is listed for use when praziquantel treatment fails.*

6.2 Antibacterials

To assist in the development of tools for antibiotic stewardship at local, national and global levels and to reduce antimicrobial resistance, three different categories were developed – ACCESS, WATCH and RESERVE groups.

Group 1 - KEY ACCESS ANTIBIOTICS

To improve both access and clinical outcomes antibiotics that were first or second choice antibiotics in at least one of the reviewed syndromes are designated as key ACCESS antibiotics, emphasizing their role as the antibiotics that should be widely available, affordable and quality-assured. ACCESS antibiotics are listed below. Selected ACCESS antibiotics may also be included in the WATCH group.

6.2.1 Beta-lactam medicines		6.2.2 Other antibacterials	
amoxicillin	cefotaxime*	amikacin	gentamicin
amoxicillin + clavulanic acid	ceftriaxone*	azithromycin*	metronidazole
ampicillin	cloxacillin	chloramphenicol	nitrofurantoin
benzathine benzylpenicillin	phenoxymethylpenicillin	ciprofloxacin*	spectinomycin (EML only)
benzylpenicillin	piperacillin + tazobactam*	clarithromycin*	sulfamethoxazole + trimethoprim
cefalexin	procaine benzyl penicillin	clindamycin	vancomycin (oral)*
cefazolin	*meropenem**	doxycycline	*vancomycin (parenteral)**
cefixime*			

Italics = complementary list

*Watch group antibiotics included in the EML/EMLc only for specific, limited indications

The 2017 Expert Committee identified the following antibiotics or antibiotic classes that should be the subject of a specific stewardship focus. Antibiotics or antibiotic classes in these groups are designated accordingly in the EML/EMLc. The "WATCH" and "RESERVE" stewardship groups could assist in activities such as local, national and global monitoring of use; development of guidelines and educational activities.

Group 2 - WATCH GROUP ANTIBIOTICS

This group includes antibiotic classes that have higher resistance potential and so are recommended as first or second choice treatments only for a specific, limited number of indications. These medicines should be prioritized as key targets of stewardship programs and monitoring.

This group includes most of the highest priority agents among the Critically Important Antimicrobials for Human Medicine[1] and/or antibiotics that are at relatively high risk of selection of bacterial resistance.

Watch group antibiotics
Quinolones and fluoroquinolones e.g. ciprofloxacin, levofloxacin, moxifloxacin, norfloxacin
3rd-generation cephalosporins (with or without beta-lactamase inhibitor) e.g. cefixime, ceftriaxone, cefotaxime, ceftazidime
Macrolides e.g. azithromycin, clarithromycin, erythromycin
Glycopeptides e.g. teicoplanin, vancomycin
Antipseudomonal penicillins + beta-lactamase inhibitor e.g. piperacillin-tazobactam
Carbapenems e.g. meropenem, imipenem + cilastatin
Penems e.g. faropenem

[1] http://apps.who.int/iris/bitstream/10665/251715/1/9789241511469-eng.pdf?ua=1

Group 3 - RESERVE GROUP ANTIBIOTICS

This group includes antibiotics that should be treated as "last resort" options that should be accessible, but whose use should be tailored to highly specific patients and settings, when all alternatives have failed (e.g., serious, life-threatening infections due to multi-drug resistant bacteria). These medicines could be protected and prioritized as key targets of national and international stewardship programs involving monitoring and utilization reporting, to preserve their effectiveness.

Reserve group antibiotics	
Aztreonam	Fosfomycin (IV)
4th generation cephalosporins e.g. cefepime	Oxazolidinones e.g. linezolid
5th generation cephalosporins e.g. ceftaroline	Tigecycline
Polymyxins e.g. polymyxin B, colistin	Daptomycin

6.2.1 Beta-lactam medicines

amoxicillin	**Powder for oral liquid:** 125 mg (as trihydrate)/5 mL; 250 mg (as trihydrate)/5 mL . **Solid oral dosage form:** 250 mg; 500 mg (as trihydrate). **Powder for injection**: 250 mg; 500 mg; 1 g (as sodium) in vial.	
	FIRST CHOICE *- community acquired pneumonia (mild to moderate)* *-community acquired pneumonia (severe)* *- complicated severe acute malnutrition* *- lower urinary tract infections* *- otitis media* *- pharyngitis* *- sepsis in neonates and children* *- sinusitis* *- uncomplicated severe acute malnutrition*	**SECOND CHOICE** *- acute bacterial meningitis*
amoxicillin + clavulanic acid	**Oral liquid:** 125 mg amoxicillin + 31.25 mg clavulanic acid/5 mL AND 250 mg amoxicillin + 62.5 mg clavulanic acid/5 mL . **Tablet:** 500 mg (as trihydrate) + 125 mg (as potassium salt). **Powder for injection:** 500 mg (as sodium) + 100 mg (as potassium salt); 1000 mg (as sodium) + 200 mg (as potassium salt) in vial.	
	FIRST CHOICE *- community acquired pneumonia (severe)* *- complicated intraabdominal infections (mild to moderate)* *- hospital acquired pneumonia* *- low-risk febrile neutropenia* *- lower urinary tract infections* *- sinusitis* *- skin and soft tissue infections*	**SECOND CHOICE** *- bone and joint infections* *- community acquired pneumonia (mild to moderate)* *-community acquired pneumonia (severe)* *- otitis media*

<table>
<tr><td rowspan="3">ampicillin</td><td colspan="2">Powder for injection: 500 mg; 1 g (as sodium salt) in vial.</td></tr>
<tr><td>FIRST CHOICE

- community acquired pneumonia (severe)
- complicated severe acute malnutrition
- sepsis in neonates and children</td><td>SECOND CHOICE

- acute bacterial meningitis</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">benzathine benzylpenicillin</td><td colspan="2">Powder for injection: 900 mg benzylpenicillin (= 1.2 million IU) in 5- mL vial [c]; 1.44 g benzylpenicillin (= 2.4 million IU) in 5- mL vial.</td></tr>
<tr><td>FIRST CHOICE

- syphilis (congenital)</td><td>SECOND CHOICE</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">benzylpenicillin</td><td colspan="2">Powder for injection: 600 mg (= 1 million IU); 3 g (= 5 million IU) (sodium or potassium salt) in vial.</td></tr>
<tr><td>FIRST CHOICE

- community acquired pneumonia (severe)
- complicated severe acute malnutrition
- sepsis in neonates and children
- syphilis (congenital)</td><td>SECOND CHOICE
- acute bacterial meningitis</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">cefalexin</td><td colspan="2">Powder for reconstitution with water: 125 mg/5 mL; 250 mg/5 mL (anhydrous).

Solid oral dosage form: 250 mg (as monohydrate).</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE

- pharyngitis
- skin and soft tissue infections</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">cefazolin* a</td><td colspan="2">Powder for injection: 1 g (as sodium salt) in vial.

* also indicated for surgical prophylaxis.

a >1 month.</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE

- bone and joint infections</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">cefixime

WATCH GROUP</td><td colspan="2">Capsules or tablets: 200 mg; 400 mg (as trihydrate)

Powder for oral liquid: 100 mg /5 mL</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE

- acute invasive bacterial diarrhoea / dysentery</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="2">cefotaxime*</td><td colspan="2">Powder for injection: 250 mg per vial (as sodium salt)</td></tr>
<tr><td colspan="2">* 3rd generation cephalosporin of choice for use in hospitalized neonates.</td></tr>
</table>

<table>
<tr><td>WATCH GROUP</td><td>FIRST CHOICE

- acute bacterial meningitis
- community acquired pneumonia (severe)
- complicated intraabdominal infections (mild to moderate)
- complicated intrabdominal infections (severe)
- hospital acquired pneumonia
- pyelonephritis (severe)</td><td>SECOND CHOICE

- bone and joint infections
- pyelonephritis (mild to moderate)
- sepsis in neonates and children</td></tr>
<tr><td rowspan="2">ceftriaxone* a
WATCH GROUP</td><td colspan="2">Powder for injection: 250 mg; 1 g (as sodium salt) in vial.

* Do not administer with calcium and avoid in infants with hyperbilirubinaemia.

a >41 weeks corrected gestational age.</td></tr>
<tr><td>FIRST CHOICE

- acute bacterial meningitis
- community acquired pneumonia (severe)
- complicated intraabdominal infections (mild to moderate)
- complicated intraabdominal infections (severe)
- hospital acquired pneumonia
- pyelonephritis (severe)</td><td>SECOND CHOICE

- acute invasive bacterial diarrhoea / dysentery
- bone and joint infections
- pyelohepnritis or prostatitis (mild to moderate)
- sepsis in neonates and children</td></tr>
<tr><td rowspan="2">□ cloxacillin*</td><td colspan="2">Capsule: 500 mg; 1 g (as sodium salt).

Powder for injection: 500 mg (as sodium salt) in vial.

Powder for oral liquid: 125 mg (as sodium salt)/5 mL.

*cloxacillin, dicloxacillin and flucloxacillin are preferred for oral administration due to better bioavailability.</td></tr>
<tr><td>FIRST CHOICE

- bone and joint infections
- skin and soft tissue infections</td><td>SECOND CHOICE

- sepsis in neonates and children</td></tr>
<tr><td rowspan="2">phenoxymethylpenicillin</td><td colspan="2">Powder for oral liquid: 250 mg (as potassium salt)/5 mL.

Tablet: 250 mg (as potassium salt).</td></tr>
<tr><td>FIRST CHOICE

- community acquired pneumonia (mild to moderate)
- pharyngitis</td><td>SECOND CHOICE</td></tr>
</table>

<table>
<tr><td rowspan="3">piperacillin + tazobactam
WATCH GROUP</td><td colspan="2">Powder for injection: 2 g (as sodium salt) + 250 mg (as sodium salt); 4 g (as sodium salt) + 500 mg (as sodium salt) in vial</td></tr>
<tr><td>FIRST CHOICE
- complicated intraabdominal infections (severe)
-high-risk febrile neutropenia
-hospital acquired pneumonia</td><td>SECOND CHOICE</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">procaine benzylpenicillin*</td><td colspan="2">Powder for injection: 1 g (=1 million IU); 3 g (=3 million IU) in vial.
* Procaine benzylpenicillin is not recommended as first-line treatment for neonatal sepsis / sepsis except in settings with high neonatal mortality, when given by trained health workers in cases where hospital care is not achievable.</td></tr>
<tr><td>FIRST CHOICE
-syphilis (congenital)</td><td>SECOND CHOICE</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="3">Complementary List</td></tr>
<tr><td>ceftazidime
WATCH GROUP</td><td colspan="2">Powder for injection: 250 mg or 1 g (as pentahydrate) in vial.</td></tr>
<tr><td rowspan="3">meropenem* a
WATCH GROUP</td><td colspan="2">Powder for injection: 500 mg (as trihydrate); 1 g (as trihydrate) in vial
a >3 months.
*imipenem + cilastatin is an alternative except for acute bacterial meningitis where meropenen is preferred.</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
- acute bacterial meningitis in neonates
- complicated intraabdominal infections (severe)
- high-risk febrile neutropenia</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="3">Complementary List – RESERVE GROUP</td></tr>
<tr><td colspan="2">aztreonam</td><td>Powder for injection: 1 g; 2 g in vial</td></tr>
<tr><td colspan="2">fifth generation cephalosporins
(with or without beta-lactamase inhibitor)
e.g, ceftaroline</td><td>Powder for injection: 400 mg; 600 mg (as fosamil) in vial</td></tr>
<tr><td colspan="2">fourth generation cephalosporins
(with or without beta-lactamase inhibitor)
e.g., cefepime</td><td>Powder for injection: 500 mg; 1g; 2g (as hydrochloride) in vial</td></tr>
</table>

<table>
<tr><td colspan="3">6.2.2 Other antibacterials</td></tr>
<tr><td rowspan="2">amikacin</td><td colspan="2">Injection: 250 mg (as sulfate)/mL in 2- mL vial</td></tr>
<tr><td>FIRST CHOICE
- pyelonephritis (severe)</td><td>SECOND CHOICE
- high-risk febrile neutropenia
- sepsis in neonates and children</td></tr>
<tr><td rowspan="2">azithromycin*
WATCH GROUP</td><td colspan="2">Capsule: 250 mg; 500 mg (anhydrous).
Oral liquid: 200 mg/5 mL.
* also listed for single-dose treatment of trachoma and yaws.</td></tr>
<tr><td>FIRST CHOICE
- cholera</td><td>SECOND CHOICE
- acute invasive bacterial diarrhoea / dysentery</td></tr>
<tr><td rowspan="2">chloramphenicol</td><td colspan="2">Capsule: 250 mg.
Oily suspension for injection*: 0.5 g (as sodium succinate)/ mL in 2- mL ampoule.
* Only for the presumptive treatment of epidemic meningitis in children older than 2 years.
Oral liquid: 150 mg (as palmitate)/5 mL.
Powder for injection: 1 g (sodium succinate) in vial.</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
- acute bacterial meningitis</td></tr>
<tr><td rowspan="2">ciprofloxacin
WATCH GROUP</td><td colspan="2">Oral liquid: 250 mg/5 mL (anhydrous) .
Solution for IV infusion: 2 mg/ mL (as hyclate) .
Tablet: 250 mg (as hydrochloride).</td></tr>
<tr><td>FIRST CHOICE
- acute invasive bacterial diarrhoea / dysentery
- low-risk febrile neutropenia
- pyelonephritis (mild to moderate)</td><td>SECOND CHOICE
- cholera
- complicated intraabdominal infections (mild to moderate)</td></tr>
<tr><td rowspan="2">clarithromycin*
WATCH GROUP</td><td colspan="2">Solid oral dosage form: 500 mg.
Powder for oral liquid: 125 mg/5 mL; 250 mg/5 mL
Powder for injection: 500 mg in vial
*erythromycin may be an alternative</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
- pharyngitis</td></tr>
</table>

<table>
<tr><td rowspan="2">clindamycin</td><td colspan="2">Capsule: 150 mg (as hydrochloride).
Injection: 150 mg (as phosphate)/ mL.
Oral liquid: 75 mg/5 mL (as palmitate) .</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
-bone and joint infections</td></tr>
<tr><td rowspan="2">doxycycline [a]</td><td colspan="2">Oral liquid: 25 mg/5 mL ; 50 mg/5 mL (anhydrous) .
Solid oral dosage form: 50 mg ; 100 mg (as hyclate).
Powder for injection: 100 mg in vial
[a] Use in children <8 years only for life-threatening infections when no alternative exists.</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
- cholera
-community acquired pneumonia (mild to moderate)</td></tr>
<tr><td rowspan="2">gentamicin</td><td colspan="2">Injection: 10 mg; 40 mg (as sulfate)/ mL in 2- mL vial.</td></tr>
<tr><td>FIRST CHOICE
- community acquired pneumonia (severe)
- complicated severe acute malnutrition
- sepsis in neonates and children</td><td>SECOND CHOICE</td></tr>
<tr><td rowspan="2">metronidazole</td><td colspan="2">Injection: 500 mg in 100- mL vial.
Oral liquid: 200 mg (as benzoate)/5 mL.
Tablet: 200 mg to 500 mg.</td></tr>
<tr><td>FIRST CHOICE
- C. difficile infection
- complicated intra-abdominal infections (mild to moderate)
- complicated intra-abdominal infections (severe)</td><td>SECOND CHOICE
- complicated intra-abdominal infections (mild to moderate)</td></tr>
<tr><td rowspan="2">nitrofurantoin</td><td colspan="2">Oral liquid: 25 mg/5 mL.
Tablet: 100 mg.</td></tr>
<tr><td>FIRST CHOICE
- lower urinary tract infections</td><td>SECOND CHOICE</td></tr>
</table>

sulfamethoxazole + trimethoprim*	**Injection:** 80 mg + 16 mg/ mL in 5- mL ampoule; 80 mg + 16 mg/ mL in 10- mL ampoule. **Oral liquid:** 200 mg + 40 mg/5 mL. **Tablet:** 100 mg + 20 mg; 400 mg + 80 mg *single agent trimethoprim may be an alternative for lower urinary tract infection.	
	FIRST CHOICE *- lower urinary tract infections*	**SECOND CHOICE** *- acute invasive bacterial diarrhoea / dysentery*
vancomycin WATCH GROUP	**Capsule:** 125 mg; 250 mg (as hydrochloride).	
		SECOND CHOICE *- C. difficile infection*
Complementary List		
vancomycin *WATCH GROUP*	***Powder for injection:*** *250 mg (as hydrochloride) in vial.*	
	FIRST CHOICE	**SECOND CHOICE** *-high-risk febrile neutropenia*
Complementary List – RESERVE GROUP		
daptomycin	***Powder for injection:*** *350 mg; 500 mg in vial*	
fosfomycin	***Powder for injection****: 2 g; 4 g (as sodium) in vial*	
oxazolindinones *e.g., linezolid*	***Injection for intravenous administration****: 2 mg/ mL in 300 mL bag.* ***Powder for oral liquid****: 100 mg/5 mL.* ***Tablet:*** *400 mg; 600 mg.*	
polymyxins *e.g., colistin*	***Powder for injection****: 1 million I.U. (as colistemethate sodium) in vial*	
tigecycline	***Powder for injection****: 50 mg in vial*	

6.2.3 Antileprosy medicines

Medicines used in the treatment of leprosy should never be used except in combination. Combination therapy is essential to prevent the emergence of drug resistance. Colour-coded blister packs (MDT blister packs) containing standard two-medicine (paucibacillary leprosy) or three-medicine (multibacillary leprosy) combinations for adult and childhood leprosy should be used. MDT blister packs can be supplied free of charge through WHO.

clofazimine	**Capsule:** 50 mg; 100 mg.
dapsone	**Tablet:** 25 mg; 50 mg; 100 mg.
rifampicin	**Solid oral dosage form:** 150 mg; 300 mg.

6.2.4 Antituberculosis medicines	
WHO recommends and endorses the use of fixed-dose combinations and the development of appropriate new fixed-dose combinations, including modified dosage forms, non-refrigerated products and paediatric dosage forms of assured pharmaceutical quality.	
ethambutol	**Oral liquid:** 25 mg/mL. **Tablet:** 100 mg; 400 mg (hydrochloride).
isoniazid	**Oral liquid:** 50 mg/5 mL. **Tablet:** 100 mg to 300 mg. **Tablet (scored):** 50 mg.
isoniazid + pyrazinamide + rifampicin	**Tablet (dispersible):** 50 mg + 150 mg + 75 mg.
isoniazid + rifampicin	**Tablet (dispersible):** 50 mg + 75 mg.
pyrazinamide	**Oral liquid:** 30 mg/mL. **Tablet:** 400 mg. **Tablet (dispersible):** 150 mg. **Tablet (scored):** 150 mg.
rifampicin	**Oral liquid:** 20 mg/mL. **Solid oral dosage form:** 150 mg; 300 mg.
rifapentine*	**Tablet:** 150 mg *For treatment of latent TB infection (LTBI) only
Complementary List	
Reserve second-line drugs for the treatment of multidrug-resistant tuberculosis (MDR-TB) should be used in specialized centres adhering to WHO standards for TB control.	
amikacin	***Powder for injection:*** *100 mg; 500 mg; 1 g (as sulfate) in vial.*
capreomycin	***Powder for injection:*** *1 g (as sulfate) in vial.*
clofazimine	***Capsule:*** *50 mg; 100 mg.*
cycloserine	***Solid oral dosage form:*** *250 mg.*
delamanid **a**	***Tablet:*** *50 mg.* **a** >6 years
*ethionamide**	***Tablet:*** *125 mg; 250 mg.* **Protionamide may be used as an alternative.*
kanamycin	***Powder for injection:*** *1 g (as sulfate) in vial.*
levofloxacin	***Tablet:*** *250 mg: 500 mg.*
linezolid	***Injection for intravenous administration:*** *2 mg/ mL in 300 mL bag* ***Powder for oral liquid****: 100 mg/5 mL,* ***Tablet:*** *400 mg; 600 mg*
moxifloxacin	***Tablet:*** *400 mg*

p-aminosalicylic acid	***Granules:*** *4 g in sachet.* ***Tablet:*** *500 mg.*
streptomycin	***Powder for injection:*** *1 g (as sulfate) in vial.*
6.3 Antifungal medicines	
amphotericin B	**Powder for injection:** 50 mg in vial (as sodium deoxycholate **or** liposomal complex).
fluconazole	**Capsule:** 50 mg. **Injection:** 2 mg/mL in vial. **Oral liquid:** 50 mg/5 mL.
flucytosine	**Capsule:** 250 mg. **Infusion:** 2.5 g in 250 mL.
griseofulvin	**Oral liquid:** 125 mg/5 mL. **Solid oral dosage form:** 125 mg; 250 mg.
itraconazole*	**Capsule:** 100 mg. **Oral liquid:** 10 mg/mL. *For treatment of chronic pulmonary aspergillosis, acute invasive aspergillosis, histoplasmosis, sporotrichosis, paracoccidiodomycosis, mycoses caused by *T. marneffei* and chromoblastomycosis; and prophylaxis of histoplasmosis and infections caused by *T. marneffei* in AIDS patients.
nystatin	**Lozenge:** 100 000 IU. **Oral liquid:** 50 mg/5 mL; 100 000 IU/mL. **Tablet:** 100 000 IU; 500 000 IU.
voriconazole*	**Tablet:** 50 mg; 200 mg. **Powder for injection:** 200 mg in vial. **Powder for oral liquid:** 40 mg/mL. * For treatment of chronic pulmonary aspergillosis and acute invasive aspergillosis.
Complementary List	
potassium iodide	***Saturated solution.***
6.4 Antiviral medicines	
6.4.1 Antiherpes medicines	
aciclovir	**Oral liquid:** 200 mg/5 mL. **Powder for injection:** 250 mg (as sodium salt) in vial. **Tablet:** 200 mg.

6.4.2 Antiretrovirals

Based on current evidence and experience of use, medicines in the following three classes of antiretrovirals are included as essential medicines for treatment and prevention of HIV (prevention of mother-to-child transmission and post-exposure prophylaxis). WHO emphasizes the importance of using these products in accordance with global and national guidelines. WHO recommends and endorses the use of fixed-dose combinations and the development of appropriate new fixed-dose combinations, including modified dosage forms, non-refrigerated products and paediatric dosage forms of assured pharmaceutical quality.

Scored tablets can be used in children and therefore can be considered for inclusion in the listing of tablets, provided that adequate quality products are available.

6.4.2.1 Nucleoside/Nucleotide reverse transcriptase inhibitors

abacavir (ABC)	**Tablet (dispersible, scored):** 60 mg (as sulfate).
lamivudine (3TC)	**Oral liquid:** 50 mg/5 mL. **Tablet:** 150 mg.
zidovudine (ZDV **or** AZT)	**Oral liquid:** 50 mg/5 mL. **Tablet (dispersible, scored):** 60 mg (as sulfate).

6.4.2.2 Non-nucleoside reverse transcriptase inhibitors

nevirapine (NVP)**a**	**Oral liquid:** 50 mg/5 mL. **Tablet:** 50 mg (dispersible). **a** > 6 weeks

6.4.2.3 Protease inhibitors

Selection of protease inhibitor(s) from the Model List will need to be determined by each country after consideration of international and national treatment guidelines and experience. Ritonavir is recommended for use in combination as a pharmacological booster, and not as an antiretroviral in its own right. All other protease inhibitors should be used in boosted forms (e.g. with ritonavir).

atazanavir **a**	**Solid oral dosage form:** 100 mg; (as sulfate). **a** >25 kg.
darunavir **a**	**Tablet:** 75 mg. **a** >3 years
lopinavir + ritonavir (LPV/r)	**Oral liquid:** 400 mg + 100 mg/5 mL. **Tablet (heat stable):** 100 mg + 25 mg. **Capsule containing oral pellets:** 40 mg + 10 mg.
ritonavir	**Oral liquid:** 400 mg/5 mL. **Tablet (heat stable):** 25 mg; 100 mg.

6.4.2.4 Integrase inhibitors

raltegravir*	**Tablet (chewable):** 25 mg; 100 mg. **Tablet:** 400 mg. *for use in second-line regimens in accordance with WHO treatment guidelines

FIXED-DOSE COMBINATIONS	
abacavir + lamivudine	**Tablet (dispersible, scored):** 60 mg (as sulfate) + 30 mg; 120 mg (as sulfate) + 60 mg.
lamivudine + nevirapine + zidovudine	**Tablet:** 30 mg + 50 mg + 60 mg.
lamivudine + zidovudine	**Tablet:** 30 mg + 60 mg.
6.4.2.5 Medicines for prevention of HIV-related opportunistic infections	
isoniazid + pyridoxine + sulfamethoxazole + trimethoprim	**Tablet (scored):** 300 mg + 25 mg + 800 mg + 160 mg
6.4.3 Other antivirals	
ribavirin*	**Injection for intravenous administration:** 800 mg and 1 g in 10-mL phosphate buffer solution. **Solid oral dosage form:** 200 mg; 400 mg; 600 mg. * For the treatment of viral haemorrhagic fevers only.
Complementary List	
*oseltamivir**	***Capsule:*** *30 mg; 45 mg; 75 mg (as phosphate).* ***Oral powder:*** *12 mg/ mL.* ** Severe illness due to confirmed or suspected influenza virus infection in critically ill hospitalized patients*
*valganciclovir**	***Powder for oral solution:*** *50 mg/mL* ***Tablet:*** *450 mg.* **For the treatment of cytomegalovirus retinitis (CMVr).*
6.4.4 Antihepatitis medicines	
6.4.4.1 Medicines for hepatitis B	
6.4.4.1.1 Nucleoside/Nucleotide reverse transcriptase inhibitors	
entecavir	**Oral liquid:** 0.05 mg/ mL **Tablet:** 0.5 mg; 1 mg
~~***6.4.4.2 Medicines for hepatitis C***~~	
6.5 Antiprotozoal medicines	
6.5.1 Antiamoebic and antigiardiasis medicines	
diloxanide **a**	**Tablet:** 500 mg (furoate). **a** >25 kg.
☐ metronidazole	**Injection:** 500 mg in 100-mL vial. **Oral liquid:** 200 mg (as benzoate)/5 mL. **Tablet:** 200 mg to 500 mg.
6.5.2 Antileishmaniasis medicines	

amphotericin B	**Powder for injection:** 50 mg in vial. As sodium deoxycholate **or** liposomal complex.
miltefosine	**Solid oral dosage form:** 10 mg; 50 mg.
paromomycin	**Solution for intramuscular injection:** 750 mg of paromomycin base (as the sulfate).
sodium stibogluconate **or** meglumine antimoniate	**Injection:** 100 mg/mL, 1 vial = 30 mL **or** 30%, equivalent to approximately 8.1% antimony (pentavalent) in 5-mL ampoule.
6.5.3 Antimalarial medicines	
6.5.3.1 For curative treatment	
Medicines for the treatment of *P. falciparum* malaria cases should be used in combination. The list currently recommends combinations according to treatment guidelines. WHO recognizes that not all of the fixed dose combinations (FDCs in the WHO treatment guidelines exist, and encourages their development and rigorous testing. WHO also encourages development and testing of rectal dosage formulations.	
amodiaquine*	**Tablet:** 153 mg **or** 200 mg (as hydrochloride). * To be used in combination with artesunate 50 mg.
artemether*	**Oily injection:** 80 mg/mL in 1-mL ampoule. * For use in the management of severe malaria.
artemether + lumefantrine*	**Tablet:** 20 mg + 120 mg. **Tablet (dispersible):** 20 mg + 120 mg. * Not recommended in the first trimester of pregnancy or in children below 5 kg.
artesunate*	**Injection:** ampoules, containing 60 mg anhydrous artesunic acid with a separate ampoule of 5% sodium bicarbonate solution. For use in the management of severe malaria. **Rectal dosage form:** 50 mg; 100 mg; 200 mg capsules (for pre-referral treatment of severe malaria only; patients should be taken to an appropriate health facility for follow-up care). **Tablet:** 50 mg. * To be used in combination with either amodiaquine, mefloquine **or** sulfadoxine + pyrimethamine.
artesunate + amodiaquine *	**Tablet:** 25 mg + 67.5 mg; 50 mg + 135 mg; 100 mg + 270 mg. * Other combinations that deliver the target doses required such as 153 mg **or** 200 mg (as hydrochloride) with 50 mg artesunate can be alternatives.
artesunate + mefloquine	**Tablet:** 25 mg + 55 mg; 100 mg + 220 mg.
artesunate + pyronaridine tetraphosphate **a**	**Tablet:** 60 mg + 180 mg **Granules:** 20 mg + 60 mg **a** > 5 kg

chloroquine*	**Oral liquid:** 50 mg (as phosphate **or** sulfate)/5 mL. **Tablet:** 100 mg; 150 mg (as phosphate **or** sulfate). * For use only for the treatment of *P.vivax* infection.
dihydroartemisinin + piperaquine phosphate **a**	**Tablet:** 20 mg + 160 mg; 40 mg + 320 mg **a** > 5 kg
doxycycline*	**Capsule:** 100 mg (as hydrochloride **or** hyclate). **Tablet (dispersible):** 100 mg (as monohydrate). * For use only in combination with quinine.
mefloquine*	**Tablet:** 250 mg (as hydrochloride). * To be used in combination with artesunate 50 mg.
primaquine*	**Tablet:** 7.5 mg; 15 mg (as diphosphate). * Only for use to achieve radical cure of *P.vivax* and *P.ovale* infections, given for 14 days.
quinine*	**Injection:** 300 mg quinine hydrochloride/mL in 2-mL ampoule. **Tablet:** 300 mg (quinine sulfate) **or** 300 mg (quinine bisulfate). * For use only in the management of severe malaria, and should be used in combination with doxycycline.
sulfadoxine + pyrimethamine*	**Tablet:** 500 mg + 25 mg. * Only in combination with artesunate 50 mg.
6.5.3.2 For prophylaxis	
chloroquine*	**Oral liquid:** 50 mg (as phosphate **or** sulfate)/5 mL. **Tablet:** 150 mg (as phosphate **or** sulfate). * For use only for the treatment of *P.vivax* infection.
doxycycline **a**	**Solid oral dosage form:** 100 mg (as hydrochloride **or** hyclate). **a** >8 years.
mefloquine **a**	**Tablet:** 250 mg (as hydrochloride). **a** >5 kg **or** >3 months.
proguanil*	**Tablet:** 100 mg (as hydrochloride). * For use only in combination with chloroquine.
6.5.4 Antipneumocystosis and antitoxoplasmosis medicines	
pyrimethamine	**Tablet:** 25 mg.
sulfadiazine	**Tablet:** 500 mg.

sulfamethoxazole + trimethoprim	**Injection:** 80 mg + 16 mg/mL in 5-mL ampoule; 80 mg + 16 mg/mL in 10-mL ampoule. **Oral liquid:** 200 mg + 40 mg/5 mL. **Tablet:** 100 mg + 20 mg; 400 mg + 80 mg.
6.5.5 Antitrypanosomal medicines	
6.5.5.1 African trypanosomiasis	
Medicines for the treatment of 1st stage African trypanosomiasis.	
pentamidine*	**Powder for injection:** 200 mg (as isetionate) in vial. * To be used for the treatment of *Trypanosoma brucei gambiense* infection.
suramin sodium*	**Powder for injection:** 1 g in vial. * To be used for the treatment of the initial phase of *Trypanosoma brucei rhodesiense* infection.
Medicines for the treatment of 2nd stage African trypanosomiasis	
eflornithine*	**Injection:** 200 mg (hydrochloride)/mL in 100-mL bottle. * To be used for the treatment of *Trypanosoma brucei gambiense* infection.
nifurtimox*	**Tablet:** 120 mg. * Only to be used in combination with eflornithine, for the treatment of *Trypanosoma brucei gambiense* infection.
Complementary List	
melarsoprol	***Injection:** 3.6% solution in 5-mL ampoule (180 mg of active compound).*
6.5.5.2 American trypanosomiasis	
benznidazole	**Tablet:** 12.5 mg; 100 mg. **Tablet (scored):** 50 mg.
nifurtimox	**Tablet:** 30 mg; 120 mg; 250 mg.
7. ANTIMIGRAINE MEDICINES	
7.1 For treatment of acute attack	
ibuprofen	**Tablet:** 200 mg; 400 mg.
paracetamol	**Oral liquid:** 120 mg/5 mL; 125 mg/5 mL. **Tablet:** 300 mg to 500 mg.
7.2 For prophylaxis	
propranolol	**Tablet:** 20 mg; 40 mg (hydrochloride).

8. ANTINEOPLASTICS AND IMMUNOSUPPRESSIVES	
8.1 Immunosuppressive medicines	
Complementary List	
azathioprine	***Powder for injection:*** *100 mg (as sodium salt) in vial.* ***Tablet (scored):*** *50 mg.*
ciclosporin	***Capsule:*** *25 mg.* ***Concentrate for injection:*** *50 mg/mL in 1-mL ampoule for organ transplantation.*
8.2 Cytotoxic and adjuvant medicines Medicines listed below should be used according to protocols for treatment of the diseases.	
Complementary List	
allopurinol	***Tablet:*** *100 mg; 300 mg.*
asparaginase	***Powder for injection:*** *10 000 IU in vial.* – *Acute lymphoblastic leukaemia.*
bleomycin	***Powder for injection:*** *15 mg (as sulfate) in vial.* – *Hodgkin lymphoma* – *Testicular germ cell tumours* – *Ovarian germ cell tumours*
calcium folinate	***Injection:*** *3 mg/ mL in 10- mL ampoule.* ***Tablet:*** *15 mg.* – *Osteosarcoma* – *Burkitt lymphoma*
carboplatin	***Injection:*** *50 mg/5 mL; 150 mg/15 mL; 450 mg/45 mL; 600 mg/60 mL.* – *Osteosarcoma* – *Retinoblastoma*
cisplatin	***Injection:*** *50 mg/50 mL; 100 mg/100 mL.* – *Osteosarcoma* – *Testicular germ cell tumours* – *Ovarian germ cell tumours*
cyclophosphamide	***Powder for injection:*** *500 mg in vial.* ***Tablet:*** *25 mg.* – *Rhabdomyosarcoma* – *Ewing sarcoma* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma* – *Hodgkin lymphoma*

cytarabine	***Powder for injection:*** *100 mg in vial.* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma.*
dacarbazine	***Powder for injection: 100 mg in vial.*** – *Hodgkin lymphoma*
dactinomycin	***Powder for injection:*** *500 micrograms in vial.* – *Rhabdomyosarcoma* – *Wilms tumour*
daunorubicin	***Powder for injection:*** *50 mg (hydrochloride) in vial.* – *Acute lymphoblastic leukaemia*
doxorubicin	***Powder for injection:*** *10 mg; 50 mg (hydrochloride) in vial.* – *Osteosarcoma* – *Ewing sarcoma* – *Acute lymphoblastic leukaemia* – *Wilms tumour* – *Burkitt lymphoma* – *Hodgkin lymphoma*
etoposide	***Capsule:*** *100 mg.* ***Injection:*** *20 mg/ mL in 5- mL ampoule.* – *Retinoblastoma* – *Ewing sarcoma* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma* – *Hodgkin lymphoma* – *Testicular germ cell tumours* – *Ovarian germ cell tumours*
filgrastim	***Injection:*** *120 micrograms/0.2 mL; 300 micrograms/0.5 mL; 480 micrograms/0.8 mL in pre-filled syringe 300 micrograms/mL in 1- mL vial, 480 mg/1.6 mL in 1.6- mL vial.* – *Primary prophylaxis in patients at high risk for developing febrile neutropenia associated with myelotoxic chemotherapy.* – *Secondary prophylaxis for patients who have experienced neutropenia following prior myelotoxic chemotherapy* – *To facilitate administration of dose dense chemotherapy regimens*
ifosfamide	***Powder for injection:*** *500 mg vial 1-g vial; 2-g vial.* – *Osteosarcoma* – *Rhabdomyosarcoma* – *Ewing sarcoma* – *Testicular germ cell tumours* – *Ovarian germ cell tumours*

mercaptopurine	***Tablet:*** *50 mg.* – *Acute lymphoblastic leukaemia*
mesna	***Injection:*** *100 mg/ mL in 4- mL and 10- mL ampoules.* ***Tablet:*** *400 mg; 600 mg.* – *Osteosarcoma* – *Rhabdomyosarcoma* – *Ewing sarcoma.* – *Testicular germ cell tumours* – *Ovarian germ cell tumours*
methotrexate	***Powder for injection:*** *50 mg (as sodium salt) in vial.* ***Tablet:*** *2.5 mg (as sodium salt).* – *Osteosarcoma* – *Acute lymphoblastic leukaemia*
paclitaxel	***Powder for injection:*** *6 mg/ mL.* – *Ovarian germ cell tumours*
tioguanine	***Solid oral dosage form:*** *40 mg.* – *Acute lymphoblastic leukaemia.*
vinblastine	***Powder for injection:*** *10 mg (sulfate) in vial.* – *Testicular germ cell tumours* – *Ovarian germ cell tumours* – *Hodgkin lymphoma*
vincristine	***Powder for injection:*** *1 mg; 5 mg (sulfate) in vial.* – *Retinoblastoma* – *Rhabdomyosarcoma* – *Ewing sarcoma* – *Acute lymphoblastic leukaemia* – *Wilms tumour* – *Burkitt lymphoma.* – *Hodgkin lymphoma*
8.3 Hormones and antihormones	
Complementary List	
dexamethasone	***Oral liquid****: 2 mg/5 mL* – *Acute lymphoblastic leukaemia*
hydrocortisone	***Powder for injection:*** *100 mg (as sodium succinate) in vial.* – *Acute lymphoblastic leukaemia.*

methylprednisolone ***[c]***	***Injection:*** *40 mg/ mL (as sodium succinate) in 1- mL single-dose vial and* *5- mL multi-dose vials; 80 mg/ mL (as sodium succinate) in 1- mL single-dose vial.* – *Acute lymphoblastic leukamia.*
☐ *prednisolone*	***Oral liquid:*** *5 mg/ mL* ***[c]****.* ***Tablet:*** *5 mg; 25 mg.* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma* – *Hodgkin lymphoma*
~~9. ANTIPARKINSONISM MEDICINES~~	
10. MEDICINES AFFECTING THE BLOOD	
10.1 Antianaemia medicines	
ferrous salt	**Oral liquid:** equivalent to 25 mg iron (as sulfate)/mL. **Tablet:** equivalent to 60 mg iron.
folic acid	**Tablet:** 1 mg; 5 mg.
hydroxocobalamin	**Injection:** 1 mg (as acetate, as hydrochloride **or** as sulfate) in 1-mL ampoule.
Complementary List	
☐ *erythropoiesis-stimulating agents**	***Injection: pre-filled syringe*** *1000IU/ 0.5 mL; 2000IU/ 0.5 mL; 3000IU/ 0.3 mL; 4000IU/ 0.4 mL; 5000IU/ 0.5 mL; 6000IU/ 0.6 mL; 8000IU/ 0.8mL; 10 000IU/ 1 mL; 20 000IU/ 0.5 mL; 40 000IU/ 1 mL* ** the square box applies to epoetin alfa, beta and theta, darbepoietin alfa, and their respective biosimilars*
10.2 Medicines affecting coagulation	
phytomenadione	**Injection:** 1 mg/mL; 10 mg/mL in 5-mL ampoule. **Tablet:** 10 mg.
Complementary List	
desmopressin	***Injection****: 4 micrograms/ mL (as acetate) in 1- mL ampoule.* ***Nasal spray:*** *10 micrograms (as acetate) per dose*
heparin sodium	***Injection:*** *1000 IU/mL; 5000 IU/mL in 1-mL ampoule.*
protamine sulfate	***Injection:*** *10 mg/mL in 5-mL ampoule.*
☐ *warfarin*	***Tablet:*** *0.5 mg; 1 mg; 2 mg; 5 mg (sodium salt).*

10.3 Other medicines for haemoglobinopathies	
Complementary list	
*deferoxamine**	***Powder for injection:*** *500 mg (mesilate) in vial.* ** Deferasirox oral form may be an alternative, depending on cost and availability.*
hydroxycarbamide	***Solid oral dosage form:*** *200 mg; 500 mg; 1 g.*
11. BLOOD PRODUCTS OF HUMAN ORIGIN AND PLASMA SUBSTITUTES	
11.1 Blood and blood components	
In accordance with the World Health Assembly resolution WHA63.12, WHO recognizes that achieving self-sufficiency, unless special circumstances preclude it, in the supply of safe blood components based on voluntary, non-remunerated blood donation, and the security of that supply are important national goals to prevent blood shortages and meet the transfusion requirements of the patient population. All preparations should comply with the WHO requirements.	
fresh–frozen plasma	
platelet	
red blood cells	
whole blood	
11.2 Plasma-derived medicines	
All human plasma-derived medicines should comply with the WHO requirements.	
11.2.1 Human immunoglobulins	
anti-rabies immunoglobulin	**Injection:** 150 IU/ mL in vial.
anti-tetanus immunoglobulin	**Injection:** 500 IU in vial.
Complementary List	
normal immunoglobulin	***Intramuscular administration:*** *16% protein solution.** ***Intravenous administration:*** *5%; 10% protein solution.*** ***Subcutaneous administration:*** *15%; 16% protein solution.** ** Indicated for primary immune deficiency.* ***Indicated for primary immune deficiency and Kawasaki disease.*
11.2.2 Blood coagulation factors	
Complementary List	
☐ coagulation factor VIII	***Powder for injection:*** *500 IU/vial.*
☐ coagulation factor IX	***Powder for injection:*** *500 IU/vial, 1000 IU/vial.*

11.3 Plasma substitutes	
☐ dextran 70*	**Injectable solution:** 6%. * Polygeline, injectable solution, 3.5% is considered as equivalent.
12. CARDIOVASCULAR MEDICINES	
~~**12.1 Antianginal medicines**~~	
~~**12.2 Antiarrhythmic medicines**~~	
12.3 Antihypertensive medicines	
☐ enalapril	**Tablet:** 2.5 mg; 5 mg (as hydrogen maleate).
12.4 Medicines used in heart failure	
digoxin	**Injection:** 250 micrograms/mL in 2-mL ampoule. **Oral liquid:** 50 micrograms/mL. **Tablet:** 62.5 micrograms; 250 micrograms.
furosemide	**Injection:** 10 mg/mL in 2-mL ampoule. **Oral liquid:** 20 mg/5 mL. **Tablet:** 40 mg.
Complementary List	
dopamine	***Injection:*** *40 mg (hydrochloride) in 5-mL vial.*
~~**12.5 Antithrombotic medicines**~~	
~~**12.6 Lipid-lowering agents**~~	
~~**12.7 Fixed-dose combinations of cardiovascular medicines**~~	
13. DERMATOLOGICAL MEDICINES (topical)	
13.1 Antifungal medicines	
☐ miconazole	**Cream or ointment:** 2% (nitrate).
terbinafine	**Cream:** 1% **or Ointment:** 1% terbinafine hydrochloride.
13.2 Anti-infective medicines	
mupirocin	**Cream (as mupirocin calcium):** 2%. **Ointment:** 2%.
potassium permanganate	**Aqueous solution:** 1:10 000.
silver sulfadiazine **a**	**Cream:** 1%. **a** >2 months.
13.3 Anti-inflammatory and antipruritic medicines	
☐ betamethasone **a**	**Cream or ointment:** 0.1% (as valerate). **a** Hydrocortisone preferred in neonates.
calamine	**Lotion.**
hydrocortisone	**Cream or ointment:** 1% (acetate).

13.4 Medicines affecting skin differentiation and proliferation	
benzoyl peroxide	**Cream or lotion:** 5%.
coal tar	**Solution:** 5%.
☐ podophyllum resin	**Solution:** 10% to 25%.
salicylic acid	**Solution:** 5%.
urea	**Cream or ointment:** 5%; 10%.
13.5 Scabicides and pediculicides	
☐ benzyl benzoate **a**	**Lotion:** 25%. **a** >2 years.
permethrin	**Cream:** 5%. **Lotion:** 1%.
14. DIAGNOSTIC AGENTS	
14.1 Ophthalmic medicines	
fluorescein	**Eye drops:** 1% (sodium salt).
☐ tropicamide	**Eye drops:** 0.5%.
14.2 Radiocontrast media	
Complementary List	
barium sulfate	***Aqueous suspension.***
15. DISINFECTANTS AND ANTISEPTICS	
15.1 Antiseptics	
☐ chlorhexidine	**Solution:** 5% (digluconate). **Gel:** 4%.
☐ ethanol	**Solution:** 70% (denatured).
☐ povidone iodine	**Solution:** 10% (equivalent to 1% available iodine).
15.2 Disinfectants	
alcohol based hand rub	**Solution** containing ethanol 80% volume /volume **Solution** containing isopropyl alcohol 75% volume/volume
☐ chlorine base compound	**Powder:** (0.1% available chlorine) for solution.
☐ chloroxylenol	**Solution:** 4.8%.
glutaral	**Solution:** 2%.

16. DIURETICS	
furosemide	**Injection:** 10 mg/mL in 2-mL ampoule. **Oral liquid:** 20 mg/5 mL. **Tablet:** 10 mg; 20 mg; 40 mg.
Complementary List	
☐ *hydrochlorothiazide*	***Tablet (scored):*** *25 mg.*
mannitol	***Injectable solution:*** *10%; 20%.*
spironolactone	***Oral liquid:*** *5 mg/5 mL; 10 mg/5 mL; 25 mg/5 mL.* ***Tablet:*** *25 mg.*
17. GASTROINTESTINAL MEDICINES	
Complementary List	
☐ *pancreatic enzymes*	*Age-appropriate formulations and doses including lipase, protease and amylase.*
17.1 Antiulcer medicines	
☐ omeprazole	**Powder for oral liquid:** 20-mg; 40-mg sachets. **Solid oral dosage form:** 10 mg; 20 mg; 40 mg.
☐ ranitidine	**Injection:** 25 mg/mL (as hydrochloride) in 2-mL ampoule. **Oral liquid:** 75 mg/5 mL (as hydrochloride). **Tablet:** 150 mg (as hydrochloride).
17.2 Antiemetic medicines	
dexamethasone	**Injection:** 4 mg/mL in 1-mL ampoule (as disodium phosphate salt). **Oral liquid:** 0.5 mg/5 mL; 2 mg/5 mL. **Solid oral dosage form:** 0.5 mg; 0.75 mg; 1.5 mg; 4 mg.
metoclopramide **a**	**Injection:** 5 mg (hydrochloride)/mL in 2-mL ampoule. **Oral liquid:** 5 mg/5 mL. **Tablet:** 10 mg (hydrochloride). **a** Not in neonates.
ondansetron **a**	**Injection:** 2 mg base/mL in 2-mL ampoule (as hydrochloride). **Oral liquid:** 4 mg base/5 mL. **Solid oral dosage form:** Eq 4 mg base; Eq 8 mg base. **a** >1 month.
~~**17.3 Anti-inflammatory medicines**~~	
17.4 Laxatives	
17.5 Medicines used in diarrhoea	

17.5.1 Oral rehydration	
oral rehydration salts	**Powder for dilution** in 200 mL; 500 mL; 1 L. glucose: 75 mEq sodium: 75 mEq **or** mmol/L chloride: 65 mEq **or** mmol/L potassium: 20 mEq **or** mmol/L citrate: 10 mmol/L osmolarity: 245 mOsm/L glucose: 13.5 g/L sodium chloride: 2.6 g/L potassium chloride: 1.5 g/L trisodium citrate dihydrate*: 2.9 g/L * trisodium citrate dihydrate may be replaced by sodium hydrogen carbonate (sodium bicarbonate) 2.5 g/L. However, as the stability of this latter formulation is very poor under tropical conditions, it is recommended only when manufactured for immediate use.
17.5.2 Medicines for diarrhoea	
zinc sulfate*	**Solid oral dosage form:** 20 mg. **[c]**. * In acute diarrhoea, zinc sulfate should be used as an adjunct to oral rehydration salts.
18. HORMONES, OTHER ENDOCRINE MEDICINES AND CONTRACEPTIVES	
18.1 Adrenal hormones and synthetic substitutes	
fludrocortisone	**Tablet:** 100 micrograms (acetate).
hydrocortisone	**Tablet:** 5 mg; 10 mg; 20 mg.
~~***18.2 Androgens***~~	
~~***18.3 Contraceptives***~~	
~~***18.3.1 Oral hormonal contraceptives***~~	
~~***18.3.2 Injectable hormonal contraceptives***~~	
~~***18.3.3 Intrauterine devices***~~	
~~***18.3.4 Barrier methods***~~	
~~***18.3.5 Implantable contraceptives***~~	
~~***18.4 Estrogens***~~	
18.5 Insulins and other medicines used for diabetes	
glucagon	**Injection:** 1 mg/mL.
insulin injection (soluble)	**Injection:** 100 IU/mL in 10-mL vial.
intermediate-acting insulin	**Injection:** 100 IU/mL in 10-mL vial (as compound insulin zinc suspension **or** isophane insulin).
Complementary List	
metformin	***Tablet:** 500 mg (hydrochloride).*

~~**18.6 Ovulation inducers**~~	
~~**18.7 Progestogens**~~	
18.8 Thyroid hormones and antithyroid medicines	
levothyroxine	**Tablet:** 25 micrograms; 50 micrograms; 100 micrograms (sodium salt).
Complementary List	
Lugol's solution	***Oral liquid:*** *about 130 mg total iodine/mL.*
potassium iodide	***Tablet:*** *60 mg.*
propylthiouracil	***Tablet:*** *50 mg.*
19. IMMUNOLOGICALS	
19.1 Diagnostic agents	
All tuberculins should comply with the WHO requirements for tuberculins.	
tuberculin, purified protein derivative (PPD)	**Injection.**
19.2 Sera and immunoglobulins	
All plasma fractions should comply with the WHO requirements.	
Anti-venom immunoglobulin*	**Injection.** * Exact type to be defined locally.
diphtheria antitoxin	**Injection:** 10 000 IU; 20 000 IU in vial.

19.3 Vaccines	

WHO immunization policy recommendations are published in vaccine position papers on the basis of recommendations made by the Strategic Advisory Group of Experts on Immunization (SAGE).

WHO vaccine position papers are updated three to four times per year. The list below details the vaccines for which there is a recommendation from SAGE and a corresponding WHO position paper as at **10 February 2017**. The most recent versions of the WHO position papers, reflecting the current evidence related to a specific vaccine and the related recommendations, can be accessed at any time on the WHO website at:

http://www.who.int/immunization/documents/positionpapers/en/index.html.

Vaccine recommendations may be universal or conditional (e.g., in certain regions, in some high-risk populations or as part of immunization programmes with certain characteristics). Details are available in the relevant position papers, and in the Summary Tables of WHO Routine Immunization Recommendations available on the WHO website at:

http://www.who.int/immunization/policy/immunization_tables/en/index.html.

Selection of vaccines from the Model List will need to be determined by each country after consideration of international recommendations, epidemiology and national priorities.

All vaccines should comply with the WHO requirements for biological substances.

WHO noted the need for vaccines used in children to be polyvalent.

Recommendations for all	
BCG vaccine	
diphtheria vaccine	
Haemophilus influenzae type b vaccine	
hepatitis B vaccine	
HPV vaccine	
measles vaccine	
pertussis vaccine	
pneumococcal vaccine	
poliomyelitis vaccine	
rotavirus vaccine	
rubella vaccine	
tetanus vaccine	
Recommendations for certain regions	
Japanese encephalitis vaccine	
yellow fever vaccine	
tick-borne encephalitis vaccine	
Recommendations for some high-risk populations	
cholera vaccine	

hepatitis A vaccine	
meningococcal meningitis vaccine	
rabies vaccine	
typhoid vaccine	
Recommendations for immunization programmes with certain characteristics	
influenza vaccine (seasonal)	
mumps vaccine	
varicella vaccine	

20. MUSCLE RELAXANTS (PERIPHERALLY-ACTING) AND CHOLINESTERASE INHIBITORS	
neostigmine	**Injection:** 500 micrograms in 1-mL ampoule; 2.5 mg (metilsulfate) in 1-mL ampoule. **Tablet:** 15 mg (bromide).
suxamethonium	**Injection:** 50 mg (chloride)/mL in 2-mL ampoule. **Powder for injection:** (chloride), in vial.
☐ vecuronium	**Powder for injection:** 10 mg (bromide) in vial.
Complementary List	
pyridostigmine	***Injection:*** *1 mg in 1-mL ampoule.* ***Tablet:*** *60 mg (bromide).*
21. OPHTHALMOLOGICAL PREPARATIONS	
21.1 Anti-infective agents	
aciclovir	**Ointment:** 3% W/W.
azithromycin	**Solution (eye drops):** 1.5%
erythromycin*	**Ointment:** 0.5% **Infections due to Chlamydia trachomatis or Neisseria gonorrhoeae.*
☐ gentamicin	**Solution (eye drops):** 0.3% (sulfate).
natamycin	**Suspension: (eye drops):** 5%
☐ ofloxacin	**Solution (eye drops):** 0.3%.
☐ tetracycline	**Eye ointment:** 1% (hydrochloride).
21.2 Anti-inflammatory agents	
☐ prednisolone	**Solution (eye drops):** 0.5% (sodium phosphate).
21.3 Local anaesthetics	
☐ tetracaine **a**	**Solution (eye drops):** 0.5% (hydrochloride). **a** Not in preterm neonates.

~~**21.4 Miotics and antiglaucoma medicines**~~	
21.5 Mydriatics	
atropine* **a**	**Solution (eye drops):** 0.1%; 0.5%; 1% (sulfate). * **Or** homatropine (hydrobromide) **or** cyclopentolate (hydrochloride). **a** >3 months.
Complementary List	
epinephrine (adrenaline)	***Solution (eye drops):*** *2% (as hydrochloride).*
~~**22. OXYTOCICS AND ANTIOXYTOCICS**~~	
~~**22.1 Oxytocics**~~	
~~**22.2 Antioxytocics (tocolytics)**~~	
23. PERITONEAL DIALYSIS SOLUTION	
Complementary List	
intraperitoneal dialysis solution (of appropriate composition)	***Parenteral solution.***
24. MEDICINES FOR MENTAL AND BEHAVIOURAL DISORDERS	
24.1 Medicines used in psychotic disorders	
Complementary List	
chlorpromazine	***Injection:*** *25 mg (hydrochloride)/mL in 2-mL ampoule.* ***Oral liquid:*** *25 mg (hydrochloride)/5 mL.* ***Tablet:*** *10 mg; 25 mg; 50 mg; 100 mg (hydrochloride).*
haloperidol	***Injection:*** *5 mg in 1-mL ampoule.* ***Oral liquid:*** *2 mg/mL.* ***Solid oral dosage form:*** *0.5 mg; 2 mg; 5 mg.*
24.2 Medicines used in mood disorders	
24.2.1 Medicines used in depressive disorders	
Complementary List	
fluoxetine **a**	***Solid oral dosage form:*** *20 mg (as hydrochloride).* **a** >8 years.
24.2.2 Medicines used in bipolar disorders	
24.3 Medicines for anxiety disorders	
24.4 Medicines used for obsessive compulsive disorders	
24.5 Medicines for disorders due to psychoactive substance use	
25. MEDICINES ACTING ON THE RESPIRATORY TRACT	
25.1 Antiasthmatic medicines	

☐ budesonide	**Inhalation (aerosol):** 100 micrograms per dose; 200 micrograms per dose.
epinephrine (adrenaline)	**Injection:** 1 mg (as hydrochloride **or** hydrogen tartrate) in 1-mL ampoule.
☐ salbutamol	**Injection:** 50 micrograms (as sulfate)/mL in 5-mL ampoule. **Metered dose inhaler (aerosol):** 100 micrograms (as sulfate) per dose. **Respirator solution for use in nebulizers:** 5 mg (as sulfate)/mL.
26. SOLUTIONS CORRECTING WATER, ELECTROLYTE AND ACID–BASE DISTURBANCES	
26.1 Oral	
oral rehydration salts	See section 17.5.1.
potassium chloride	**Powder for solution.**
26.2 Parenteral	
glucose	**Injectable solution:** 5% (isotonic); 10% (hypertonic); 50% (hypertonic).
glucose with sodium chloride	**Injectable solution:** 5% glucose, 0.9% sodium chloride (equivalent to Na+ 150 mmol/L and Cl- 150 mmol/L); 5% glucose, 0.45% sodium chloride (equivalent to Na+ 75 mmol/L and Cl- 75 mmol/L).
potassium chloride	**Solution for dilution:** 7.5% (equivalent to K+ 1 mmol/mL and Cl- 1 mmol/mL); 15% (equivalent to K+ 2 mmol/mL and Cl- 2 mmol/mL).
sodium chloride	**Injectable solution:** 0.9% isotonic (equivalent to Na+ 154 mmol/L, Cl- 154 mmol/L).
sodium hydrogen carbonate	**Injectable solution:** 1.4% isotonic (equivalent to Na+167 mmol/L, HCO_3^- 167 mmol/L). **Solution:** 8.4% in 10-mL ampoule (equivalent to Na+ 1000 mmol/L, HCO_3^- 1000 mmol/L).
☐ sodium lactate, compound solution	**Injectable solution.**
26.3 Miscellaneous	
water for injection	2-mL; 5-mL; 10-mL ampoules.
27. VITAMINS AND MINERALS	
ascorbic acid	**Tablet:** 50 mg.
colecalciferol*	**Oral liquid:** 400 IU/mL. **Solid oral dosage form:** 400 IU; 1000 IU. * Ergocalciferol can be used as an alternative.

iodine	**Capsule:** 200 mg. **Iodized oil:** 1 mL (480 mg iodine); 0.5 mL (240 mg iodine) in ampoule (oral **or** injectable); 0.57 mL (308 mg iodine) in dispenser bottle.
pyridoxine	**Tablet:** 25 mg (hydrochloride).
retinol	**Capsule:** 100 000 IU; 200 000 IU (as palmitate). **Oral oily solution:** 100 000 IU (as palmitate)/mL in multidose dispenser. **Tablet (sugar-coated):** 10 000 IU (as palmitate). **Water-miscible injection:** 100 000 IU (as palmitate) in 2-mL ampoule.
riboflavin	**Tablet:** 5 mg.
sodium fluoride	In any appropriate topical formulation.
thiamine	**Tablet:** 50 mg (hydrochloride).
Complementary List	
calcium gluconate	***Injection:*** *100 mg/mL in 10-mL ampoule.*
28. EAR, NOSE AND THROAT MEDICINES	
acetic acid	**Topical:** 2%, in alcohol.
☐ budesonide	**Nasal spray:** 100 micrograms per dose.
☐ ciprofloxacin	**Topical:** 0.3% drops (as hydrochloride).
☐ xylometazoline **a**	**Nasal spray:** 0.05%. **a** Not in children less than 3 months.
29. SPECIFIC MEDICINES FOR NEONATAL CARE	
29.1 Medicines administered to the neonate	
caffeine citrate	**Injection:** 20 mg/mL (equivalent to 10 mg caffeine base/mL). **Oral liquid:** 20 mg/mL (equivalent to 10 mg caffeine base/mL).
chlorhexidine	**Solution or gel:** 7.1% (digluconate) delivering 4% chlorhexidine (for umbilical cord care).
Complementary List	
☐ *ibuprofen*	***Solution for injection:*** 5 mg/mL.
☐ *prostaglandin E*	***Solution for injection:*** ***Prostaglandin E1:*** 0.5 mg/mL in alcohol. ***Prostaglandin E2:*** 1 mg/mL.
surfactant	***Suspension for intratracheal instillation:*** *25 mg/mL* **or** *80 mg/mL.*
30. MEDICINES FOR DISEASES OF JOINTS	

~~30.1 Medicines used to treat gout~~	
30.2 Disease-modifying agents used in rheumatoid disorders (DMARDs)	
Complementary List	
hydroxychloroquine	***Solid oral dosage form:*** *200 mg (as sulfate).*
methotrexate	***Tablet:*** *2.5 mg (as sodium salt).*
30.3 Juvenile joint diseases	
acetylsalicylic acid (acute or chronic use)*	***Suppository: 50 mg to 150 mg.*** ***Tablet: 100 mg to 500 mg.*** **** For use for rheumatic fever, juvenile arthritis, Kawasaki disease.***

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