World Health Organization Model List of Essential Medicines

22nd List
(2021)

World Health Organization

WHO/MHP/HPS/EML/2021.02

WHO Model List of Essential Medicines – 22nd List (2021)

Explanatory notes

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.

Where the **[c]** symbol is placed next to an individual medicine or strength of medicine on the core list it signifies that there is a specific indication for restricting its use to children.

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.

Where the ***[c]*** symbol is placed next to an individual medicine or strength of medicine on the complementary list it signifies that the medicine(s) require(s) specialist diagnostic or monitoring facilities, and/or specialist medical care, and/or specialist training for their use in children.

The **square box symbol (□)** is intended to indicate therapeutic alternatives to the listed medicine that may be considered for selection in national essential medicines lists. Alternatives may be individual medicines, or multiple medicines within a pharmacological class or chemical subgroup, defined at the 4th level of the Anatomical Therapeutic Chemical (ATC) classification, which have similar clinical effectiveness and safety. The listed medicine should be the example of the class or subgroup 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. Not all square box listings are applicable to medicine selection for children. A square box is not used to indicate alternative generic brands of the same small molecule medicines, nor alternative biosimilars of biological medicines. However, the selection and use of quality-assured generics and biosimilars of essential medicines at country level is recommended.

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 **a** symbol indicates that there is an age or weight restriction on use of the medicine; details for each medicine can be found in Table 1.1.

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 website https://www.who.int/teams/health-product-and-policy-standards/standards-and-specifications/norms-and-standards-for-pharmaceuticals/guidelines/quality-assurance

Medicines and dosage forms are listed in alphabetical order within each section and the order of listing does not imply 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.

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.* https://www.who.int/teams/health-product-and-policy-standards/standards-and-specifications/norms-and-standards-for-pharmaceuticals/pharmacopoeia.

WHO Model List of Essential Medicines – 22nd List (2021)

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/mL (as hydrochloride) in 10 mL vial.
☐ propofol Therapeutic alternatives: - thiopental	**Injection:** 10 mg/mL; 20 mg/mL.
1.2 Local anaesthetics	
☐ bupivacaine Therapeutic alternatives to be reviewed (2023)	**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 Therapeutic alternatives to be reviewed (2023)	**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.
Complementary List	
ephedrine	***Injection:** 30 mg/mL (hydrochloride) in 1 mL ampoule.* *(For use in spinal anaesthesia during delivery, to prevent hypotension).*
1.3 Preoperative medication and sedation for short-term procedures	
atropine	**Injection:** 1 mg (sulfate) in 1 mL ampoule.
☐ midazolam Therapeutic alternatives to be reviewed (2023)	**Injection:** 1 mg/mL. **Oral liquid:** 2 mg/mL **[c]**. **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)	
acetylsalicylic acid	Suppository: 50 mg to 150 mg. Tablet: 100 mg to 500 mg.
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	
codeine	Tablet: 30 mg (phosphate).
fentanyl*	Transdermal patch: 12 micrograms/hr; 25 micrograms/hr; 50 micrograms/hr; 75 micrograms/hr; 100 micrograms/hr *For the management of cancer pain
☐ morphine Therapeutic alternatives: - hydrormorphone - oxycodone	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: Tablet (slow release): 10 mg to 200mg (morphine hydrochloride or morphine sulfate). Tablet (immediate release): 10 mg (morphine sulfate).
Complementary list	
*methadone**	*Tablet: 5 mg; 10 mg (hydrochloride)* *Oral liquid: 5 mg/5 mL; 10 mg/5 mL (hydrochloride)* *Concentrate for oral liquid: 5 mg/mL; 10 mg/mL (hydrochloride)* **For the management of cancer pain.*

2.3 Medicines for other common symptoms in palliative care	
amitriptyline	**Tablet:** 10 mg; 25 mg; 75 mg.
cyclizine **[c]**	**Injection:** 50 mg/mL. **Tablet:** 50 mg.
dexamethasone	**Injection:** 4 mg/mL (as disodium phosphate salt) in 1 mL ampoule. **Oral liquid**: 2 mg/5 mL. **Tablet:** 2 mg **[c]**; 4 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.
haloperidol	**Injection:** 5 mg in 1 mL ampoule. **Oral liquid:** 2 mg/mL. **Solid oral dosage form:** 0.5 mg; 2mg; 5 mg.
hyoscine butylbromide	**Injection:** 20 mg/mL.
hyoscine hydrobromide **[c]**	**Injection:** 400 micrograms/mL; 600 micrograms/mL. **Transdermal patches:** 1 mg/72 hours.
lactulose **[c]**	**Oral liquid:** 3.1 to 3.7 g/5 mL.
loperamide	**Solid oral dosage form:** 2 mg.
metoclopramide	**Injection:** 5 mg/mL (hydrochloride) in 2 mL ampoule. **Oral liquid:** 5 mg/5 mL. **Solid oral form:** 10 mg (hydrochloride).
midazolam	**Injection:** 1 mg/mL; 5 mg/mL. **Oral liquid:** 2mg/mL **[c].** **Solid oral dosage form:** 7.5 mg; 15 mg.
☐ ondansetron a Therapeutic alternatives: - dolasetron - granisetron - palonosetron - tropisetron	**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 (as disodium phosphate salt) in 1 mL ampoule.
epinephrine (adrenaline)	**Injection:** 1 mg/mL (as hydrochloride or hydrogen tartrate) in 1 mL ampoule.
hydrocortisone	**Powder for injection:** 100 mg (as sodium succinate) in vial.
□ loratadine* Therapeutic alternatives: - cetirizine - fexofenadine	**Oral liquid:** 1 mg/mL. **Tablet:** 10 mg. **There may be a role for sedating antihistamines for limited indications (EMLc).*
□ prednisolone Therapeutic alternatives: - prednisone	**Oral liquid:** 5 mg/mL **[c]**. **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% **[c]**; 20% **[c]**.
atropine	**Injection:** 1 mg (sulfate) in 1 mL ampoule.
calcium gluconate	**Injection:** 100 mg/mL in 10 mL ampoule.
methylthioninium chloride (methylene blue)	**Injection:** 10 mg/mL in 10 mL ampoule.
naloxone	**Injection:** 400 micrograms (hydrochloride) in 1 mL ampoule.
penicillamine	**Solid oral dosage form:** 250 mg.
potassium ferric hexacyano-ferrate(II) -$2H_2O$ (Prussian blue)	**Powder for oral administration.**
sodium nitrite	**Injection:** 30 mg/mL in 10 mL ampoule.
sodium thiosulfate	**Injection:** 250 mg/mL in 50 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. *For use as adjunctive therapy for treatment-resistant partial or generalized seizures.
☐ lorazepam Therapeutic alternatives: - diazepam (injection) - midazolam (injection)	**Injection:** 2 mg/mL in 1 mL ampoule; 4 mg/mL in 1 mL ampoule.
magnesium sulfate*	**Injection:** 0.5 g/mL in 2 mL ampoule (equivalent to 1 g in 2 mL; 50% weight/volume); 0.5 g/mL in 10 mL ampoule (equivalent to 5 g in 10 mL; 50% weight/volume). *For use in eclampsia and severe pre-eclampsia and not for other convulsant disorders.
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 (sodium) in 5 mL vial. **Oral liquid:** 25 mg to 30 mg/5 mL.* **Solid oral dosage form:** 25 mg; 50 mg; 100 mg (sodium). **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)* **Avoid use in pregnancy and in women and girls of child-bearing potential, unless alternative treatments are ineffective or not tolerated because of the high risk of birth defects and developmental disorders in children exposed to valproate in the womb.*	**Oral liquid:** 200 mg/5 mL. **Tablet (crushable):** 100 mg. **Tablet (enteric-coated):** 200 mg; 500 mg.

Complementary List	
ethosuximide	***Capsule:*** *250 mg.* ***Oral liquid:*** *250 mg/5 mL.*
*valproic acid (sodium valproate)** **Avoid use in pregnancy and in women and girls of child-bearing potential, unless alternative treatments are ineffective or not tolerated because of the high risk of birth defects and developmental disorders in children exposed to valproate in the womb.*	***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/mL (as embonate or pamoate). **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** **For use when praziquantel treatment fails.*	***Capsule:*** *250 mg.* ***Oral liquid:*** *250 mg/5 mL.*
6.1.4 Cysticidal medicines	
Complementary List	
albendazole	***Tablet (chewable):*** *400 mg.*
mebendazole	***Tablet (chewable):*** *500 mg.*
praziquantel	***Tablet:*** *500 mg; 600 mg.*

6.2 Antibacterials

To assist in the development of tools for antibiotic stewardship at local, national and global levels and to reduce antimicrobial resistance, the Access, Watch, Reserve (AWaRe) classification of antibiotics was developed – where antibiotics are classified into different groups to emphasize the importance of their appropriate use.

ACCESS GROUP ANTIBIOTICS

This group includes antibiotics that have activity against a wide range of commonly encountered susceptible pathogens while also showing lower resistance potential than antibiotics in the other groups. Selected Access group antibiotics are recommended as essential first or second choice empiric treatment options for infectious syndromes reviewed by the EML Expert Committee and are listed as individual medicines on the Model Lists to improve access and promote appropriate use. They are essential antibiotics that should be widely available, affordable and quality assured.

WATCH GROUP ANTIBIOTICS

This group includes antibiotic classes that have higher resistance potential and includes most of the highest priority agents among the Critically Important Antimicrobials for Human Medicine and/or antibiotics that are at relatively high risk of selection of bacterial resistance. These medicines should be prioritized as key targets of stewardship programs and monitoring. Selected Watch group antibiotics are recommended as essential first or second choice empiric treatment options for a limited number of specific infectious syndromes and are listed as individual medicines on the Model Lists.

RESERVE GROUP ANTIBIOTICS

This group includes antibiotics and antibiotic classes that should be reserved for treatment of confirmed or suspected infections due to multi-drug-resistant organisms. Reserve group antibiotics should be treated as “last resort” options. Selected Reserve group antibiotics are listed as individual medicines on the Model Lists when they have a favourable risk-benefit profile and proven activity against “Critical Priority” or “High Priority” pathogens identified by the WHO Priority Pathogens List, notably carbapenem resistant *Enterobacteriaceae*. These antibiotics should be accessible, but their use should be tailored to highly specific patients and settings, when all alternatives have failed or are not suitable. 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.

<table>
<tr><td colspan="3">6.2.1 Access group antibiotics</td></tr>
<tr><td rowspan="2">amikacin</td><td colspan="2">Injection: 250 mg/mL (as sulfate) in 2 mL vial.</td></tr>
<tr><td>FIRST CHOICE

– High-risk febrile neutropenia
– Pyelonephritis or prostatitis (severe)</td><td>SECOND CHOICE

– Sepsis in neonates and children [c]</td></tr>
<tr><td rowspan="2">amoxicillin</td><td colspan="2">Powder for injection: 250 mg; 500 mg; 1 g (as sodium) in vial.

Powder for oral liquid: 125 mg/5 mL; 250 mg/5 mL (as trihydrate) [c].

Solid oral dosage form: 250 mg; 500 mg; 1g (as trihydrate).</td></tr>
<tr><td>FIRST CHOICE

– Community acquired pneumonia (mild to moderate)
– Community acquired pneumonia (severe) [c]
– Complicated severe acute malnutrition [c]
– Exacerbations of COPD
– Otitis media
– Pharyngitis
– Progressive apical dental abscess
– Sepsis in neonates and children [c]
– Sinusitis
– Uncomplicated severe acute malnutrition [c]</td><td>SECOND CHOICE

– Acute bacterial meningitis</td></tr>
<tr><td rowspan="2">amoxicillin + clavulanic acid</td><td colspan="2">Powder for injection: 500 mg (as sodium) + 100 mg (as potassium salt); 1000 mg (as sodium) + 200 mg (as potassium salt) in vial.

Powder for oral liquid: 125 mg (as trihydrate)+ 31.25 mg (as potassium salt)/5 mL; 250 mg (as trihydrate) + 62.5 mg (as potassium salt)/5mL [c].

Tablet: 500 mg (as trihydrate) + 125 mg (as potassium salt); 875 mg (as trihydrate) + 125 mg (as potassium salt).</td></tr>
<tr><td>FIRST CHOICE

– Community acquired pneumonia (severe) [c]
– Complicated intraabdominal infections (mild to moderate)
– Exacerbations of COPD
– Hospital acquired pneumonia
– Low-risk febrile neutropenia
– Lower urinary tract infections
– Sinusitis
– Skin and soft tissue infections</td><td>SECOND CHOICE

– Bone and joint infections
– Community-acquired pneumonia (mild to moderate)
– Community acquired pneumonia (severe)
– Otitis media
– Surgical prophylaxis</td></tr>
</table>

<table>
<tr><td rowspan="3">ampicillin</td><td colspan="2">Powder for injection: 500 mg; 1 g (as sodium) in vial.</td></tr>
<tr><td>FIRST CHOICE
– Community acquired pneumonia (severe) [c]
– Complicated intraabdominal infections [c]
– Complicated severe acute malnutrition [c]
– Sepsis in neonates and children [c]</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: 1.2 million IU (≈ 900 mg) in vial [c]; 2.4 million IU (≈ 1.8 g) in vial.</td></tr>
<tr><td>FIRST CHOICE
– Syphilis</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) [c]
– Complicated severe acute malnutrition [c]
– Sepsis in neonates and children [c]
– Syphilis</td><td>SECOND CHOICE
– Acute bacterial meningitis [c]</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">cefalexin</td><td colspan="2">Powder for oral liquid: 125 mg/5 mL; 250 mg/5 mL (anhydrous).
Solid oral dosage form: 250 mg; 500 mg (as monohydrate).</td></tr>
<tr><td>FIRST CHOICE
– Skin and soft tissue infections</td><td>SECOND CHOICE
– Exacerbations of COPD
– Pharyngitis</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.
[a] > 1 month.</td></tr>
<tr><td>FIRST CHOICE
– Surgical prophylaxis</td><td>SECOND CHOICE
– Bone and joint infections</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">chloramphenicol</td><td colspan="2">Capsule: 250 mg.
Oily suspension for injection*: 0.5 g/mL (as sodium succinate) in 2 mL ampoule.
*Only for the presumptive treatment of epidemic meningitis in children older than 2 years and in adults.
Oral liquid: 150 mg/5 mL (as palmitate).
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 colspan="2"></td></tr>
</table>

<table>
<tr><td rowspan="3">clindamycin</td><td colspan="2">Capsule: 150 mg (as hydrochloride).

Injection: 150 mg/mL (as phosphate); 600 mg/4 mL (as phosphate); 900 mg/6 mL (as phosphate).

Oral liquid: 75 mg/5 mL (as palmitate) [c].</td></tr>
<tr><td>FIRST CHOICE

– Necrotizing fasciitis</td><td>SECOND CHOICE

– Bone and joint infections</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">☐ cloxacillin*

Therapeutic alternatives:

- 4th level ATC chemical subgroup (J01CF Beta-lactamase resistant penicillins)</td><td colspan="2">Capsule: 500 mg; 1 g (as sodium).

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

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

*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 [c]</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">doxycycline a</td><td colspan="2">Oral liquid: 25 mg/5 mL [c]; 50 mg/5 mL (anhydrous) [c].

Powder for injection: 100 mg in vial.

Solid oral dosage form: 50 mg [c]; 100 mg (as hyclate).

a Use in children <8 years only for life-threatening infections when no alternative exists.</td></tr>
<tr><td>FIRST CHOICE

– Cholera
– Sexually transmitted infection due to Chlamydia trachomatis</td><td>SECOND CHOICE

– Cholera [c]
– Community acquired pneumonia (mild to moderate)
– Exacerbations of COPD</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">gentamicin</td><td colspan="2">Injection: 10 mg/mL (as sulfate); 40 mg/mL (as sulfate) in 2 mL vial.</td></tr>
<tr><td>FIRST CHOICE

– Acute bacterial meningitis in neonates [c]
– Community acquired pneumonia (severe) [c]
– Complicated intraabdominal infections [c]
– Complicated severe acute malnutrition [c]
– Sepsis in neonates and children [c]</td><td>SECOND CHOICE

– Gonorrhoea
– Surgical prophylaxis</td></tr>
<tr><td colspan="2"></td></tr>
</table>

<table>
<tr><td rowspan="3">metronidazole</td><td colspan="2">Injection: 500 mg in 100 mL vial.
Oral liquid: 200 mg/5 mL (as benzoate).
Suppository: 500 mg; 1 g.
Tablet: 200 mg to 500 mg.</td></tr>
<tr><td>FIRST CHOICE
– C. difficile infection
– Complicated intraabdominal infections (mild to moderate)
– Complicated intrabdominal infections (severe)
– Necrotizing fasciitis
– Surgical prophylaxis
– Trichomoniasis</td><td>SECOND CHOICE
– Complicated intraabdominal infections (mild to moderate)</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">nitrofurantoin</td><td colspan="2">Oral liquid: 25 mg/5 mL [c].
Tablet: 100 mg.</td></tr>
<tr><td>FIRST CHOICE
– Lower urinary tract infections</td><td>SECOND CHOICE</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">phenoxymethylpenicillin</td><td colspan="2">Powder for oral liquid: 250 mg/5 mL (as potassium).
Tablet: 250 mg; 500 mg (as potassium).</td></tr>
<tr><td>FIRST CHOICE
– Community acquired pneumonia (mild to moderate)
– Pharyngitis
– Progressive apical dental abscess</td><td>SECOND CHOICE</td></tr>
<tr><td></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 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) [c]</td><td>SECOND CHOICE
– Syphilis</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">spectinomycin</td><td colspan="2">Powder for injection: 2 g (as hydrochloride) in vial.</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
– Gonorrhoea</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">sulfamethoxazole + trimethoprim</td><td colspan="2">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; 800 mg + 160 mg.</td></tr>
<tr><td>FIRST CHOICE
– Lower urinary tract infections</td><td>SECOND CHOICE
– Acute invasive diarrhoea / bacterial dysentery</td></tr>
<tr><td></td></tr>
</table>

<table>
<tr><td rowspan="2">trimethoprim</td><td colspan="2">Tablet: 100 mg; 200 mg.
Oral liquid: 50 mg/5 mL [c].</td></tr>
<tr><td>FIRST CHOICE
– Lower urinary tract infections</td><td>SECOND CHOICE</td></tr>
<tr><td colspan="3">6.2.2 Watch group antibiotics</td></tr>
<tr><td rowspan="2">azithromycin</td><td colspan="2">Capsule: 250 mg; 500 mg (anhydrous).
Oral liquid: 200 mg/5 mL.</td></tr>
<tr><td>FIRST CHOICE
– Cholera [c]
– Enteric fever
– Gonorrhoea
– Sexually transmitted infection due to Chlamydia trachomatis
– Trachoma
– Yaws</td><td>SECOND CHOICE
– Acute invasive bacterial diarrhoea / dysentery
– Gonorrhoea</td></tr>
<tr><td rowspan="2">cefixime</td><td colspan="2">Powder for oral liquid: 100 mg/5 mL [c].
Solid oral dosage form: 200 mg; 400 mg (as trihydrate).</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
– Acute invasive bacterial diarrhoea / dysentery
– Gonorrhoea</td></tr>
<tr><td rowspan="2">cefotaxime*</td><td colspan="2">Powder for injection: 250 mg (as sodium) in vial.
*3rd generation cephalosporin of choice for use in hospitalized neonates.</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 or prostatitis (severe)</td><td>SECOND CHOICE
– Bone and joint infections
– Pyelonephritis or prostatitis (mild to moderate)
– Sepsis in neonates and children [c]</td></tr>
</table>

<table>
<tr><td rowspan="3">ceftriaxone* a</td><td colspan="2">Powder for injection: 250 mg; 1 g; 2 g (as sodium) 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 intrabdominal infections (severe)
– Endophthalmitis
– Enteric fever
– Gonorrhoea
– Hospital acquired pneumonia
– Necrotizing fasciitis
– Pyelonephritis or prostatitis (severe)</td><td>SECOND CHOICE
– Acute invasive bacterial diarrhoea / dysentery
– Bone and joint infections
– Pyelonephritis or prostatitis (mild to moderate)
– Sepsis in neonates and children [c]</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">cefuroxime</td><td colspan="2">Powder for injection: 250 mg; 750 mg; 1.5 g (as sodium) in vial.</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
– Surgical prophylaxis</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">ciprofloxacin</td><td colspan="2">Oral liquid: 250 mg/5 mL (anhydrous) [c].
Solution for IV infusion: 2 mg/mL (as hyclate) [c].
Solid oral dosage form: 250 mg; 500 mg (as hydrochloride).</td></tr>
<tr><td>FIRST CHOICE
– Acute invasive bacterial diarrhoea / dysentery
– Enteric fever
– Low-risk febrile neutropenia
– Pyelonephritis or prostatitis (mild to moderate)</td><td>SECOND CHOICE
– Cholera
– Complicated intraabdominal infections (mild to moderate)</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">☐ clarithromycin†
Therapeutic alternatives:
- erythromycin*
*as second choice treatment for pharyngitis in children (EMLc only)</td><td colspan="2">Powder for oral liquid: 125 mg/5 mL; 250 mg/5 mL.
Powder for injection: 500 mg in vial.
Solid oral dosage form: 500 mg.
†clarithromycin is also listed for use in combination regimens for eradication of H. pylori in adults.</td></tr>
<tr><td>FIRST CHOICE
Community acquired pneumonia (severe)</td><td>SECOND CHOICE
– Pharyngitis</td></tr>
<tr><td colspan="2"></td></tr>
</table>

piperacillin + tazobactam	**Powder for injection:** 2 g (as sodium) + 250 mg (as sodium); 4 g (as sodium) + 500 mg (as sodium) in vial.	
	FIRST CHOICE – *Complicated intraabdominal infections (severe)* – *High-risk febrile neutropenia* – *Hospital acquired pneumonia* – *Necrotizing fasciitis*	SECOND CHOICE
vancomycin	**Capsule:** 125 mg; 250 mg (as hydrochloride).	
	FIRST CHOICE	SECOND CHOICE – *C. difficile infection*
Complementary List		
ceftazidime	***Powder for injection:*** *250 mg; 1 g (as pentahydrate) in vial.*	
	FIRST CHOICE – *Endophthalmitis*	SECOND CHOICE
☐ *meropenem** a *Therapeutic alternatives*:* *- imipenem + cilastatin* **complicated intraabdominal infections and high-risk febrile neutropenia only. Meropenem is the preferred choice for acute bacterial meningitis in neonates.*	***Powder for injection:*** *500 mg (as trihydrate); 1 g (as trihydrate) in vial.* a > 3 months.	
	FIRST CHOICE	SECOND CHOICE – *Acute bacterial meningitis in neonates* ***[c]*** – *Complicated intraabdominal infections (severe)* – *High-risk febrile neutropenia*
vancomycin	***Powder for injection:*** *250 mg; 500 mg; 1 g (as hydrochloride) in vial.*	
	FIRST CHOICE – *Endophthalmitis* – *Necrotizing fasciitis*	SECOND CHOICE – *High-risk febrile neutropenia*
6.2.3 Reserve group antibiotics		
Complementary List		
cefiderocol	***Powder for injection:*** *1 g (as sulfate toxylate) in vial.*	
ceftazidime + avibactam	***Powder for injection:*** *2 g + 0.5 g in vial.*	
colistin	***Powder for injection:*** *1 million IU (as colistemethate sodium) in vial.*	
fosfomycin	***Powder for injection:*** *2 g; 4 g (as sodium) in vial.*	
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.*	
meropenem + vaborbactam	***Powder for injection:*** *1 g (as trihydrate) + 1 g in vial.*	
plazomicin	***Injection****: 500 mg/10 mL.*	
polymyxin B	***Powder for injection:*** *500,000 IU in vial.*	

6.2.4 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.
6.2.5 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 **[c]**. **Tablet:** 100 mg; 400 mg (hydrochloride). **Tablet (dispersible**): 100 mg **[c]**
ethambutol + isoniazid + pyrazinamide + rifampicin	**Tablet:** 275 mg + 75 mg + 400 mg + 150 mg.
ethambutol + isoniazid + rifampicin	**Tablet:** 275 mg + 75 mg + 150 mg.
isoniazid	**Oral liquid:** 50 mg/5 mL **[c]**. **Tablet:** 100 mg; 300 mg. **Tablet (dispersible):** 100 mg **[c]**.
isoniazid + pyrazinamide + rifampicin	**Tablet (dispersible):** 50 mg + 150 mg + 75 mg **[c]**.
isoniazid + rifampicin	**Tablet:** 75 mg + 150 mg; 150 mg + 300 mg. **Tablet (dispersible):** 50 mg + 75 mg **[c].**
isoniazid + rifapentine	**Tablet (scored):** 300 mg + 300 mg.
moxifloxacin	**Tablet:** 400 mg.
pyrazinamide	**Oral liquid:** 30 mg/mL **[c]**. **Tablet:** 400 mg; 500 mg **Tablet (dispersible):** 150 mg.
rifabutin	**Solid oral dosage form:** 150 mg.* *For use only in patients with HIV receiving protease inhibitors.
rifampicin	**Oral liquid:** 20 mg/mL **[c]**. **Solid oral dosage form:** 150 mg; 300 mg.
rifapentine	**Tablet:** 150 mg; 300 mg.

Complementary List	
Medicines for the treatment of multidrug-resistant tuberculosis (MDR-TB) should be used in specialized centres adhering to WHO standards for TB control.	
amikacin	***Injection:*** *100 mg/2 mL (as sulfate) in 2 mL vial; 250 mg/mL (as sulfate) in 2 mL vial.*
*amoxicillin + clavulanic acid**	***Powder for oral liquid:*** *250 mg (as trihydrate) + 62.5 mg (as potassium salt)/5mL* ***[c]****.* ***Tablet:*** *500 mg (as trihydrate) + 125 mg (as potassium salt).* **For use only in combination with meropenem or imipenem+cilastatin.*
bedaquiline a	***Tablet:*** *20 mg* ***[c]****; 100 mg.* a ≥ 5 years
clofazimine	***Solid oral dosage form:*** *50 mg; 100 mg.*
☐ *cycloserine* *Therapeutic alternatives:* *- terizidone*	***Solid oral dosage form:*** *125 mg* ***[c]****; 250 mg.*
delamanid a	***Tablet (dispersible):*** *25 mg* ***[c]****.* a ≥ *3* years ***Tablet:*** *50 mg.* a ≥ 6 years
☐ *ethionamide* *Therapeutic alternatives:* *- protionamide*	***Tablet:*** *125 mg; 250 mg.* ***Tablet (dispersible****): 125 mg* ***[c]****.*
levofloxacin	***Tablet:*** *250mg; 500 mg; 750 mg.* ***Tablet (dispersible****): 100 mg* ***[c]****.*
linezolid	***Powder for oral liquid****: 100 mg/5 mL.* ***Tablet:*** *600 mg.* ***Tablet (dispersible):*** *150 mg* ***[c]****.*
☐ *meropenem* *Therapeutic alternatives:* *- imipenem + cilastatin*	***Powder for injection:*** *500 mg (as trihydrate); 1 g (as trihydrate) in vial.*
moxifloxacin	***Tablet:*** *400 mg.* ***Tablet (dispersible):*** *100 mg* ***[c]****.*
p-aminosalicylic acid	***Granules:*** *4 g in sachet.*
streptomycin ***[c]***	***Powder for injection:*** *1 g (as sulfate) in vial.*

6.3 Antifungal medicines	
amphotericin B	**Powder for injection:** 50 mg (as sodium deoxycholate or liposomal complex) in vial.
clotrimazole	**Vaginal cream:** 1%; 10%. **Vaginal tablet:** 100 mg; 500 mg.
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 **[c]**. **Solid oral dosage form:** 125 mg; 250 mg.
itraconazole*	**Capsule**: 100 mg. **Oral liquid:** 10 mg/mL. *For treatment of chronic pulmonary 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 **[c]**; 100 000 IU/mL **[c]**. **Pessary:** 100 000 IU. **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	
☐ *micafungin* *Therapeutic alternatives:* *- anidulafungin* *- caspofungin*	***Powder for injection:** 50 mg (as sodium); 100 mg (as sodium) in vial.*
potassium iodide	***Saturated solution.***

6.4 Antiviral medicines	
6.4.1 Antiherpes medicines	
☐ aciclovir Therapeutic alternatives: - valaciclovir (oral)	**Oral liquid:** 200 mg/5 mL **[c]**. **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 classes of antiretrovirals are included as essential medicines for treatment and prevention of HIV (prevention of mother-to-child transmission, pre-exposure prophylaxis (where indicated) 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	**Tablet:** 300 mg (as sulfate).
lamivudine	**Oral liquid:** 50 mg/5 mL **[c]**. **Tablet:** 150 mg.
tenofovir disoproxil fumarate†	**Tablet:** 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil). †also indicated for pre-exposure prophylaxis.
zidovudine	**Capsule:** 250 mg. **Oral liquid:** 50 mg/5 mL. **Solution for IV infusion:** 10 mg/mL in 20 mL vial. **Tablet:** 300 mg.
6.4.2.2 Non-nucleoside reverse transcriptase inhibitors	
efavirenz	**Tablet:** 600 mg.
nevirapine a	**Oral liquid:** 50 mg/5 mL. **Tablet:** 50 mg (dispersible); 200 mg. 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 + ritonavir	**Tablet (heat stable):** 300 mg (as sulfate) + 100 mg.
darunavir a	**Tablet:** 75 mg; 400 mg; 600 mg; 800 mg a > 3 years
lopinavir + ritonavir	**Solid oral dosage form:** 40 mg + 10 mg **[c]**. **Tablet (heat stable):** 100 mg + 25 mg; 200 mg + 50 mg.
ritonavir	**Tablet (heat stable):** 25 mg; 100 mg.

6.4.2.4 Integrase inhibitors	
dolutegravir a	**Tablet (dispersible, scored):** 10 mg [c]. a ≥ 4 weeks and ≥ 3 kg **Tablet**: 50 mg a ≥ 25 kg
raltegravir*	**Granules for oral suspension**: 100 mg in sachet. **Tablet (chewable):** 25 mg. **Tablet:** 400 mg. *For use in pregnant women and in second-line regimens in accordance with WHO treatemnt guidelines.
6.4.2.5 Fixed-dose combinations of antiretroviral medicines	
abacavir + lamivudine	**Tablet (dispersible, scored):** 120 mg (as sulfate) + 60 mg.
dolutegravir + lamivudine + tenofovir	**Tablet:** 50 mg + 300 mg + 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil)
efavirenz + ☐ emtricitabine + tenofovir Therapeutic alternatives: - lamivudine (for emtricitabine)	**Tablet:** 600 mg + 200 mg + 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil).
efavirenz + lamivudine + tenofovir	**Tablet:** 400 mg + 300 mg + 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil)
☐ emtricitabine + tenofovir† Therapeutic alternatives: - lamivudine (for emtricitabine)	**Tablet:** 200 mg + 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil). † combination also indicated for pre-exposure prophylaxis
lamivudine + zidovudine	**Tablet:** 30 mg + 60 mg [c]; 150 mg + 300 mg.
6.4.2.6 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
valganciclovir*	**Tablet:** 450 mg. *For the treatment of cytomegalovirus retinitis (CMVr).

Complementary list	
*oseltamivir**	***Capsule:*** *30 mg; 45 mg; 75 mg (as phosphate).* **Severe illness due to confirmed or suspected influenza virus infection in critically ill hospitalized patients*
*valganciclovir**[c]	***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
tenofovir disoproxil fumarate	**Tablet:** 300 mg (tenofovir disoproxil fumarate – equivalent to 245 mg tenofovir disoproxil).
6.4.4.2 Medicines for hepatitis C	
Pangenotypic direct-acting antivirals should be considered as therapeutic alternatives for the purposes of selection and procurement at national level.	
6.4.4.2.1 ☐ Pangenotypic direct-acting antiviral combinations	
daclatasvir*	**Tablet:** 30 mg; 60 mg (as hydrochloride). *Pangenotypic when used in combination with sofosbuvir
daclatasvir + sofosbuvir	**Tablet**: 60 mg + 400 mg.
glecaprevir + pibrentasvir	**Tablet:** 100 mg + 40 mg. **Granules**: 50 mg + 20 mg in sachet **[c]**.
sofosbuvir*	**Tablet:** 200 mg; 400 mg. *Pangenotypic when used in combination with daclatasvir
sofosbuvir + velpatasvir	**Tablet:** 200 mg + 50 mg **[c];** 400 mg + 100 mg.
6.4.4.2.2 Non-pangenotypic direct-acting antiviral combinations	
dasabuvir	**Tablet:** 250 mg.
ledipasvir + sofosbuvir	**Tablet:** 90 mg + 400 mg.
ombitasvir + paritaprevir + ritonavir	**Tablet:** 12.5 mg + 75 mg + 50 mg.

6.4.4.2.3 Other antivirals for hepatitis C	
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 hepatitis C, in combination with direct acting anti-viral medicines
Complementary list	
*pegylated interferon alfa (2a or 2b) **	*Vial or pre-filled syringe:* *180 micrograms (peginterferon alfa-2a).* *80 micrograms, 100 micrograms (peginterferon alfa-2b).* **To be used in combination with ribavirin.*
6.5 Antiprotozoal medicines	
6.5.1 Antiamoebic and antigiardiasis medicines	
diloxanide a	**Tablet:** 500 mg (furoate). a > 25 kg.
☐ metronidazole Therapeutic alternatives: - tinidazole	**Injection:** 500 mg in 100 mL vial. **Oral liquid:** 200 mg/5 mL (as benzoate). **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 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 **[c]**. *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 **[c]**; 100 mg **[c]**; 200 mg capsules (for pre-referral treatment of severe malaria only; patients should be taken to an appropriate health facility for follow-up care) **[c]**. **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	**Granules**: 20 mg + 60 mg **[c]**. **Tablet:** 60 mg + 180 mg. a > 5 kg
chloroquine*	**Oral liquid:** 50 mg/5 mL (as phosphate or sulfate). **Tablet:** 100 mg; 150 mg (as phosphate or sulfate). *For use only for the treatment of *Plasmodium 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 *Plasmodium vivax* and *Plasmodium ovale* infections, given for 14 days.
quinine*	**Injection:** 300 mg/mL (hydrochloride) in 2 mL ampoule. **Tablet:** 300 mg (sulfate) or 300 mg (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 chemoprevention	
amodiaquine – sulfadoxine + pyrimethamine **[c]**	**Co-packaged dispersible tablets:** amodiaquine 76.5 mg (as hydrochloride) [3] and sulfadoxine + pyrimethamine 250 mg + 12.5 mg [1]; amodiaquine 153 mg (as hydrochloride) [3] and sulfadoxine + pyrimethamine 500 mg + 25 mg [1].
chloroquine*	**Oral liquid:** 50 mg/5 mL (as phosphate or sulfate). **Tablet:** 150 mg (as phosphate or sulfate). *For use only in central American regions, for *Plasmodium vivax* infections.
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.
sulfadoxine + pyrimethamine	**Tablet:** 250 mg + 12.5 mg **[c]**; 500 mg + 25 mg.
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 **[c]**. **Tablet:** 100 mg + 20 mg; 400 mg + 80 mg **[c]**; 800 mg + 160 mg
Complementary List	
pentamidine	***Tablet:** 200 mg; 300 mg (as isethionate).*
6.5.5 Antitrypanosomal medicines	
6.5.5.1 African trypanosomiasis	
fexinidazole*	**Tablet:** 600 mg *For the treatment of 1st and 2nd stage of human African trypanosomiasis due to *Trypanosoma brucei gambiense* infection.
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/mL (hydrochloride) in 100 mL bottle. *To be used for the treatment of *Trypanosoma brucei gambiense* infection.
melarsoprol	**Injection:** 180 mg/5 mL in 5 mL ampoule (3.6% solution).
nifurtimox *	**Tablet:** 120 mg. *Only to be used in combination with eflornithine, for the treatment of *Trypanosoma brucei gambiense* infection.
Complementary List	
melarsoprol ***[c]***	***Injection:*** *180 mg/5 mL in 5 mL ampoule (3.6% solution).*
6.5.5.2 American trypanosomiasis	
benznidazole	**Tablet:** 12.5 mg **[c]**;100 mg. **Tablet (scored):** 50 mg.
nifurtimox	**Tablet:** 30 mg; 120 mg; 250 mg.
6.6 Medicines for ectoparasitic infections	
ivermectin	**Tablet (scored):** 3 mg
7. ANTIMIGRAINE MEDICINES	
7.1 For treatment of acute attack	
acetylsalicylic acid	**Tablet:** 300 mg to 500 mg.
ibuprofen **[c]**	**Tablet:** 200 mg; 400 mg.
paracetamol	**Oral liquid:** 120 mg/5 mL **[c]**; 125 mg/5 mL **[c]**. **Tablet:** 300 mg to 500 mg.
sumatriptan	**Tablet:** 50 mg
7.2 For prophylaxis	
☐ propranolol Therapeutic alternatives to be reviewed (2023)	**Tablet:** 20 mg; 40 mg (hydrochloride).

8. IMMUNOMODULATORS AND ANTINEOPLASTICS	
8.1 Immunomodulators for non-malignant disease	
Complementary List	
☐ *adalimumab** *Therapeutic alternatives*:* *- certolizumab pegol* *- etanercept* *- golimumab* *- infliximab* **including quality-assured biosimilars*	***Injection:*** *40 mg/0.8 mL; 40 mg/0.4 mL.*
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.*
tacrolimus	***Capsule (immediate-release):*** *0.5 mg; 0.75 mg; 1 mg; 2 mg; 5 mg.* ***Granules for oral supsension:*** *0.2 mg; 1 mg.* ***Injection:*** *5 mg/mL in 1 mL vial.*
8.2 Antineoplastics and supportive medicines	
Medicines listed below should be used according to protocols for treatment of the diseases.	
8.2.1 Cytotoxic medicines	
Complementary List	
arsenic trioxide	***Concentrate for solution for infusion:*** *1 mg/mL* *– Acute promyelocytic leukaemia*
*asparaginase** **including quality-assured biosimilars*	***Powder for injection:*** *10 000 IU in vial.* *– Acute lymphoblastic leukaemia.*
bendamustine	***Injection:*** *45 mg/0.5 mL; 180 mg/2 mL.* *– Chronic lymphocytic leukaemia* *– Follicular lymphoma*
bleomycin	***Powder for injection:*** *15 mg (as sulfate) in vial.* *– Hodgkin lymphoma* *– Kaposi sarcoma* *– Ovarian germ cell tumour* *– Testicular germ cell tumour*
calcium folinate	***Injection:*** *3 mg/mL in 10 mL ampoule.* ***Tablet:*** *5 mg; 15 mg; 25 mg.* *– Burkitt lymphoma* *– Early stage colon cancer* *– Early stage rectal cancer* *– Gestational trophoblastic neoplasia* *– Metastatic colorectal cancer* *– Osteosarcoma*

capecitabine	*Tablet: 150 mg; 500 mg.* – *Early stage colon cancer* – *Early stage rectal cancer* – *Metastatic breast cancer* – *Metastatic colorectal cancer*
carboplatin	*Injection: 50 mg/5 mL; 150 mg/15 mL; 450 mg/45 mL; 600 mg/60 mL.* – *Cervical cancer* – *Early stage breast cancer* – *Epithelial ovarian cancer* – *Head and neck cancer (as a radio-sensitizer)* – *Low-grade glioma* – *Nasopharyngeal cancer* – *Nephroblastoma (Wilms tumour)* – *Non-small cell lung cancer* – *Osteosarcoma* – *Ovarian germ cell tumour* – *Retinoblastoma* – *Testicular germ cell tumour*
chlorambucil	*Tablet: 2 mg.* – *Chronic lymphocytic leukaemia*
cisplatin	*Injection: 10 mg/10 mL; 20 mg/20 mL; 50 mg/50 mL; 100 mg/100 mL.* – *Cervical cancer* – *Head and neck cancer (as a radio-sensitizer)* – *Low-grade glioma* – *Nasopharyngeal cancer (as a radio-sensitizer)* – *Non-small cell lung cancer* – *Osteosarcoma* – *Ovarian germ cell tumour* – *Testicular germ cell tumour*
cyclophosphamide	*Powder for injection: 500 mg; 1 g; 2 g in vial.* *Tablet: 25 mg, 50 mg.* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma* – *Chronic lymphocytic leukaemia* – *Diffuse large B-cell lymphoma* – *Early stage breast cancer* – *Ewing sarcoma* – *Follicular lymphoma* – *Gestational trophoblastic neoplasia* – *Hodgkin lymphoma* – *Low-grade glioma* – *Metastatic breast cancer* – *Multiple myeloma* – *Nephroblastoma (Wilms tumour)* – *Rhabdomyosarcoma*
cytarabine	*Powder for injection: 100 mg in vial.* – *Acute lymphoblastic leukaemia* – *Acute myeloid leukaemia* – *Acute promyelocytic leukaemia* – *Burkitt lymphoma.*

dacarbazine	***Powder for injection:*** *100 mg in vial.* – *Hodgkin lymphoma*
dactinomycin	***Powder for injection:*** *500 micrograms in vial.* – *Ewing sarcoma* – *Gestational trophoblastic neoplasia* – *Nephroblastoma (Wilms tumour)* – *Rhabdomyosarcoma*
daunorubicin	***Powder for injection:*** *50 mg (hydrochloride) in vial.* – *Acute lymphoblastic leukaemia* – *Acute myeloid leukaemia* – *Acute promyelocytic leukaemia*
docetaxel	***Injection:*** *20 mg/mL; 40 mg/mL.* – *Early stage breast cancer* – *Metastatic breast cancer* – *Metastatic prostate cancer*
doxorubicin	***Powder for injection:*** *10 mg; 50 mg (hydrochloride) in vial.* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma* – *Diffuse large B-cell lymphoma* – *Early stage breast cancer* – *Ewing sarcoma* – *Follicular lymphoma* – *Hodgkin lymphoma* – *Kaposi sarcoma* – *Metastatic breast cancer* – *Multiple myeloma* – *Nephroblastoma (Wilms tumour)* – *Osteosarcoma*
etoposide	***Capsule:*** *50 mg, 100 mg.* ***Injection:*** *20 mg/mL in 5 mL ampoule.* – *Acute lymphoblastic leukaemia* – *Acute myeloid leukaemia* – *Burkitt lymphoma* – *Ewing sarcoma* – *Gestational trophoblastic neoplasia* – *Hodgkin lymphoma* – *Nephroblastoma (Wilms tumour)* – *Non-small cell lung cancer* – *Osteosarcoma* – *Ovarian germ cell tumour* – *Retinoblastoma* – *Testicular germ cell tumour*
fludarabine	***Powder for injection:*** *50 mg (phosphate) in vial.* ***Tablet:*** *10 mg* – *Chronic lymphocytic leukaemia.*

fluorouracil	*Injection: 50 mg/mL in 5 mL ampoule.* – *Early stage breast cancer* – *Early stage colon cancer* – *Early stage rectal cancer* – *Metastatic colorectal cancer* – *Nasopharyngeal cancer*
gemcitabine	*Powder for injection: 200 mg; 1 g in vial.* – *Epithelial ovarian cancer* – *Non-small cell lung cancer*
hydroxycarbamide	*Solid oral dosage form: 200 mg; 250 mg; 300 mg; 400 mg; 500 mg; 1 g.* – *Chronic myeloid leukaemia*
ifosfamide	*Powder for injection: 500 mg; 1 g; 2 g in vial.* – *Burkitt lymphoma* – *Ewing sarcoma* – *Nephroblastoma (Wilms tumour)* – *Ovarian germ cell tumour* – *Osteosarcoma* – *Rhabdomyosarcoma* – *Testicular germ cell tumour*
irinotecan	*Injection: 40 mg/2 mL in 2 mL vial; 100 mg/5 mL in 5 mL vial; 500 mg/25 mL in 25 mL vial.* – *Metastatic colorectal cancer* – *Nephroblastoma (Wilms tumour)* – *Rhabdomyosarcoma*
melphalan	*Tablet: 2 mg* *Powder for injection: 50 mg in vial* – *Multiple myeloma.*
mercaptopurine	*Tablet: 50 mg.* – *Acute lymphoblastic leukaemia* – *Acute promyelocytic leukaemia.*
methotrexate	*Powder for injection: 50 mg (as sodium salt) in vial.* *Tablet: 2.5 mg (as sodium salt).* – *Acute lymphoblastic leukaemia* – *Acute promyelocytic leukaemia* – *Burkitt lymphoma* – *Early stage breast cancer* – *Gestational trophoblastic neoplasia* – *Osteosarcoma*
oxaliplatin	*Injection: 50 mg/10 mL in 10 mL vial; 100 mg/20 mL in 20 mL vial; 200 mg/40 mL in 40 mL vial.* *Powder for injection: 50 mg; 100 mg in vial.* – *Early stage colon cancer* – *Metastatic colorectal cancer*

paclitaxel	***Injection:*** *6 mg/mL in vial.* – *Cervical cancer* – *Epithelial ovarian cancer* – *Early stage breast cancer* – *Metastatic breast cancer* – *Kaposi sarcoma* – *Nasopharyngeal cancer* – *Non-small cell lung cancer* – *Ovarian germ cell tumour*
*pegaspargase** **including quality-assured biosimilars*	***Injection:*** *3,750 units/5 mL in vial.* – *Acute lymphoblastic leukaemia*
procarbazine ***[c]***	***Capsule:*** *50 mg (as hydrochloride).* – *Hodgkin lymphoma*
realgar-Indigo naturalis formulation	***Tablet:*** *270 mg (containing tetra-arsenic tetra-sulfide 30 mg).* – *Acute promyelocytic leukaemia*
tioguanine ***[c]***	***Solid oral dosage form:*** *40 mg.* – *Acute lymphoblastic leukaemia*
vinblastine	***Injection:*** *10 mg/10 mL (sulfate) in vial.* ***Powder for injection:*** *10 mg (sulfate) in vial.* – *Hodgkin lymphoma* – *Kaposi sarcoma* – *Low-grade glioma* – *Ovarian germ cell tumour* – *Testicular germ cell tumour*
vincristine	***Injection****: 1 mg/mL (sulfate); 2 mg/2 mL (sulfate) in vial.* ***Powder for injection:*** *1 mg; 5 mg (sulfate) in vial.* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma* – *Diffuse large B-cell lymphoma* – *Ewing sarcoma* – *Follicular lymphoma* – *Gestational trophoblastic neoplasia* – *Hodgkin lymphoma* – *Kaposi sarcoma* – *Low-grade glioma* – *Nephroblastoma (Wilms tumour)* – *Retinoblastoma* – *Rhabdomyosarcoma*
vinorelbine	***Capsule:*** *20 mg; 30 mg; 80 mg.* ***Injection:*** *10 mg/mL in 1 mL vial; 50 mg/5 mL in 5 mL vial.* – *Non-small cell lung cancer* – *Metastatic breast cancer* – *Rhabdomyosarcoma*

8.2.2 Targeted therapies	
Complementary List	
all-trans retinoid acid (ATRA)	***Capsule:*** *10 mg.* – *Acute promyelocytic leukaemia.*
bortezomib	***Powder for injection:*** *3.5 mg in vial.* – *Multiple myeloma*
dasatinib	***Tablet:*** *20 mg; 50 mg; 70 mg; 80 mg; 100 mg; 140 mg.* – *Imatinib-resistant chronic myeloid leukaemia*
☐ *erlotinib* *Therapeutic alternatives:* *- afatinib* *- gefitinib*	***Tablet:*** *100 mg, 150 mg.* – *EGFR mutation-positive advanced non-small cell lung cancer*
everolimus	***Tablet:*** *2.5 mg; 5 mg; 7.5 mg; 10 mg.* ***Tablet (dispersible):*** *2 mg; 3 mg; 5 mg.* – *Subependymal giant cell astrocytoma*
ibrutinib	***Capsule:*** *140 mg.* – *Relapsed/refractory chronic lymphocytic leukaemia*
imatinib	***Solid oral dosage form:*** *100 mg; 400 mg.* – *Chronic myeloid leukaemia* – *Gastrointestinal stromal tumour* – *Philadelphia chromosome positive acute lymphoblastic leukaemia*
nilotinib	***Capsule:*** *150 mg; 200 mg.* – *Imatinib-resistant chronic myeloid leukaemia*
*rituximab** **including quality-assured biosimilars*	***Injection (intravenous):*** *100 mg/10 mL in 10 mL vial; 500 mg/50 mL in 50 mL vial.* – *Diffuse large B-cell lymphoma* – *Chronic lymphocytic leukaemia* – *Follicular lymphoma*
*trastuzumab** **including quality-assured biosimilars*	***Powder for injection:*** *60 mg; 150 mg; 440 mg in vial.* – *Early stage HER2 positive breast cancer* – *Metastatic HER2 positive breast cancer*

8.2.3 Immunomodulators	
Complementary List	
*filgrastim** **including quality-assured biosimilars*	***Injection:*** *120 micrograms/0.2 mL; 300 micrograms/0.5 mL; 480 micrograms/0.8 mL in pre-filled syringe.* ***Injection:*** *300 micrograms/mL in 1 mL vial; 480 micrograms/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*
lenalidomide	***Capsule:*** *25 mg.* – *Multiple myeloma*
☐ *nivolumab** *Therapeutic alternatives**:* *- pembrolizumab* **including quality-assured biosimilars*	***Concentrate solution for infusion:*** *10 mg/mL.* – *Metastatic melanoma*
thalidomide	***Capsule:*** *50 mg.* – *Multiple myeloma*
8.2.4 Hormones and antihormones	
Complementary List	
☐ *abiraterone* *Therapeutic alternatives:* *- enzalutamide*	***Tablet:*** *250 mg; 500 mg.* – *Metastatic castration-resistant prostate cancer*
☐ *anastrozole* *Therapeutic alternatives:* *- 4th level ATC chemical subgroup (L02BG Aromatase inhibitors)*	***Tablet:*** *1 mg.* – *Early stage breast cancer* – *Metastatic breast cancer*
☐ *bicalutamide* *Therapeutic alternatives:* *- flutamide* *- nilutamide*	***Tablet:*** *50 mg.* – *Metastatic prostate cancer*
dexamethasone	***Injection:*** *4 mg/mL (as disodium phosphate salt) in 1 mL ampoule.* ***Oral liquid:*** *2 mg/5 mL* ***[c]****.* ***Tablet:*** *2 mg* ***[c]****; 4 mg.* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma* – *Multiple myeloma*
hydrocortisone	***Powder for injection:*** *100 mg (as sodium succinate) in vial.* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma*

☐ *leuprorelin* *Therapeutic alternatives:* *- goserelin* *- triptorelin*	***Injection:*** *7.5 mg; 22.5 mg in pre-filled syringe.* – *Early stage breast cancer* – *Metastatic prostate cancer.*
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* – *Burkitt lymphoma*
☐ *prednisolone* *Therapeutic alternatives:* *- prednisone*	***Oral liquid:*** *5 mg/mL* ***[c]****.* ***Tablet:*** *5 mg; 25 mg.* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma* – *Chronic lymphocytic leukaemia* – *Diffuse large B-cell lymphoma* – *Follicular lymphoma* – *Hodgkin lymphoma* – *Metastatic castration-resitsant prostate cancer* – *Multiple myeloma*
tamoxifen	***Tablet:*** *10 mg; 20 mg (as citrate).* – *Early stage breast cancer* – *Metastatic breast cancer.*
8.2.5 Supportive medicines	
Complementary List	
allopurinol ***[c]***	***Tablet:*** *100 mg; 300 mg.* – *Tumour lysis syndrome*
mesna	***Injection:*** *100 mg/mL in 4 mL and 10 mL ampoules.* ***Tablet:*** *400 mg; 600 mg.* – *Burkitt lymphoma* – *Ewing sarcoma* – *Nephroblastoma (Wilms tumour)* – *Ovarian germ cell tumour* – *Osteosarcoma* – *Rhabdomyosarcoma* – *Testicular germ cell tumour*
rasburicase	***Powder and solvent for solution for infusion:*** *1.5 mg; 7.5 mg in vial* – *Tumour lysis syndrome*
zoledronic acid	***Concentrate solution for infusion:*** *4 mg/5 mL in 5 mL vial.* ***Solution for infusion****: 4 mg/100 mL in 100 mL bottle.* – *Malignancy-related bone disease*

9. ANTIPARKINSONISM MEDICINES	
□ biperiden Therapeutic alternatives: – trihexyphenidyl	**Injection:** 5 mg (lactate) in 1 mL ampoule. **Tablet:** 2 mg (hydrochloride).
levodopa + □ carbidopa Therapeutic alternatives: – benserazide (for carbidopa)	**Tablet:** 100 mg + 10 mg; 100 mg + 25 mg; 250 mg + 25 mg.
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.
ferrous salt + folic acid	**Tablet:** equivalent to 60 mg iron + 400 micrograms folic acid. *nutritional supplement for use during pregnancy
folic acid	**Tablet:** 400 micrograms*; 1 mg; 5 mg. *periconceptual use for prevention of first occurrence of neural tube defects
hydroxocobalamin	**Injection:** 1 mg/mL (as acetate, as hydrochloride or as sulfate) in 1 mL ampoule.
Complementary List	
□ *erythropoiesis-stimulating agents** *Therapeutic alternatives:* *- epoetin alfa, beta and theta* *- darbepoetin alfa* *- methoxy polyethylene glycol-epoetin beta* **including quality-assured biosimilars*	***Injection: pre-filled syringe*** *1000 IU/0.5 mL; 2000 IU/0.5 mL; 3000 IU/0.3 mL; 4000 IU/0.4 mL; 5000 IU/0.5 mL; 6000 IU/0.6 mL; 8000 IU/0.8mL; 10 000 IU/1 mL; 20 000 IU/0.5 mL; 40 000 IU/1 mL.*
10.2 Medicines affecting coagulation	
□ dabigatran Therapeutic alternatives: - apixaban - edoxaban - rivaroxaban	**Capsule:** 110 mg; 150 mg.
□ enoxaparin* Therapeutic alternatives*: - dalteparin - nadroparin **including quality-assured biosimilars*	**Injection: ampoule or pre-filled syringe** 20 mg/0.2 mL; 40 mg/0.4 mL; 60 mg/0.6 mL; 80 mg/0.8 mL; 100 mg/1 mL; 120 mg/0.8 mL; 150 mg/1 mL.
heparin sodium	**Injection:** 1000 IU/mL; 5000 IU/mL; 20 000 IU/mL in 1 mL ampoule.
phytomenadione	**Injection:** 1 mg/mL **[c]**; 10 mg/mL in ampoule. **Tablet:** 10 mg.
protamine sulfate	**Injection:** 10 mg/mL in 5 mL ampoule.

tranexamic acid	**Injection:** 100 mg/mL in 10 mL ampoule.
☐ warfarin Therapeutic alternatives to be reviewed (2023)	**Tablet:** 1 mg; 2 mg; 5 mg (sodium).
Complementary List	
*desmopressin **[c]***	***Injection**: 4 micrograms/mL (as acetate) in 1 mL ampoule.* ***Nasal spray:** 10 micrograms (as acetate) per dose.*
*heparin sodium **[c]***	***Injection:** 1000 IU/mL; 5000 IU/mL in 1 mL ampoule.*
*protamine sulfate **[c]***	***Injection:** 10 mg/mL in 5 mL ampoule.*
☐ *warfarin **[c]*** *Therapeutic alternatives to be reviewed (2023)*	***Tablet:** 0.5 mg; 1 mg; 2 mg; 5 mg (sodium).*
10.3 Other medicines for haemoglobinopathies	
Complementary List	
☐ *deferoxamine* *Therapeutic alternatives:* *- deferasirox (oral)*	***Powder for injection:** 500 mg (mesilate) in vial.*
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	
platelets	
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-D immunoglobulin	**Injection:** 250 micrograms in single-dose vial.
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* *Therapeutic alternatives to be reviewed (2023)*	***Powder for injection:*** *500 IU/vial.*
☐ *coagulation factor IX* *Therapeutic alternatives to be reviewed (2023)*	***Powder for injection:*** *500 IU/vial, 1000 IU/vial.*
11.3 Plasma substitutes	
☐ dextran 70 Therapeutic alternatives: - Polygeline injectable solution 3.5%	**Injectable solution:** 6%.
12. CARDIOVASCULAR MEDICINES	
12.1 Antianginal medicines	
☐ bisoprolol Therapeutic alternatives: - carvedilol - metoprolol	**Tablet:** 1.25 mg; 5 mg.
glyceryl trinitrate	**Tablet (sublingual):** 500 micrograms.
isosorbide dinitrate	**Tablet (sublingual):** 5 mg.
verapamil	**Tablet:** 40 mg; 80 mg (hydrochloride).
12.2 Antiarrhythmic medicines	
☐ bisoprolol Therapeutic alternatives: - carvedilol - metoprolol	**Tablet:** 1.25 mg; 5 mg.
digoxin	**Injection:** 250 micrograms/mL in 2 mL ampoule. **Oral liquid:** 50 micrograms/mL. **Tablet:** 62.5 micrograms; 250 micrograms.
epinephrine (adrenaline)	**Injection:** 100 micrograms/mL (as acid tartrate or hydrochloride) in 10 mL ampoule.
lidocaine	**Injection:** 20 mg/mL (hydrochloride) in 5 mL ampoule.
verapamil	**Injection:** 2.5 mg/mL (hydrochloride) in 2 mL ampoule. **Tablet:** 40 mg; 80 mg (hydrochloride).

Complementary List	
amiodarone	***Injection:*** *50 mg/mL (hydrochloride) in 3 mL ampoule.* ***Tablet:*** *100 mg; 200 mg; 400 mg (hydrochloride).*
12.3 Antihypertensive medicines	
☐ amlodipine Therapeutic alternatives: - 4th level ATC chemical subgroup (C08CA Dihydropyridine derivatives)	**Tablet:** 5 mg (as maleate, mesylate or besylate).
☐ bisoprolol Therapeutic alternatives: - atenolol* - carvedilol - metoprolol	**Tablet:** 1.25 mg; 5 mg. *atenolol should not be used as a first-line agent in uncomplicated hypertension in patients > 60 years
☐ enalapril Therapeutic alternatives: - 4th level ATC chemical subgroup (C09AA ACE inhibitors, plain)	**Tablet:** 2.5 mg; 5 mg (as hydrogen maleate).
hydralazine*	**Powder for injection:** 20 mg (hydrochloride) in ampoule. **Tablet:** 25 mg; 50 mg (hydrochloride). *Hydralazine is listed for use only in the acute management of severe pregnancy-induced hypertension. Its use in the treatment of essential hypertension is not recommended in view of the evidence of greater efficacy and safety of other medicines.
☐ hydrochlorothiazide Therapeutic alternatives: - chlorothiazide - chlorthalidone - indapamide	**Oral liquid:** 50 mg/5 mL. **Solid oral dosage form:** 12.5 mg; 25 mg.
☐ lisinopril + ☐ amlodipine Therapeutic alternatives: - 4th level ATC chemical subgroup (C09AA ACE inhibitors, plain) (for lisinopril) - 4th level ATC chemical subgroup (C08CA Dihydropyridine derivatives) (for amlodipine)	**Tablet:** 10 mg + 5 mg; 20 mg + 5 mg; 20 mg + 10 mg.
☐ lisinopril + ☐ hydrochlorothiazide Therapeutic alternatives: - 4th level ATC chemical subgroup (C09AA ACE inhibitors, plain) (for lisinopril) - chlorthalidone, chlorothiazide, indapamide (for hydrochlorothiazide)	**Tablet:** 10 mg + 12.5 mg; 20 mg + 12.5 mg; 20 mg + 25 mg.
☐ losartan Therapeutic alternatives: - 4th level ATC chemical subgroup (C09CA Angiotensin II receptor blockers (ARBs), plain)	**Tablet:** 25 mg; 50 mg; 100 mg.

methyldopa*	**Tablet:** 250 mg. *Methyldopa is listed for use only in the management of pregnancy-induced hypertension. Its use in the treatment of essential hypertension is not recommended in view of the evidence of greater efficacy and safety of other medicines.
☐ telmisartan + ☐ amlodipine Therapeutic alternatives: - 4th level ATC chemical subgroup (C09CA Angiotensin II receptor blockers (ARBs), plain) (for telmisartan) - 4th level ATC chemical subgroup (C08CA Dihydropyridine derivatives) (for amlodipine)	**Tablet:** 40 mg + 5 mg; 80 mg + 5 mg; 80 mg + 10 mg.
☐ telmisartan + ☐ hydrochlorothiazide Therapeutic alternatives: - 4th level ATC chemical subgroup (C09CA Angiotensin II receptor blockers (ARBs), plain) (for telmisartan) - chlorthalidone, chlorothiazide, indapamide (for hydrochlorothiazide)	**Tablet:** 40 mg + 12.5 mg; 80 mg + 12.5 mg; 80 mg + 25 mg.
Complementary List	
sodium nitroprusside	***Powder for infusion:*** *50 mg in ampoule.*
12.4 Medicines used in heart failure	
☐ bisoprolol Therapeutic alternatives: - carvedilol - metoprolol	**Tablet:** 1.25 mg; 5 mg.
digoxin	**Injection:** 250 micrograms/mL in 2 mL ampoule. **Oral liquid:** 50 micrograms/mL. **Tablet:** 62.5 micrograms; 250 micrograms.
☐ enalapril Therapeutic alternatives: - 4th level ATC chemical subgroup (C09AA ACE inhibitors, plain)	**Tablet:** 2.5 mg; 5 mg (as hydrogen maleate).
☐ furosemide Therapeutic alternatives: - bumetanide - torasemide	**Injection:** 10 mg/mL in 2 mL ampoule. **Oral liquid:** 20 mg/5 mL **[c]**. **Tablet:** 40 mg.
☐ hydrochlorothiazide Therapeutic alternatives: - chlorothiazide - chlorthalidone - indapamide	**Oral liquid:** 50 mg/5 mL. **Solid oral dosage form:** 25 mg.
☐ losartan Therapeutic alternatives: - 4th level ATC chemical subgroup (C09CA Angiotensin II receptor blockers (ARBs), plain)	**Tablet:** 25 mg; 50 mg; 100 mg.

spironolactone	**Tablet:** 25 mg.
Complementary List	
dopamine	***Injection:*** *40 mg/mL (hydrochloride) in 5 mL vial.*
12.5 Antithrombotic medicines	
12.5.1 Anti-platelet medicines	
acetylsalicylic acid	**Tablet:** 100 mg.
clopidogrel	**Tablet:** 75 mg; 300 mg
12.5.2 Thrombolytic medicines	
Complementary List	
alteplase	***Powder for injection:*** *10 mg; 20 mg; 50 mg in vial*
streptokinase	***Powder for injection:*** *1.5 million IU in vial.*
12.6 Lipid-lowering agents	
☐ simvastatin* Therapeutic alternatives: - atorvastatin - fluvastatin - lovastatin - pravastatin	**Tablet:** 5 mg; 10 mg; 20 mg; 40 mg. *For use in high-risk patients.
13. DERMATOLOGICAL MEDICINES (topical)	
13.1 Antifungal medicines	
☐ miconazole Therapeutic alternatives: - 4th level ATC chemical subgroup (D01AC Imidazole and triazole derivatives) excluding combinations	**Cream or ointment:** 2% (nitrate).
selenium sulfide	**Detergent-based suspension:** 2%.
sodium thiosulfate	**Solution:** 15%.
terbinafine	**Cream or ointment:** 1% (hydrochloride).

13.2 Anti-infective medicines	
mupirocin	**Cream:** 2% (as calcium). **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 Therapeutic alternatives: - 4th level ATC chemical subgroup (D07AC Corticosteroids, potent (group III))	**Cream or ointment:** 0.1% (as valerate). a Hydrocortisone preferred in neonates.
calamine	**Lotion.**
☐ hydrocortisone Therapeutic alternatives: - 4th level ATC chemical subgroup (D07AA Corticosteroids, weak (group I))	**Cream or ointment:** 1% (acetate).
13.4 Medicines affecting skin differentiation and proliferation	
benzoyl peroxide	**Cream or lotion:** 5%.
☐ calcipotriol Therapeutic alternatives: - calcitriol - tacalcitol	**Cream or ointment:** 50 micrograms/mL (0.005%). **Lotion:** 50 micrograms/mL (0.005%).
coal tar	**Solution:** 5%.
fluorouracil	**Ointment:** 5%.
☐ podophyllum resin Therapeutic alternatives: - podophyllotoxin	**Solution:** 10% to 25%.
salicylic acid	**Solution:** 5%.
urea	**Cream or ointment:** 5%; 10%.
13.5 Scabicides and pediculicides	
☐ benzyl benzoate a Therapeutic alternatives: - precipitated sulfur topical ointment	**Lotion:** 25%. a > 2 years.
permethrin	**Cream:** 5%. **Lotion:** 1%.

14. DIAGNOSTIC AGENTS	
14.1 Ophthalmic medicines	
fluorescein	**Eye drops:** 1% (sodium salt).
□ tropicamide Therapeutic alternatives: - atropine - cyclopentolate	**Eye drops:** 0.5%.
14.2 Radiocontrast media	
□ amidotrizoate Therapeutic alternatives to be reviewed (2023)	**Injection:** 140 mg to 420 mg iodine/mL (as sodium or meglumine salt) in 20 mL ampoule.
barium sulfate	**Aqueous suspension.**
□ iohexol Therapeutic alternatives to be reviewed (2023)	**Injection:** 140 mg to 350 mg iodine/mL in 5 mL; 10 mL; 20 mL ampoules.
Complementary List	
barium sulfate ***[c]***	***Aqueous suspension.***
□ *meglumine iotroxate* *Therapeutic alternatives to be reviewed (2023)*	***Solution:*** *5 g to 8 g iodine in 100 mL to 250 mL.*
15. ANTISEPTICS AND DISINFECTANTS	
15.1 Antiseptics	
□ chlorhexidine Therapeutic alternatives to be reviewed (2023)	**Solution:** 5% (digluconate).
□ ethanol Therapeutic alternatives: - propanol	**Solution:** 70% (denatured).
□ povidone iodine Therapeutic alternatives: - 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	**Liquid:** (0.1% available chlorine) for solution. **Powder:** (0.1% available chlorine) for solution. **Solid:** (0.1% available chlorine) for solution.

☐ chloroxylenol Therapeutic alternatives: - 4th level ATC chemical subgroup (D08AE Phenol and derivatives)	**Solution:** 4.8%.
glutaral	**Solution:** 2%.
16. DIURETICS	
amiloride	**Tablet:** 5 mg (hydrochloride).
☐ furosemide Therapeutic alternatives: - bumetanide - torasemide	**Injection:** 10 mg/mL in 2 mL ampoule. **Oral liquid:** 20 mg/5 mL **[c]**. **Tablet:** 10 mg **[c]**; 20 mg **[c]**; 40 mg.
☐ hydrochlorothiazide Therapeutic alternatives: - chlorothiazide - chlortalidone - indapamide	**Solid oral dosage form:** 25 mg.
mannitol	**Injectable solution:** 10%; 20%.
spironolactone	**Tablet:** 25 mg.
Complementary List	
☐ *hydrochlorothiazide* ***[c]*** *Therapeutic alternatives:* *- chlorothiazide* *- chlortalidone*	***Tablet (scored):*** *25 mg.*
mannitol ***[c]***	***Injectable solution:*** *10%; 20%.*
spironolactone ***[c]***	***Oral liquid:*** *5 mg/5 mL; 10 mg/5 mL; 25 mg/5 mL.* ***Tablet:*** *25 mg.*
17. GASTROINTESTINAL MEDICINES	
Complementary List	
pancreatic enzymes ***[c]***	*Age-appropriate formulations and doses including lipase, protease and amylase.*
17.1 Antiulcer medicines	
☐ omeprazole Therapeutic alternatives: - 4th level ATC chemical subgroup (A02BC Proton pump inhibitors) excluding combinations	**Powder for injection:** 40 mg in vial **Powder for oral liquid:** 20 mg; 40 mg sachets. **Solid oral dosage form:** 10 mg; 20 mg; 40 mg.
☐ ranitidine Therapeutic alternatives: - 4th level ATC chemical subgroup (A02BA H_2-receptor antagonists) excluding combinations	**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 (as disodium phosphate salt) in 1 mL ampoule. **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/mL (hydrochloride) in 2 mL ampoule. **Oral liquid:** 5 mg/5 mL **[c]**. **Tablet:** 10 mg (hydrochloride). [a] Not in neonates.
☐ ondansetron [a] Therapeutic alternatives: - dolasetron - granisetron - palonosetron - tropisetron	**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; Eq 24 mg base. [a] > 1 month.
Complementary list	
aprepitant	***Capsule:*** *80 mg; 125 mg; 165 mg* ***Powder for oral susupension:*** *125 mg in sachet*
17.3 Anti-inflammatory medicines	
☐ sulfasalazine Therapeutic alternatives: - mesalazine	**Retention enema.** **Suppository:** 500 mg. **Tablet:** 500 mg.
Complementary List	
hydrocortisone	***Retention enema:*** *100 mg/60 mL.* ***Suppository:*** *25 mg (acetate).*
prednisolone	***Retention enema:*** *20 mg/100 mL (as sodium phosphate).*
17.4 Laxatives	
☐ senna Therapeutic alternatives: - bisacodyl	**Tablet:** 7.5 mg (sennosides) (or traditional dosage forms).
17.5 Medicines used in diarrhoea	
oral rehydration salts – zinc sulfate **[c]**	**Co-package containing:** **ORS powder for dilution** (see Section 17.5.1) – zinc sulfate **solid oral dosage form** 20 mg (see Section 17.5.2)

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. *In acute diarrhoea zinc sulfate should be used as an adjunct to oral rehydration salts.
18. MEDICINES FOR ENDOCRINE DISORDERS	
18.1 Adrenal hormones and synthetic substitutes	
fludrocortisone	**Tablet:** 100 micrograms (acetate).
hydrocortisone	**Tablet:** 5 mg; 10 mg; 20 mg.
18.2 Androgens	
Complementary List	
testosterone	***Injection:*** *200 mg (enanthate) in 1 mL ampoule.*
18.3 Estrogens	
18.4 Progestogens	
☐ medroxyprogesterone acetate Therapeutic alternatives: - norethisterone	**Tablet:** 5 mg.

18.5 Medicines for diabetes	
18.5.1 Insulins	
insulin injection (soluble)* **including quality-assured biosimilars*	**Injection:** 40 IU/mL in 10 mL vial; 100 IU/mL in 10 mL vial.
intermediate-acting insulin* **including quality-assured biosimilars*	**Injection:** 40 IU/mL in 10 mL vial; 100 IU/mL in 10 mL vial (as compound insulin zinc suspension or isophane insulin).
☐ long-acting insulin analogues* Therapeutic alternatives: - insulin degludec - insulin detemir - insulin glargine **including quality-assured biosimilars*	**Injection:** 100 IU/mL in 3 mL cartridge or pre-filled pen.
18.5.2 Oral hypoglycaemic agents	
☐ empagliflozin Therapeutic alternatives: - canagliflozin - dapagliflozin	**Tablet:** 10 mg; 25 mg.
☐ gliclazide* Therapeutic alternatives: - 4th level ATC chemical subgroup (A10BB Sulfonylureas)	**Solid oral dosage form:** (controlled-release tablets) 30 mg; 60 mg; 80 mg. *glibenclamide not suitable above 60 years.
metformin	**Tablet:** 500 mg (hydrochloride).
Complementary List	
metformin ***[c]***	***Tablet:*** *500 mg (hydrochloride).*
18.6 Medicines for hypoglycaemia	
glucagon	**Injection:** 1 mg/mL.
Complementary List	
diazoxide ***[c]***	***Oral liquid:*** *50 mg/mL.* ***Tablet:*** *50 mg.*
18.7 Thyroid hormones and antithyroid medicines	
levothyroxine	**Tablet:** 25 micrograms **[c]**; 50 micrograms; 100 micrograms (sodium salt).
potassium iodide	**Tablet:** 60 mg.
☐ methimazole Therapeutic alternatives: - carbimazole (depending on local availability)	**Tablet:** 5mg, 10mg, 20mg.
propylthiouracil*	**Tablet:** 50 mg. *For use when alternative first-line treatment is not appropriate or available; and in patients during the first trimester of pregnancy.

Complementary List	
Lugol's solution **[c]**	***Oral liquid:*** *about 130 mg total iodine/mL.*
☐ *methimazole* **[c]** *Therapeutic alternatives:* *- carbimazole (depending on local availability)*	*Tablet: 5mg, 10mg, 20mg.*
potassium iodide **[c]**	***Tablet:*** *60 mg.*
*propylthiouracil** **[c]**	***Tablet:*** *50 mg.* **For use when alternative first-line treatment is not appropriate or available*
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, immunoglobulins and monoclonal antibodies	
All plasma fractions should comply with the WHO requirements.	
anti-rabies virus monoclonal antibodies* **including quality-assured biosimilars*	**Injection:** 40 IU/mL in 1.25 mL, 2.5 mL vial; 100 IU/mL in 2.5 mL vial (human). **Injection:** 300 IU/mL in 10 mL vial; 600 IU/mL in 1 mL, 2.5 mL and 5 mL vial (murine).
antivenom immunoglobulin*	**Injection.** *Exact type to be defined locally.
diphtheria antitoxin	**Injection:** 10 000 IU; 20 000 IU in vial.
equine rabies immunoglobulin	**Injection:** 150 IU/mL; 200 IU/mL; 300 IU/mL; 400 IU/mL in vial.

19.3 Vaccines

WHO immunization policy recommendations are published in vaccine position papers based on 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 September 2020. 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:

https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/position-papers

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:

https://www.who.int/teams/immunization-vaccines-and-biologicals/policies/who-recommendations-for-routine-immunization---summary-tables

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	
human papilloma virus (HPV) vaccine	
measles vaccine	
pertussis vaccine	
pneumococcal vaccine	
poliomyelitis vaccine	
rotavirus vaccine	
rubella vaccine	
tetanus vaccine	
Recommendations for certain regions	
Japanese encephalitis vaccine	
tick-borne encephalitis vaccine	
yellow fever vaccine	
Recommendations for some high-risk populations	
cholera vaccine	
dengue 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	
☐ atracurium Therapeutic alternatives to be reviewed (2023)	**Injection:** 10 mg/mL (besylate).
neostigmine	**Injection:** 500 micrograms/mL (methylsulfate) in 1 mL ampoule; 2.5 mg/mL (methylsulfate) in 1 mL ampoule. **Tablet:** 15 mg (bromide).
suxamethonium	**Injection:** 50 mg/mL (chloride) in 2 mL ampoule. **Powder for injection:** (chloride), in vial.
☐ vecuronium [c] Therapeutic alternatives to be reviewed (2023)	**Powder for injection:** 10 mg (bromide) in vial.
Complementary List	
pyridostigmine	***Injection:*** *1 mg in 1 mL ampoule.* ***Tablet:*** *60 mg (bromide).*
☐ *vecuronium* *Therapeutic alternatives to be reviewed (2023)*	***Powder for injection:*** *10 mg (bromide) in vial.*
21. OPHTHALMOLOGICAL PREPARATIONS	
21.1 Anti-infective agents	
aciclovir	**Ointment:** 3% W/W.
azithromycin	**Solution (eye drops):** 1.5%. – *Trachoma*
erythromycin	**Ointment:** 0.5% [c] – *Infections due to Chlamydia trachomatis or Neisseria gonorrhoea.*
☐ gentamicin Therapeutic alternatives: - amikacin - kanamycin - netilmicin - tobramycin	**Solution (eye drops):** 0.3% (sulfate). – *Bacterial blepharitis* – *Bacterial conjunctivitis*

natamycin	**Suspension (eye drops):** 5% – *Fungal keratitis*
☐ ofloxacin Therapeutic alternatives: - 4th level ATC chemical subgroup (S01AE Fluoroquinolones)	**Solution (eye drops):** 0.3%. – *Bacterial conjunctivitis* – *Bacterial keratitis*
☐ tetracycline Therapeutic alternatives: - chlortetracycline - oxytetracycline	**Eye ointment:** 1% (hydrochloride). – *Bacterial blepharitis* – *Bacterial conjunctivitis* – *Bacterial keratitis* – *Trachoma*
21.2 Anti-inflammatory agents	
☐ prednisolone Therapeutic alternatives to be reviewed (2023)	**Solution (eye drops):** 0.5% (sodium phosphate).
21.3 Local anaesthetics	
☐ tetracaine [a] Therapeutic alternatives: - 4th level ATC chemical subgroup (S01HA Local anaesthetics) excluding cocaine and combinations	**Solution (eye drops):** 0.5% (hydrochloride). [a] Not in preterm neonates.
21.4 Miotics and antiglaucoma medicines	
acetazolamide	**Tablet:** 250 mg.
latanoprost	**Solution (eye drops):** 50 micrograms/mL
☐ pilocarpine Therapeutic alternatives: - carbachol	**Solution (eye drops):** 2%; 4% (hydrochloride or nitrate).
☐ timolol Therapeutic alternatives: - 4th level ATC chemical subgroup (S01ED Beta blocking agents) excluding combinations	**Solution (eye drops):** 0.25%; 0.5% (as hydrogen maleate).
21.5 Mydriatics	
☐ atropine [a] Therapeutic alternatives*: - cyclopentolate hydrochloride - homatropine hydrobromide **EMLc only*	**Solution (eye drops):** 0.1%; 0.5%; 1% (sulfate). [a] > 3 months.
Complementary List	
epinephrine (adrenaline)	***Solution (eye drops):** 2% (as hydrochloride).*
21.6 Anti-vascular endothelial growth factor (VEGF) preparations	
Complementary List	
*bevacizumab** **including quality-assured biosimilars*	***Injection:** 25 mg/mL.*

22. MEDICINES FOR REPRODUCTIVE HEALTH AND PERINATAL CARE	
22.1 Contraceptives	
22.1.1 Oral hormonal contraceptives	
☐ ethinylestradiol + ☐ levonorgestrel Therapeutic alternatives to be reviewed (2023)	**Tablet:** 30 micrograms + 150 micrograms.
☐ ethinylestradiol + ☐ norethisterone Therapeutic alternatives to be reviewed (2023)	**Tablet:** 35 micrograms + 1 mg.
levonorgestrel	**Tablet:** 30 micrograms; 750 micrograms (pack of two); 1.5 mg.
ulipristal	**Tablet:** 30 mg (as acetate)
22.1.2 Injectable hormonal contraceptives	
estradiol cypionate + medroxyprogesterone acetate	**Injection:** 5 mg + 25 mg.
medroxyprogesterone acetate	**Injection (intramuscular):** 150 mg mL in 1 mL vial. **Injection (subcutaneous):** 104 mg/0.65 mL in pre-filled syringe or single-dose injection delivery system.
norethisterone enantate	**Oily solution:** 200 mg/mL in 1 mL ampoule.
22.1.3 Intrauterine devices	
copper-containing device	
levonorgestrel-releasing intrauterine system	**Intrauterine system**: with reservoir containing 52 mg of levonorestrel
22.1.4 Barrier methods	
condoms	
diaphragms	
22.1.5 Implantable contraceptives	
etonogestrel-releasing implant	**Single-rod etonogestrel-releasing implant:** containing 68 mg of etonogestrel.
levonorgestrel-releasing implant	**Two-rod levonorgestrel-releasing implant:** each rod containing 75 mg of levonorgestrel (150 mg total).
22.1.6 Intravaginal contraceptives	
ethinylestradiol + etonogestrel	**Vaginal ring:** containing 2.27 mg + 11.7 mg
progesterone vaginal ring*	**Progesterone-releasing vaginal ring:** containing 2.074 g of micronized progesterone. *For use in women actively breastfeeding at least 4 times per day
22.2 Ovulation inducers	
Complementary List	
clomifene	***Tablet:** 50 mg (citrate).*

22.3 Uterotonics	
carbetocin	**Injection (heat stable):** 100 micrograms/mL
□ ergometrine Therapeutic alternatives: - methylergometrine	**Injection:** 200 micrograms (hydrogen maleate) in 1 mL ampoule.
mifepristone – misoprostol Where permitted under national law and where culturally acceptable.	**Tablet** 200 mg – **tablet** 200 micrograms. **Co-package containing:** mifepristone 200 mg tablet [1] and misoprostol 200 micrograms tablet [4]
misoprostol	**Tablet:** 200 micrograms. – Management of incomplete abortion and miscarriage; – Prevention and treatment of postpartum haemorrhage where oxytocin is not available or cannot be safely used **Vaginal tablet:** 25 micrograms.* *Only for use for induction of labour where appropriate facilities are available.
oxytocin	**Injection:** 10 IU in 1 mL.
22.4 Antioxytocics (tocolytics)	
nifedipine	**Immediate-release capsule:** 10 mg.
22.5 Other medicines administered to the mother	
dexamethasone	**Injection:** 4 mg/mL (as disodium phosphate salt) in 1 mL ampoule.
multiple micronutrient supplement	**Tablet containing:** Vitamin A (retinol acetate) — 800 micrograms retinol activity equivalent Vitamin C (ascorbic acid) — 70 mg Vitamin D (cholecalciferol) — 5 micrograms (200 IU) Vitamin E (alpha tocopherol succinate) — 10 mg alpha tocopherol equivalent Vitamin B1 (thiamine mononitrate) — 1.4 mg Vitamin B2 (riboflavin) — 1.4 mg Vitamin B3 (niacinamide) — 18 mg niacin equivalent Vitamin B6 (pyridoxine hydrochloride) — 1.9 mg Folic acid (folic acid) — 680 micrograms dietary folate equivalent (400 micrograms) Vitamin B12 (cyanocobalamin) — 2.6 micrograms Iron (ferrous fumarate) — 30 mg Iodine (potassium iodide) — 150 micrograms Zinc (zinc oxide) — 15 mg Selenium (sodium selenite) — 65 micrograms Copper (cupric oxide) — 2 mg
tranexamic acid	**Injection:** 100 mg/mL in 10 mL ampoule
22.6 Medicines administered to the neonate [c]	
caffeine citrate **[c]**	**Injection:** 20 mg/mL (equivalent to 10 mg caffeine base/mL). **Oral liquid:** 20 mg/mL (equivalent to 10 mg caffeine base/mL).
chlorhexidine **[c]**	**Solution or gel:** 7.1% (digluconate) delivering 4% chlorhexidine (for umbilical cord care).

Complementary List	
☐ *ibuprofen* ***[c]*** *Therapeutic alternatives:* *- indometacin*	***Solution for injection***: 5 mg/mL.
☐ *prostaglandin E1* ***[c]*** *Therapeutic alternatives:* *- prostaglandin E2*	***Solution for injection:*** 0.5 mg/mL in alcohol.
surfactant ***[c]***	***Suspension for intratracheal instillation:*** *25 mg/mL or 80 mg/mL.*
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	
☐ chlorpromazine Therapeutic alternatives to be reviewed (2023)	**Injection:** 25 mg/mL (hydrochloride) in 2 mL ampoule. **Oral liquid:** 25 mg/5 mL (hydrochloride). **Tablet:** 100 mg (hydrochloride).
☐ fluphenazine Therapeutic alternatives to be reviewed (2023)	**Injection:** 25 mg (decanoate or enantate) in 1 mL ampoule.
☐ haloperidol Therapeutic alternatives to be reviewed (2023)	**Injection:** 5 mg in 1 mL ampoule. **Tablet:** 2 mg; 5 mg.
☐ paliperidone Therapeutic alternatives: - risperidone injection	**Injection (prolonged-release):** 25 mg; 50 mg; 75 mg; 100 mg; 150 mg (as palmitate) in pre-filled syringe
risperidone	**Solid oral dosage form:** 0.25 mg to 6.0 mg.
Complementary List	
chlorpromazine [c]	***Injection:*** *25 mg/mL (hydrochloride) in 2 mL ampoule.* ***Oral liquid:*** *25 mg/5 mL (hydrochloride).* ***Tablet:*** *10 mg; 25 mg; 50 mg; 100 mg (hydrochloride).*
clozapine	***Solid oral dosage form:*** *25 to 200 mg.*
haloperidol [c]	***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	
☐ amitriptyline Therapeutic alternatives to be reviewed (2023)	**Tablet:** 25 mg; 75mg. (hydrochloride).
☐ fluoxetine Therapeutic alternatives: - citalopram - escitalopram - fluvoxamine - paroxetine - sertraline	**Solid oral dosage form:** 20 mg (as hydrochloride).
Complementary List	
fluoxetine a *[c]*	***Solid oral dosage form:*** *20 mg (as hydrochloride).* a > 8 years.
24.2.2 Medicines used in bipolar disorders	
carbamazepine	**Tablet (scored):** 100 mg; 200 mg.
lithium carbonate	**Solid oral dosage form:** 300 mg.
valproic acid (sodium valproate)* *avoid use in pregnancy and in women and girls of child-bearing potential, unless alternative treatments are ineffective or not tolerated because of the high risk of birth defects and developmental disorders in children exposed to valproate in the womb.	**Tablet (enteric-coated):** 200 mg; 500 mg.
24.3 Medicines for anxiety disorders	
☐ diazepam Therapeutic alternatives to be reviewed (2023)	**Tablet (scored):** 2 mg; 5 mg.
24.4 Medicines used for obsessive compulsive disorders	
clomipramine	**Capsule:** 10 mg; 25 mg (hydrochloride).
24.5 Medicines for disorders due to psychoactive substance use	
bupropion	**Tablet (sustained-release):** 150 mg (hydrochloride)
nicotine replacement therapy (NRT)	**Chewing gum:** 2 mg; 4 mg (as polacrilex). **Transdermal patch:** 5 mg to 30 mg/16 hrs; 7 mg to 21 mg/24 hrs.
varenicline	**Tablet:** 0.5 mg, 1 mg
Complementary List	
☐ *methadone** *Therapeutic alternatives:* *- buprenorphine*	***Concentrate for oral liquid:*** *5 mg/mL; 10 mg/mL (hydrochloride).* ***Oral liquid:*** *5 mg/5 mL; 10 mg/5 mL (hydrochloride).* **The medicines should only be used within an established support programme.*

25. MEDICINES ACTING ON THE RESPIRATORY TRACT	
25.1 Antiasthmatic medicines and medicines for chronic obstructive pulmonary disease	
□ budesonide Therapeutic alternatives: - beclometasone - ciclesonide - flunisolide - fluticasone - mometasone	**Inhalation (aerosol):** 100 micrograms per dose; 200 micrograms per dose.
□ budesonide + □ formoterol Therapeutic alternatives: - beclometasone + formoterol - budesonide + salmeterol - fluticasone + formoterol - fluticasone furoate + vilanterol - mometasone + formoterol	**Dry powder inhaler:** 100 micrograms + 6 micrograms per dose; 200 micrograms + 6 micrograms per dose
epinephrine (adrenaline)	**Injection:** 1 mg/mL (as hydrochloride or hydrogen tartrate) in 1 mL ampoule.
ipratropium bromide	**Inhalation (aerosol):** 20 micrograms/metered dose.
□ salbutamol Therapeutic alternatives: - terbutaline	**Inhalation (aerosol):** 100 micrograms (as sulfate) per dose. **Injection:** 50 micrograms/mL (as sulfate) in 5 mL ampoule. **Metered dose inhaler (aerosol):** 100 micrograms (as sulfate) per dose. **Respirator solution for use in nebulizers:** 5 mg/mL (as sulfate).
□ tiotropium Therapeutic alternatives: - aclidinium - glycopyrronium - umeclidinium	**Powder for inhalaton, capsule:** 18 micrograms **Inhalation solution:** 1.25 micrograms; 2.5 micrograms per actuation
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:** 4% glucose, 0.18% sodium chloride (equivalent to Na+ 30 mmol/L, Cl- 30 mmol/L). **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) **[c]**.

potassium chloride	**Solution:** 11.2% in 20 mL ampoule (equivalent to K+ 1.5 mmol/mL, Cl- 1.5 mmol/mL). **Solution for dilution:** 7.5% (equivalent to K 1 mmol/mL and Cl 1 mmol/mL) **[c]**; 15% (equivalent to K 2 mmol/mL and Cl 2 mmol/mL) **[c]**.
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.
calcium	**Tablet:** 500 mg (elemental).
☐ colecalciferol **[c]** Therapeutic alternatives: - ergocalciferol	**Oral liquid:** 400 IU/mL. **Solid oral dosage form:** 400 IU; 1000 IU.
☐ ergocalciferol Therapeutic alternatives: - colecalciferol	**Oral liquid:** 250 micrograms/mL (10 000 IU/mL). **Solid oral dosage form:** 1.25 mg (50 000 IU).
iodine	**Capsule:** 190 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.
multiple micronutrient powder **[c]**	**Sachets containing:** - iron (elemental) 12.5 mg (as coated ferrous fumarate) - zinc (elemental) 5 mg - vitamin A 300 micrograms - with or without other micronutrients at recommended daily values
nicotinamide	**Tablet:** 50 mg.
pyridoxine	**Tablet:** 25 mg (hydrochloride).
retinol	**Capsule:** 50 000 IU; 100 000 IU; 200 000 IU (as palmitate). **Oral oily solution:** 100 000 IU/mL (as palmitate) 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.
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 [c]	**Topical:** 2%, in alcohol.
☐ budesonide [c] Therapeutic alternatives to be reviewed (2023)	**Nasal spray:** 100 micrograms per dose.
☐ ciprofloxacin [c] Therapeutic alternatives: - ofloxacin	**Solution (ear drops):** 0.3% (as hydrochloride).
☐ xylometazoline a [c] Therapeutic alternatives to be reviewed (2023)	**Nasal spray:** 0.05%. a Not in children less than 3 months.
29. MEDICINES FOR DISEASES OF JOINTS	
29.1 Medicines used to treat gout	
allopurinol	**Tablet:** 100 mg.
29.2 Disease-modifying anti-rheumatic drugs (DMARDs)	
chloroquine	**Tablet:** 100 mg; 150 mg (as phosphate or sulfate).
Complementary List	
azathioprine	***Tablet:*** *50 mg.*
hydroxychloroquine	***Solid oral dosage form:*** *200 mg (as sulfate)*.
methotrexate	***Tablet:*** *2.5 mg (as sodium salt).*
penicillamine	***Solid oral dosage form:*** *250 mg.*
sulfasalazine	***Tablet:*** *500 mg.*
29.3 Juvenile joint diseases	
Complementary List	
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.*
30. DENTAL PREPARATIONS	
fluoride	**Paste, cream or gel:** containing between 1000 and 1500 ppm fluoride (any type). **In other appropriate topical formulations.**
glass ionomer cement	**Single-use capsules:** 0.4 g powder + 0.09 mL liquid. **Multi-use bottle:** powder + liquid. Powder (fluoro-alumino-silicate glass) contains: 25-50% silicate, 20-40% aluminium oxide, 1-20% fluoride, 15-40% metal oxide, 0-15% phosphate, remainder are polyacrylic acid powder and metals in minimal quantities. Liquid (aqueous) contains: 7-25% polybasic carboxylic acid, 45-60% polyacrylic acid.
silver diamine fluoride	**Solution:** 38% w/v.

Table 1.1: Medicines with age or weight restrictions

artesunate + pyronaridine tetraphosphate	> 5 kg
atropine	> 3 months
bedaquiline	≥ 5 years
benzyl benzoate	>2 years
betamethasone topical preparations	hydrocortisone preferred in neonates
cefazolin	> 1 month
ceftriaxone	> 41 weeks corrected gestational age
darunavir	> 3 years
delamanid	≥ 3 years (25 mg dispersible tablet) ≥ 6 years (50 mg tablet)
dihydroartemisinin + piperaquine phosphate	> 5 kg
diloxanide	>25 kg
dolutegravir	≥ 4 weeks and ≥ 3 kg (10 mg dispersible tablet) ≥ 25 kg (50 mg tablet)
doxycycline	> 8 years (except for serious infections e.g. cholera)
fluoxetine	> 8 years
ibuprofen	> 3 months (except IV form for patent ductus arteriosus)
mefloquine	> 5 kg or > 3 months
metoclopramide	Not in neonates
nevirapine	> 6 weeks
ondansetron	> 1 month
silver sulfadiazine	> 2 months
tetracaine	Not in preterm neonates
xylometazoline	> 3 months

Table 1.2: Explanation of dosage forms

A. Principal dosage forms used in EML – oral administration

Term	Definition
Solid oral dosage form	Refers to tablets or capsules or other solid dosage forms such as 'melts' that are immediate-release preparations. It implies that there is no difference in clinical efficacy or safety between the available dosage forms, and countries should therefore choose the form(s) to be listed depending on quality and availability. The term 'solid oral dosage form' is *never* intended to allow any type of modified-release tablet.
Tablets	Refers to: • uncoated or coated (film-coated or sugar-coated) tablets that are intended to be swallowed whole; • unscored and scored*; • tablets that are intended to be chewed before being swallowed; • tablets that are intended to be dispersed or dissolved in water or another suitable liquid before being swallowed; • tablets that are intended to be crushed before being swallowed. The term 'tablet' without qualification is *never* intended to allow any type of modified-release tablet.
Tablets (qualified)	Refers to a specific type of tablet: **chewable** - tablets that are intended to be chewed before being swallowed; **dispersible** - tablets that are intended to be dispersed in water or another suitable liquid before being swallowed; **soluble** - tablets that are intended to be dissolved in water or another suitable liquid before being swallowed; **crushable** - tablets that are intended to be crushed before being swallowed; **scored** - tablets bearing a break mark or marks where sub-division is intended in order to provide doses of less than one tablet; **sublingual** - tablets that are intended to be placed beneath the tongue. The term 'tablet' is *always* qualified with an additional term (in parentheses) in entries where one of the following types of tablet is intended: **gastro-resistant** (such tablets may sometimes be described as enteric-coated or as delayed-release), **prolonged-release** or another modified-release form.

* Scored tablets may be divided for ease of swallowing, provided that dose is a whole number of tablets.

Capsules	Refers to hard or soft capsules. The term 'capsule' without qualification is *never* intended to allow any type of modified-release capsule.
Capsules (qualified)	The term 'capsule' with qualification refers to **gastro-resistant** (such capsules may sometimes be described as enteric-coated or as delayed-release), **prolonged-release** or another modified-release form.
Granules	Preparations that are issued to patient as granules to be swallowed without further preparation, to be chewed, or to be taken in or with water or another suitable liquid. The term 'granules' without further qualification is *never* intended to allow any type of modified-release granules.
Oral powder	Preparations that are issued to patient as powder (usually as single-dose) to be taken in or with water or another suitable liquid.
Oral liquid	Liquid preparations intended to be *swallowed* i.e. oral solutions, suspensions, emulsions and oral drops, including those constituted from powders or granules, but *not* those preparations intended for *oromucosal administration* e.g. gargles and mouthwashes. Oral liquids presented as powders or granules may offer benefits in the form of better stability and lower transport costs. If more than one type of oral liquid is available on the same market (e.g. solution, suspension, granules for reconstitution), they may be interchanged and in such cases should be bioequivalent. It is preferable that oral liquids do not contain sugar and that solutions for children do not contain alcohol.

B. Principal dosage forms used in EML – parenteral administration

Term	Definition
Injection	Refers to solutions, suspensions and emulsions including those constituted from powders or concentrated solutions.
Injection (qualified)	Route of administration is indicated in parentheses where relevant.
Injection (oily)	The term `injection' is qualified by `(oily)' in relevant entries.
Intravenous infusion	Refers to solutions and emulsions including those constituted from powders or concentrated solutions.

C. Other dosage forms

Mode of administration	Term to be used
To the eye	Eye drops, eye ointments.
Topical	For liquids: lotions, paints. For semi-solids: cream, ointment.
Rectal	Suppositories, gel or solution.
Vaginal	Pessaries or vaginal tablets.
Inhalation	Powder for inhalation, pressurized inhalation, nebulizer.

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