The selection and use of essential medicines 2023

Web Annex B

World Health Organization Model List of Essential Medicines for Children

9th list
(2023)

World Health Organization

WHO/MHP/HPS/EML/2023.03

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WHO Model List of Essential Medicines for Children – 9th List (2023)

Explanatory notes

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

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

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

The **square box symbol (□)** is 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. 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 format and numbering of the 22nd WHO Model List of Essential Medicines is used for the 8th WHO Model Essential List for Children. Some sections have been deleted because they contain medicines that are not relevant for children.

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

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

For recommendations and advice concerning all aspects of the quality assurance of medicines see the WHO Medicines website 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 of Annex 1.

Definitions of many of these terms and pharmaceutical quality requirements applicable to the different categories are published in the current edition of *The International Pharmacopoeia* 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 for Children – 9th List (2023)

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).
sevoflurane	**Inhalation.**
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	**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	**Injection:** 1%; 2% (hydrochloride) in vial. **Injection for spinal anaesthesia:** 5% (hydrochloride) in 2 mL ampoule to be mixed with 7.5% glucose solution. **Topical forms:** 2% to 4% (hydrochloride).
lidocaine + epinephrine (adrenaline)	**Dental cartridge:** 2% (hydrochloride) + epinephrine 1:80 000. **Injection:** 1%; 2% (hydrochloride or sulfate) + epinephrine 1:200 000 in vial.
1.3 Preoperative medication and sedation for short-term procedures	
atropine	**Injection:** 1 mg (sulfate) in 1mL ampoule.
☐ midazolam Therapeutic alternatives to be reviewed	**Injection:** 1 mg/mL. **Oral liquid:** 2 mg/mL. **Tablet:** 7.5 mg; 15 mg.
morphine	**Injection:** 10 mg (sulfate or hydrochloride) in 1mL ampoule.
1.4 Medical gases	
oxygen*	**Inhalation** For use in the management of hypoxaemia. *No more than 30% oxygen should be used to initiate resuscitation of neonates less than or equal to 32 weeks of gestation.

2. MEDICINES FOR PAIN AND PALLIATIVE CARE	
2.1 Non-opioids and non-steroidal anti-inflammatory medicines (NSAIMs)	
ibuprofen [a]	**Oral liquid:** 100 mg/5 mL; 200 mg/5 mL. **Tablet:** 200 mg; 400 mg; 600 mg. [a] Not in children less than 3 months.
paracetamol (acetaminophen) *	**Oral liquid:** 120 mg/5 mL or 125 mg/5 mL**; 250 mg/5 mL. **The presence of both 120 mg/5 mL and 125 mg/5 mL strengths on the same market would cause confusion in prescribing and dispensing and should be avoided. **Suppository:** 100 mg; 250 mg. **Tablet:** 250 mg; 325 mg; 500 mg. **Tablet (dispersible):** 100 mg; 250 mg *Not recommended for anti-inflammatory use due to lack of proven benefit to that effect.
2.2 Opioid analgesics	
☐ morphine Therapeutic alternatives: - hydromorphone - 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:** 10 mg/5 mL (morphine hydrochloride or morphine sulfate). **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 symptoms common in palliative care	
amitriptyline	**Tablet:** 10 mg; 25 mg.
cyclizine	**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.
diazepam	**Injection:** 5 mg/mL. **Oral liquid:** 2 mg/5 mL. **Rectal gel:** 5 mg/mL in 0.5 mL, 2 mL, 4 mL rectal delivery system. **Rectal solution:** 2 mg/mL in 1.25 mL, 2.5 mL rectal tubes; 4 mg/mL in 2.5 mL rectal tube. **Tablet:** 5 mg; 10 mg.

docusate sodium	**Capsule:** 100 mg. **Oral liquid:** 50 mg/5 mL.
hyoscine hydrobromide	**Injection:** 400 micrograms/mL; 600 micrograms/mL. **Transdermal patches:** 1 mg/72 hours.
lactulose	**Oral liquid:** 3.1 to 3.7 g/5 mL.
midazolam	**Injection:** 1 mg/mL; 5 mg/mL. **Oral liquid:** 2mg/mL. **Solid oral dosage form:** 7.5 mg; 15 mg.
☐ ondansetron [a] 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.*
☐ prednisolone Therapeutic alternatives: - prednisone	**Oral liquid:** 5 mg/mL. **Tablet:** 5 mg; 25 mg.

4. ANTIDOTES AND OTHER SUBSTANCES USED IN POISONINGS	
4.1 Non-specific	
charcoal, activated	**Powder.**
4.2 Specific	
acetylcysteine	**Injection:** 200 mg/mL in 10 mL ampoule. **Oral liquid:** 10%; 20%.
atropine	**Injection:** 1 mg (sulfate) in 1 mL ampoule.
calcium gluconate	**Injection:** 100 mg/mL in 10 mL ampoule.
naloxone	**Injection:** 400 micrograms (hydrochloride) in 1 mL ampoule.
Complementary List	
deferoxamine	***Powder for injection:*** *500 mg (mesilate) in vial.*
dimercaprol	***Injection in oil:*** *50 mg/mL in 2 mL ampoule.*
fomepizole	***Injection:*** *5 mg/mL (sulfate) in 20 mL ampoule or 1 g/mL (base) in 1.5 mL ampoule.*
sodium calcium edetate	***Injection:*** *200 mg/mL in 5 mL ampoule.*
succimer	***Solid oral dosage form:*** *100 mg.*
5. MEDICINES FOR DISEASES OF THE NERVOUS SYSTEM	
5.1 Antiseizure medicines	
carbamazepine	**Oral liquid:** 100 mg/5 mL. **Tablet (chewable):** 100 mg; 200 mg. **Tablet (scored):** 100 mg; 200 mg; 400 mg.
diazepam	**Rectal gel:** 5 mg/mL in 0.5 mL, 2 mL, 4 mL rectal delivery system. **Rectal solution:** 2 mg/mL in 1.25 mL, 2.5 mL rectal tubes; 4 mg/mL in 2.5 mL rectal tube.
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.
levetiracetam	**Oral solution:** 100 mg/mL. **Tablet:** 250 mg; 500 mg; 750 mg; 1000 mg.
☐ lorazepam Therapeutic alternatives: - diazepam (injection) - midazolam (injection)	**Injection:** 2 mg/mL in 1 mL ampoule; 4 mg/mL in 1 mL ampoule.

midazolam	**Solution for oromucosal administration:** 5 mg/mL in 0.5 mL, 1 mL, 1.5 mL, 2 mL pre-filled syringe; 10 mg/mL in 0.25 mL, 0.5 mL, 0.75 mL, 1 mL pre-filled syringe. **Injection*:** 1 mg/mL in 5 mL vial; 5 mg/mL in 1 mL or 3 mL vial. *For buccal administration when solution for oromucosal administration is not available.
phenobarbital	**Injection:** 30 mg/mL or 60 mg/mL; 200 mg/mL (sodium). **Oral liquid:** 15 mg/5 mL. **Tablet:** 15 mg to 100 mg.
phenytoin	**Injection:** 50 mg/mL (phenytoin sodium). **Oral liquid:** 30 mg/5 mL (phenytoin). **Solid oral dosage form:** 25 mg; 50 mg; 100 mg (phenytoin sodium). **Tablet (chewable):** 50 mg (phenytoin).
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.*
levetiracetam	***Concentrate solution for infusion:*** *500 mg/5mL in 5 mL vial.* ***Solution for infusion:*** *5 mg/mL; 10 mg/mL; 15 mg/mL in 100 mL bag.*
*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 3 mL, 4 mL, 10 mL ampoule.*
~~5.2 Medicines for multiple sclerosis~~	
~~5.3 Medicines for parkinsonism~~	

6. ANTI-INFECTIVE MEDICINES	
6.1 Anthelminthics	
6.1.1 Intestinal anthelminthics	
albendazole	**Tablet (chewable, scored):** 400 mg.
ivermectin	**Tablet:** 3 mg.
levamisole	**Tablet:** 50 mg (as hydrochloride).
mebendazole	**Tablet (chewable):** 100 mg; 500 mg.
niclosamide	**Tablet (chewable):** 500 mg.
praziquantel	**Tablet:** 150 mg; 500 mg. **Tablet (scored):** 600 mg.
pyrantel	**Tablet (chewable):** 250 mg (as embonate or pamoate).
6.1.2 Antifilarials	
albendazole	**Tablet (chewable, scored):** 400 mg.
diethylcarbamazine	**Tablet:** 50 mg; 100 mg (dihydrogen citrate).
ivermectin	**Tablet:** 3 mg.
6.1.3 Antischistosomals and other antitrematode medicines	
praziquantel	**Tablet:** 150 mg; 500 mg. **Tablet (scored):** 600 mg.
triclabendazole	**Tablet (scored):** 250 mg.
Complementary List	
*oxamniquine**	***Capsule:*** *250 mg.* ***Oral liquid:*** *250 mg/5 mL.* **For use when praziquantel treatment fails.*
6.1.4 Cysticidal medicines	
Complementary List	
albendazole	***Tablet (chewable):*** *200 mg.* ***Tablet (chewable, scored):*** *400 mg.*
mebendazole	***Tablet (chewable):*** *100 mg; 500 mg.*
praziquantel	***Tablet:*** *150 mg; 500 mg.* ***Tablet (scored):*** *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 has been developed by WHO – 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: 50 mg/mL (as sulfate); 250 mg/mL (as sulfate) in 2 mL vial.</td></tr>
<tr><td>FIRST CHOICE

– High-risk febrile neutropenia-pyelonephritis (severe)</td><td>SECOND CHOICE

– Sepsis in neonates and children</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).

Solid oral dosage form: 250 mg; 500 mg (as trihydrate).

Tablet (dispersible, scored): 250 mg; 500 mg (as trihydrate).</td></tr>
<tr><td>FIRST CHOICE

– Community acquired pneumonia (mild to moderate)
– Community acquired pneumonia (severe)
– Complicated severe acute malnutrition
– Otitis media
– Pharyngitis
– Progressive apical dental abscess
– Sepsis in neonates and children
– Sinusitis
– Uncomplicated severe acute malnutrition</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.

Tablet: 500 mg (as trihydrate) + 125 mg (as potassium salt).

Tablet (dispersible): 200 mg (as trihydrate) + 28.5 mg (as potassium salt); 250 mg (as trihydrate) + 62.5 mg (as potassium salt).</td></tr>
<tr><td>FIRST CHOICE

– Community acquired pneumonia (severe)
– Complicated intraabdominal infections (mild to moderate)
– Hospital acquired pneumonia
– Low-risk febrile neutropenia
– Lower urinary tract infections
– Sinusitis
– Skin and soft tissue infections</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)
– Complicated intraabdominal infections
– Complicated severe acute malnutrition
– Sepsis in neonates and children</td><td>SECOND CHOICE
– Acute bacterial meningitis</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">benzathine benzylpenicillin</td><td colspan="2">Powder for injection: 1.2 million IU (≈ 900 mg) in vial; 2.4 million IU (≈ 1.8 g) in vial.</td></tr>
<tr><td>FIRST CHOICE
– Syphilis (congenital)</td><td>SECOND CHOICE</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">benzylpenicillin</td><td colspan="2">Powder for injection: 600 mg (= 1 million IU); 3 g (= 5 million IU) (sodium or potassium salt) in vial.</td></tr>
<tr><td>FIRST CHOICE
– Community acquired pneumonia (severe)
– Complicated severe acute malnutrition
– Sepsis in neonates and children
– Syphilis (congenital)</td><td>SECOND CHOICE
– Acute bacterial meningitis</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">cefalexin</td><td colspan="2">Powder for oral liquid: 125 mg/5 mL; 250 mg/5 mL (anhydrous).
Solid oral dosage form: 250 mg (as monohydrate).
Tablet (dispersible): 125 mg; 250 mg.</td></tr>
<tr><td>FIRST CHOICE
– Skin and soft tissue infections</td><td>SECOND CHOICE
– 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">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.
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="2">clindamycin</td><td colspan="2">Capsule: 150 mg (as hydrochloride).
Injection: 150 mg/mL (as phosphate).
Powder for oral liquid: 75 mg/5 mL (as palmitate hydrochloride).</td></tr>
<tr><td>FIRST CHOICE
– Necrotizing fasciitis</td><td>SECOND CHOICE
– Bone and joint infections</td></tr>
<tr><td rowspan="2">☐ cloxacillin*
Therapeutic alternatives:
- 4th level ATC chemical subgroup (J01CF Beta-lactamase resistant penicillins)</td><td colspan="2">Capsule: 250 mg; 500 mg; 1 g (as sodium).
Powder for injection: 250 mg; 500 mg (as sodium) in vial.
Powder for oral liquid: 125 mg/5 mL; 250 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</td></tr>
<tr><td rowspan="2">doxycycline a</td><td colspan="2">Oral liquid: 50 mg/5 mL (calcium).
Powder for oral liquid: 25 mg/5 mL (monohydrate).
Powder for injection: 100 mg in vial.
Solid oral dosage form: 50 mg; 100 mg (as hyclate).
Tablet (dispersible): 100 mg (as monohydrate).
a Use in children <8 years only for life-threatening infections when no alternative exists.</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
– Cholera
– Community acquired pneumonia (mild to moderate)</td></tr>
<tr><td rowspan="2">gentamicin</td><td colspan="2">Injection: 10 mg/mL (as sulfate); 40 mg/mL (as sulfate) in 2 mL vial.</td></tr>
<tr><td>FIRST CHOICE
– Acute bacterial meningitis in neonates
– Community acquired pneumonia (severe)
– Complicated intraabdominal infections
– Complicated severe acute malnutrition
– Sepsis in neonates and children</td><td>SECOND CHOICE
– Surgical prophylaxis</td></tr>
</table>

<table>
<tr><td rowspan="2">metronidazole</td><td colspan="2">Injection: 500 mg in 100 mL vial.
Oral liquid: 200 mg/5 mL (as benzoate).
Tablet: 200 mg; 250 mg; 400 mg; 500 mg.</td></tr>
<tr><td>FIRST CHOICE
– C. difficile infection
– Complicated intra-abdominal infections (mild to moderate)
– Complicated intra-abdominal infections (severe)
– Necrotizing fasciitis
– Surgical prophylaxis</td><td>SECOND CHOICE
– Complicated intra-abdominal infections (mild to moderate)</td></tr>
<tr><td rowspan="2">nitrofurantoin</td><td colspan="2">Oral liquid: 25 mg/5 mL.
Solid oral dosage form: 50 mg; 100 mg.</td></tr>
<tr><td>FIRST CHOICE
– Lower urinary tract infections</td><td>SECOND CHOICE</td></tr>
<tr><td rowspan="2">phenoxymethylpenicillin</td><td colspan="2">Powder for oral liquid: 250 mg/5 mL (as potassium).
Solid oral dosage form: 250 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 rowspan="2">procaine benzylpenicillin*</td><td colspan="2">Powder for injection: 1 g (=1 million IU); 3 g (=3 million IU) in vial.
*Procaine benzylpenicillin is not recommended as first-line treatment for neonatal sepsis / sepsis except in settings with high neonatal mortality, when given by trained health workers in cases where hospital care is not achievable.</td></tr>
<tr><td>FIRST CHOICE
– Syphilis (congenital)</td><td>SECOND CHOICE</td></tr>
<tr><td rowspan="2">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.
Tablet (dispersible): 100 mg + 20 mg.</td></tr>
<tr><td>FIRST CHOICE
– Lower urinary tract infections</td><td>SECOND CHOICE
– Acute invasive bacterial diarrhoea / dysentery</td></tr>
<tr><td rowspan="2">trimethoprim</td><td colspan="2">Tablet: 100 mg; 200 mg.
Oral liquid: 50 mg/5 mL.</td></tr>
<tr><td>FIRST CHOICE
– Lower urinary tract infections</td><td>SECOND CHOICE</td></tr>
</table>

<table>
<tr><td colspan="3">6.2.2 Watch group antibiotics</td></tr>
<tr><td rowspan="3">azithromycin</td><td colspan="2">Solid oral dosage form: 250 mg; 500 mg (anhydrous).
Powder for oral liquid: 200 mg/5 mL (anhydrous).</td></tr>
<tr><td>FIRST CHOICE
– Cholera
– Enteric fever
– Trachoma
– Yaws</td><td>SECOND CHOICE
– Acute invasive bacterial diarrhoea / dysentery</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">cefixime</td><td colspan="2">Powder for oral liquid: 100 mg/5 mL.
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</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">cefotaxime*</td><td colspan="2">Powder for injection: 250 mg; 500 mg; 1 g; 2 g (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 (severe)</td><td>SECOND CHOICE
– Bone and joint infections
– Pyelonephritis (mild to moderate)
– Sepsis in neonates and children</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">ceftriaxone*a</td><td colspan="2">Powder for injection: 250 mg; 500 mg; 1 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 intraabdominal infections (severe)
– Endophthalmitis
– Enteric fever
– Hospital acquired pneumonia
– Necrotizing fasciitis
– Pyelonephritis (severe)</td><td>SECOND CHOICE
– Acute invasive bacterial diarrhoea / dysentery
– Bone and joint infections
– Pyelonephritis (mild to moderate)
– Sepsis in neonates and children</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>
</table>

<table>
<tr><td rowspan="3">ciprofloxacin</td><td colspan="2">Oral liquid: 250 mg/5 mL (anhydrous) .
Solution for IV infusion: 2 mg/ mL (as hyclate) .
Solid oral dosage form: 100 mg; 250 mg (as hydrochloride).</td></tr>
<tr><td>FIRST CHOICE
– Acute invasive bacterial diarrhoea / dysentery
– Enteric fever
– Low-risk febrile neutropenia
– Pyelonephritis (mild to moderate)</td><td>SECOND CHOICE
– Cholera
– Complicated intraabdominal infections (mild to moderate)</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">☐ clarithromycin
Therapeutic alternatives:
- erythromycin</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: 250 mg.</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
– Pharyngitis</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">piperacillin + tazobactam</td><td colspan="2">Powder for injection: 2 g (as sodium) + 250 mg (as sodium); 4 g (as sodium) + 500 mg (as sodium) in vial.</td></tr>
<tr><td>FIRST CHOICE
– Complicated intraabdominal infections (severe)
– High-risk febrile neutropenia
– Hospital acquired pneumonia
– Necrotizing fasciitis</td><td>SECOND CHOICE</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">vancomycin*</td><td colspan="2">Capsule: 125 mg; 250 mg (as hydrochloride).
*vancomycin powder for injection may also be used for oral administration.</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
– C. difficile infection</td></tr>
<tr><td></td></tr>
<tr><td colspan="3">Complementary List</td></tr>
<tr><td rowspan="3">ceftazidime</td><td colspan="2">Powder for injection: 250 mg; 1 g (as pentahydrate) in vial.</td></tr>
<tr><td>FIRST CHOICE
– Endophthalmitis</td><td>SECOND CHOICE</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">☐ 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.</td><td colspan="2">Powder for injection: 500 mg (as trihydrate); 1 g (as trihydrate) in vial
a > 3 months.</td></tr>
<tr><td>FIRST CHOICE</td><td>SECOND CHOICE
– Acute bacterial meningitis in neonates
– Complicated intraabdominal infections (severe)
– High-risk febrile neutropenia</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">vancomycin</td><td colspan="2">Powder for injection: 250 mg; 500 mg; 1 g (as hydrochloride) in vial.</td></tr>
<tr><td>FIRST CHOICE
– Endophthalmitis
– Necrotizing fasciitis</td><td>SECOND CHOICE
– High-risk febrile neutropenia</td></tr>
<tr><td></td></tr>
</table>

6.2.3 Reserve group antibiotics	
Complementary List	
ceftazidime + avibactam	***Powder for injection:*** *2 g + 0.5 g in vial*
ceftolozane + tazobactam	***Powder for injection:*** *1 g + 0.5 g in vial.*
colistin	***Powder for injection****: 1 million IU (as colistemethate sodium) (equivalent to 34 mg colistin base activity) 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 (dispersible):*** *150 mg.*
polymyxin B	***Powder for injection:*** *500,000 IU (equivalent to 50 mg polymyxin B base) 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	**Solid oral dosage form:** 50 mg; 100 mg.
dapsone	**Tablet:** 25 mg; 50 mg; 100 mg.
rifampicin	**Oral liquid:** 20 mg/mL. **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	**Tablet:** 100 mg; 400 mg (hydrochloride). **Tablet (dispersible**): 100 mg.
ethionamide	**Tablet:** 250 mg **Tablet (dispersible):** 125 mg.
isoniazid	**Tablet:** 100 mg; 300 mg. **Tablet (dispersible):** 100 mg.
isoniazid + pyrazinamide + rifampicin	**Tablet (dispersible):** 50 mg + 150 mg + 75 mg.
isoniazid + rifampicin	**Tablet (dispersible):** 50 mg + 75 mg.
isoniazid + rifapentine	**Tablet (scored):** 300 mg + 300 mg.
pyrazinamide	**Tablet:** 400 mg; 500 mg. **Tablet (dispersible):** 150 mg.
rifampicin	**Oral liquid:** 20 mg/mL. **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:*** *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.* ***Tablet:*** *500 mg (as trihydrate) + 125 mg (as potassium salt).* **For use only in combination with meropenem.*
bedaquiline	***Tablet:*** *20 mg; 100 mg.*
clofazimine	***Solid oral dosage form:*** *50 mg; 100 mg.*
cycloserine	***Solid oral dosage form:*** *125 mg; 250 mg.*
delamanid	***Tablet (dispersible):*** *25 mg.* ***Tablet:*** *50 mg.*
☐ *ethionamide* *Therapeutic alternatives:* *- protionamide*	***Tablet:*** *250 mg.* ***Tablet (dispersible****): 125 mg.*
levofloxacin	***Tablet:*** *250 mg; 500 mg.* ***Tablet (dispersible)****: 100 mg.*
linezolid	***Tablet:*** *600 mg.* ***Tablet (dispersible****): 150 mg.*
meropenem	***Powder for injection:*** *500 mg (as trihydrate); 1 g (as trihydrate) in vial.*
moxifloxacin	***Tablet:*** *400 mg.* ***Tablet (dispersible)****: 100 mg.*
p-aminosalicylate sodium	***Powder for oral solution:*** *5.52 g in sachet (equivalent to 4 g p-aminosalicylic acid.*
streptomycin	***Powder for injection:*** *1 g (as sulfate) in vial.*
6.3 Antifungal medicines	
amphotericin B*	**Powder for injection:** 50 mg (liposomal complex) in vial. **Powder for injection:** 50 mg (as sodium deoxycholate) in vial. *Liposomal amphotericin B has a better safety profile than the sodium deoxycholate formulation and should be prioritized for selection and use depending on local availability and cost.
fluconazole	**Capsule:** 50 mg. **Injection:** 2 mg/mL in vial. **Oral liquid:** 50 mg/5 mL. **Powder for oral liquid:** 50 mg/5 mL.
flucytosine	**Capsule:** 250 mg. **Infusion:** 2.5 g in 250 mL.
griseofulvin	**Oral liquid:** 125 mg/5 mL. **Solid oral dosage form:** 125 mg; 250 mg.

itraconazole*	**Capsule:** 100 mg. **Oral liquid:** 10 mg/mL. *For treatment of chronic pulmonary aspergillosis, acute invasive aspergillosis, histoplasmosis, sporotrichosis, paracoccidiodomycosis, mycoses caused by *T. marneffei* and chromoblastomycosis; and prophylaxis of histoplasmosis and infections caused by *T. marneffei* in AIDS patients.
nystatin	**Lozenge:** 100 000 IU. **Oral liquid:** 100 000 IU/mL. **Solid oral dosage form:** 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	**Oral liquid:** 200 mg/5 mL. **Powder for injection:** 250 mg (as sodium salt) in vial. **Tablet:** 200 mg.

6.4.2 Antiretrovirals	
Based on current evidence and experience of use, medicines in the following classes of antiretrovirals are included as essential medicines for treatment and prevention of HIV (prevention of mother-to-child transmission and post-exposure prophylaxis). WHO emphasizes the importance of using these products in accordance with global and national guidelines. WHO recommends and endorses the use of fixed-dose combinations and the development of appropriate new fixed-dose combinations, including modified dosage forms, non-refrigerated products and paediatric dosage forms of assured pharmaceutical quality. Scored tablets can be used in children and therefore can be considered for inclusion in the listing of tablets, provided that adequate quality products are available.	
6.4.2.1 Nucleoside/Nucleotide reverse transcriptase inhibitors	
lamivudine	**Oral liquid:** 50 mg/5 mL.
zidovudine	**Oral liquid:** 50 mg/5 mL.
6.4.2.2 Non-nucleoside reverse transcriptase inhibitors	
nevirapine [a]	**Oral liquid:** 50 mg/5 mL. **Tablet (dispersible):** 50 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).	
darunavir [a]	**Tablet:** 75 mg. [a] > 3 years
lopinavir + ritonavir	**Solid oral dosage form:** 40 mg + 10 mg. **Tablet (heat stable):** 100 mg + 25 mg.
ritonavir	**Tablet (heat stable):** 25 mg; 100 mg.
6.4.2.4 Integrase inhibitors	
dolutegravir [a]	**Tablet (dispersible, scored):** 10 mg. [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. *For use in second-line regimens in accordance with WHO treatment guidelines
6.4.2.5 Fixed-dose combinations of antiretroviral medicines	
abacavir + lamivudine	**Tablet (dispersible, scored):** 120 mg (as sulfate) + 60 mg.
lamivudine + zidovudine	**Tablet:** 30 mg + 60 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 only.
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**	***Powder for oral solution:*** *50 mg/mL* ***Tablet:*** *450 mg.* **For the treatment of cytomegalovirus retinitis (CMVr).*
6.4.4 Antihepatitis medicines	
6.4.4.1 Medicines for hepatitis B	
6.4.4.1.1 Nucleoside/Nucleotide reverse transcriptase inhibitors	
entecavir	**Oral liquid:** 0.05 mg/ mL **Tablet:** 0.5 mg; 1 mg
6.4.4.2 Medicines for hepatitis C	
Pangenotypic direct-acting antivirals should be considered as therapeutically equivalent 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	**Granules**: 50 mg + 20 mg in sachet. **Tablet:** 100 mg + 40 mg.
sofosbuvir*	**Tablet:** 200 mg; 400 mg. *Pangenotypic when used in combination with daclatasvir
sofosbuvir + velpatasvir	**Tablet:** 200 mg + 50 mg**;** 400 mg + 100 mg
~~*6.4.4.2.2 Non-pangenotypic direct-acting antiviral combinations*~~	
~~*6.4.4.2.3 Other antivirals for hepatitis C*~~	

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; 250 mg; 400 mg; 500 mg
6.5.2 Antileishmaniasis medicines	
amphotericin B*	**Powder for injection:** 50 mg (liposomal complex) in vial. **Powder for injection:** 50 mg (as sodium deoxycholate) in vial. *Liposomal amphotericin B has a better safety profile than the sodium deoxycholate formulation and should be prioritized for selection and use depending on local availability and cost.
meglumine antimoniate	**Injection:** 1.5 g/5 mL in 5 mL ampoule.
miltefosine	**Solid oral dosage form:** 10 mg; 50 mg.
paromomycin	**Solution for intramuscular injection:** 750 mg of paromomycin base (as sulfate).
sodium stibogluconate	**Injection:** 100 mg/mL in 30 mL vial.
6.5.3 Antimalarial medicines	
6.5.3.1 For curative treatment	
Medicines for the treatment of *P. falciparum* malaria cases should be used in combination. The list currently recommends combinations according to treatment guidelines. WHO recognizes that not all of the fixed dose combinations (FDCs in the WHO treatment guidelines exist, and encourages their development and rigorous testing. WHO also encourages development and testing of rectal dosage formulations.	
amodiaquine*	**Tablet:** 153 mg or 200 mg (as hydrochloride). *To be used in combination with artesunate 50 mg.
artemether*	**Oily injection:** 80 mg/mL in 1 mL ampoule. *For use in the management of severe malaria.
artemether + lumefantrine*	**Tablet:** 20 mg + 120 mg. **Tablet (dispersible):** 20 mg + 120 mg. *Not recommended in the first trimester of pregnancy or in children below 5 kg.
artesunate*	**Injection:** ampoules, containing 60 mg anhydrous artesunic acid with a separate ampoule of 5% sodium bicarbonate solution. For use in the management of severe malaria. **Rectal dosage form:** 50 mg; 100 mg; 200 mg capsules For pre-referral treatment of severe malaria only; patients should be taken to an appropriate health facility for follow-up care. **Tablet:** 50 mg. *To be used in combination with either amodiaquine, mefloquine or sulfadoxine + pyrimethamine.

artesunate + amodiaquine *	**Tablet:** 25 mg + 67.5 mg; 50 mg + 135 mg; 100 mg + 270 mg. *Other combinations that deliver the target doses required such as 153 mg or 200 mg (as hydrochloride) with 50 mg artesunate can be alternatives.
artesunate + mefloquine	**Tablet:** 25 mg + 55 mg; 100 mg + 220 mg.
artesunate + pyronaridine tetraphosphate a	**Granules**: 20 mg + 60 mg. **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	**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 for the treatment of *Plasmodium vivax* infection.
doxycycline a	**Solid oral dosage form:** 100 mg (as hydrochloride or hyclate). a > 8 years.
mefloquine a	**Tablet:** 250 mg (as hydrochloride). a > 5 kg or > 3 months.
proguanil*	**Tablet:** 100 mg (as hydrochloride). *For use only in combination with chloroquine.

sulfadoxine + pyrimethamine	**Tablet:** 250 mg + 12.5 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. **Tablet:** 100 mg + 20 mg; 400 mg + 80 mg. **Tablet (dispersible):** 100 mg + 20 mg.
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:** 300 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 50 mL bottle. *To be used for the treatment of *Trypanosoma brucei gambiense* infection.
nifurtimox*	**Tablet (scored):** 30 mg; 120 mg. *Only to be used in combination with eflornithine, for the treatment of *Trypanosoma brucei gambiense* infection.
Complementary List	
melarsoprol	***Injection:** 180 mg/5 mL in 5 mL ampoule (3.6% solution).*
6.5.5.2 American trypanosomiasis	
benznidazole	**Tablet:** 12.5 mg. **Tablet (scored):** 50 mg; 100 mg.
nifurtimox	**Tablet (scored):** 30 mg; 120 mg.
6.6 Medicines for ectoparasitic infections	
ivermectin	**Tablet:** 3 mg.

6.7 Medicines for Ebola virus disease	
ansuvimab	**Powder for injection:** 400 mg.
atoltivimab + maftivimab + odesivimab	**Injection:** 241.7 mg + 241.7 mg + 241.7 mg in 14.5 mL vial.
6.8 Medicines for COVID-19	
WHO recommends that effective and safe therapeutics for prevention and treatment of COVID-19 should be considered as essential medicines in the context of the public health emergency. WHO recommendations are revised and updated regularly in WHO living guidelines for therapeutics for the treatment and prevention of COVID-19. Selection of essential therapeutics for COVID-19 at the national level should be informed by recommendations in these guidelines, and consideration of the latest evidence, epidemiology and national priorities. The latest WHO Therapeutics and COVID-19: living guideline is available online at: https://app.magicapp.org/#/guideline/nBkO1E The latest WHO Drugs to prevent COVID-19: living guideline is available online at: https://app.magicapp.org/#/guideline/L6RxYL	
7. ANTIMIGRAINE MEDICINES	
7.1 For treatment of acute attack	
ibuprofen	**Oral liquid:** 100 mg/5 mL. **Tablet:** 200 mg; 400 mg.
paracetamol (acetaminophen)	**Oral liquid:** 120 mg/5 mL or 125 mg/5 mL*; 250 mg/5 mL. *The presence of both 120 mg/5 mL and 125 mg/5mL strengths on the same market would cause confusion in prescribing and dispensing and should be avoided. **Suppository:** 250 mg. **Tablet:** 250 mg; 325 mg; 500 mg. **Tablet (dispersible):** 100 mg; 250 mg.
7.2 For prophylaxis	
propranolol	**Tablet:** 20 mg; 40 mg (hydrochloride).

8. IMMUNOMODULATORS AND ANTINEOPLASTICS	
8.1 Immunomodulators for non-malignant disease	
Complementary List	
☐ *adalimumab** *Therapeutic alternatives*:* *- etanercept* *- infliximab* **including quality-assured biosimilars*	***Injection:*** *10 mg/0.2 mL; 20 mg/0.4 mL; 40 mg/0.8 mL; 40 mg/0.4 mL.*
azathioprine	***Oral lliquid:*** *10 mg/mL.* ***Powder for injection:*** *50 mg; 100 mg (as sodium salt) in vial.* ***Tablet****: 25 mg.* ***Tablet (scored):*** *50 mg.*
ciclosporin	***Capsule:*** *25 mg.* ***Concentrate for injection:*** *50 mg/mL in 1 mL ampoule.* ***Oral liquid:*** *100 mg/mL.*
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 Antineoplastic 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; 2 mg/mL.* *– Acute promyelocytic leukaemia*
*asparaginase** **including quality-assured biosimilars*	***Powder for injection:*** *10 000 IU in vial.* *– Acute lymphoblastic leukaemia*
bleomycin	***Powder for injection:*** *15 000 IU (as sulfate) in vial.* *– Hodgkin lymphoma* *– Kaposi sarcoma* *– Testicular germ cell tumours* *– Ovarian germ cell tumours*
calcium folinate (leucovorin calcium)	***Injection****: 3 mg/mL in 10 mL ampoule; 7.5 mg/mL in 2 mL ampoule; 10 mg/mL in 5 mL ampoule.* ***Tablet:*** *5 mg; 15 mg; 25 mg.* *– Burkitt lymphoma* *– Osteosarcoma*

carboplatin	***Injection:*** *50 mg/5 mL; 150 mg/15 mL; 450 mg/45 mL; 600 mg/60 mL.* – *Low-grade glioma* – *Nephroblastoma (Wilms tumour)* – *Osteosarcoma* – *Ovarian germ cell tumours* – *Retinoblastoma* – *Testicular germ cell tumours*
cisplatin	***Injection:*** *10 mg/10 mL; 20 mg/20 mL; 50 mg/50 mL; 100 mg/100mL.* – *Low-grade glioma* – *Nasopharyngeal cancer* – *Osteosarcoma* – *Ovarian germ cell tumours* – *Testicular germ cell tumours*
cyclophosphamide	***Powder for injection:*** *500 mg; 1 g; 2 g in vial.* ***Solid oral dosage form:*** *25 mg; 50 mg.* – *Acute lymphoblastic leukaemia* – *Anaplastic large cell lymphoma* – *Burkitt lymphoma* – *Diffuse large B-cell lymphoma* – *Ewing sarcoma* – *Hodgkin lymphoma* – *Low-grade glioma* – *Nephroblastoma (Wilms tumour)* – *Rhabdomyosarcoma*
cytarabine	***Injection:*** *100 mg/mL in vial.* ***Powder for injection:*** *100 mg in vial.* – *Acute lymphoblastic leukaemia* – *Acute myeloid leukaemia* – *Acute promyelocytic leukaemia* – *Anaplastic large cell lymphoma* – *Burkitt lymphoma* – *Langerhans cell histiocytosis*
dacarbazine	***Powder for injection:*** *100 mg; 200 mg in vial.* – *Hodgkin lymphoma*
dactinomycin	***Powder for injection:*** *500 micrograms in vial.* – *Ewing sarcoma* – *Nephroblastoma (Wilms tumour)* – *Rhabdomyosarcoma*
daunorubicin	***Injection****: 2 mg/mL; 5 mg/mL (as hydrochloride) in vial.* ***Powder for injection:*** *20 mg; 50 mg (as hydrochloride) in vial.* – *Acute lymphoblastic leukaemia* – *Acute promyelocytic leukaemia*

doxorubicin	*Injection: 2 mg/mL (hydrochloride) in 5 mL, 25 mL vial.* *Powder for injection: 10 mg; 50 mg (hydrochloride) in vial.* – *Acute lymphoblastic leukaemia* – *Anaplastic large cell lymphoma* – *Burkitt lymphoma* – *Diffuse large B-cell lymphoma* – *Ewing sarcoma* – *Hodgkin lymphoma* – *Kaposi sarcoma* – *Nephroblastoma (Wilms tumour)* – *Osteosarcoma*
doxorubicin (as pegylated liposomal)	*Injection: 2 mg/mL (hydrochloride) in 10 mL, 25 mL vial.* – *Kaposi sarcoma*
etoposide	*Capsule: 50 mg; 100 mg.* *Injection: 20 mg/mL in 5 mL ampoule.* *Powder for injection: 100 mg (as phosphate) in vial.* – *Acute lymphoblastic leukaemia* – *Acute myeloid leukaemia* – *Anaplastic large cell lymphoma* – *Burkitt lymphoma* – *Ewing sarcoma* – *Hodgkin lymphoma* – *Nephroblastoma (Wilms tumour)* – *Osteosarcoma* – *Ovarian germ cell tumours* – *Retinoblastoma* – *Testicular germ cell tumours*
fluorouracil	*Injection: 50 mg/mL in vial.* – *Early stage colon cancer* – *Early stage rectal cancer* – *Nasopharyngeal cancer* – *Metastatic colorectal cancer*
hydroxycarbamide (hydroxyurea)	*Solid oral dosage form: 100 mg; 200 mg; 300 mg; 400 mg; 500 mg; 1 g.* – *Chronic myeloid leukaemia*
ifosfamide	*Powder for injection: 500 mg; 1 g; 2 g in vial.* – *Anaplastic large cell lymphoma* – *Burkitt lymphoma* – *Ewing sarcoma* – *Nephroblastoma (Wilms tumour)* – *Osteosarcoma* – *Ovarian germ cell tumours* – *Rhabdomyosarcoma* – *Testicular germ cell tumours*
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*

mercaptopurine	***Tablet:*** *50 mg.* ***Oral liquid:*** *20 mg/mL.* – *Acute lymphoblastic leukaemia* – *Acute promyelocytic leukaemia* – *Langerhans cell histocytosis*
methotrexate	***Concentrated injection****: 1000 mg/10 mL.* ***Injection****: 50 mg/2 mL.* ***Powder for injection:*** *50 mg (as sodium) in vial.* ***Tablet:*** *2.5 mg (as sodium).* – *Acute lymphoblastic leukaemia* – *Acute promyelocytic leukaemia* – *Anaplastic large cell lymphoma* – *Burkitt lymphoma* – *Langerhans cell histocytosis* – *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.* – *Ovarian germ cell tumours*
*pegaspargase** **including quality-assured biosimilars*	***Injection:*** *3750 units/5 mL in vial* ***Powder for injection****: 3750 units in vial.* – *Acute lymphoblastic leukaemia.*
procarbazine	***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	***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.* – *Anaplastic large cell lymphoma* – *Hodgkin lymphoma* – *Langerhans cell histiocytosis* – *Low-grade glioma* – *Ovarian germ cell tumours* – *Testicular germ cell tumours*

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* – *Hodgkin lymphoma* – *Kaposi sarcoma* – *Langerhans cell histiocytosis* – *Low-grade glioma* – *Nephroblastoma (Wilms tumour)* – *Retinoblastoma* – *Rhabdomyosarcoma*
vinorelbine	*Capsule: 20 mg; 30 mg.* *Injection: 10 mg/mL in 1 mL, 5 mL vial.* – *Rhabdomyosarcoma*
8.2.2 Targeted therapies	
Complementary List	
all-trans retinoid acid (ATRA)	*Capsule: 10 mg.* – *Acute promyelocytic leukaemia*
dasatinib	*Tablet: 20 mg; 50 mg; 70 mg; 80 mg.* – *Imatinib-resistant chronic myeloid leukaemia*
everolimus	*Tablet: 2.5 mg; 5 mg; 7.5 mg; 10 mg.* *Tablet (dispersible): 2 mg; 3 mg; 5 mg.* – *Subependymal giant cell astrocytoma*
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.* – *Burkitt lymphoma* – *Diffuse large B-cell lymphoma*

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*
*pegfilgrastim** **including quality-assured biosimilars*	***Injection:*** *6 mg/0.6 mL in pre-filled syringe.* – *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*
8.2.4 Hormones and antihormones	
Complementary List	
dexamethasone	***Injection:*** *4 mg/mL (as disodium phosphate salt) in 1 mL ampoule.* ***Oral liquid:*** *2 mg/5 mL.* ***Tablet:*** *2 mg; 4 mg.* – *Acute lymphoblastic leukaemia* – *Anaplastic large cell lymphoma* – *Burkitt lymphoma*
hydrocortisone	***Powder for injection:*** *100 mg (as sodium succinate) in vial.* – *Acute lymphoblastic leukaemia* – *Burkitt lymphoma*
methylprednisolone	***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.* ***Tablet:*** *5 mg; 25 mg.* – *Acute lymphoblastic leukaemia* – *Anaplastic large cell lymphoma* – *Burkitt lymphoma* – *Diffuse large B-cell lymphoma* – *Hodgkin lymphoma* – *Langerhans cell histiocytosis*

8.2.5 Supportive medicines	
Complementary List	
allopurinol	***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)* – *Osteosarcoma* – *Ovarian germ cell tumours* – *Rhabdomyosarcoma* – *Testicular germ cell tumours*
rasburicase	***Powder and solvent for solution for infusion:*** *1.5 mg; 7.5 mg in vial* – *Tumour lysis syndrome*
9. THERAPEUTIC FOODS	
ready-to-use therapeutic food	**Biscuit or paste*.** *of nutritional composition as determined by the UN joint statement on the community-based management of severe acute malnutrition and Codex alimentarius guidelines.
10. MEDICINES AFFECTING THE BLOOD	
10.1 Antianaemia medicines	
ferrous salt	**Oral liquid:** equivalent to 25 mg iron (as sulfate)/mL. **Tablet:** equivalent to 60 mg iron.
folic acid	**Tablet:** 1 mg; 5 mg.
hydroxocobalamin	**Injection:** 1 mg (as acetate, as hydrochloride or as sulfate) in 1 mL ampoule.
Complementary List	
☐ *erythropoiesis-stimulating agents* *Therapeutic alternatives:* *- epoetin alfa, beta and theta* *- darbepoetin alfa* **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	
☐ 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.
phytomenadione	**Injection:** 1 mg/mL; 10 mg/mL in ampoule. **Tablet:** 10 mg.

Complementary List	
desmopressin	***Injection**: 4 micrograms/mL (as acetate) in 1 mL ampoule.* ***Nasal spray:** 10 micrograms (as acetate) per dose.*
heparin sodium	***Injection:** 1000 IU/mL; 5000 IU/mL in 1 mL ampoule.*
protamine sulfate	***Injection:** 10 mg/mL in 5 mL ampoule.*
☐ *warfarin* *Therapeutic alternatives to be reviewed*	***Tablet:** 0.5 mg; 1 mg; 2 mg; 5 mg (sodium).*
10.3 Other medicines for haemoglobinopathies	
☐ deferasirox Therapeutic alternatives: - deferiprone	**Tablet (dispersible):** 100 mg; 125 mg; 250 mg; 400 mg; 500 mg. **Tablet (film-coated):** 90 mg; 180 mg; 360 mg.
Complementary list	
deferoxamine	***Powder for injection:** 500 mg (mesilate) in vial.*
hydroxycarbamide (hydroxyurea)	***Solid oral dosage form:** 100 mg; 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.	
☐ cryoprecipitate, pathogen-reduced Therapeutic alternatives: - cryoprecipitate (not pathogen-reduced)	**Injection**: frozen liquid in bag or lyophilized powder in vial containing: - > 50 IU Factor VIII - > 100 IU vWF - > 140 mg clottable fibrinogen per unit
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-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.* *Subcutaneous administration: 15%; 16% protein solution.* – *Primary immune deficiency.* *Intravenous administration: 5%; 10% protein solution.* – *Primary immune deficiency* – *Kawasaki disease* – *Langerhans cell histiocytosis*
11.2.2 Blood coagulation factors	
Complementary List	
coagulation factor VIII	*Powder for injection: 250 IU; 500 IU; 1000 IU in vial.*
☐ *coagulation factor IX* *Therapeutic alternatives:* *- coagulation factor IX complex*	*Powder for injection: 500 IU; 1000 IU in vial.*
11.3 Plasma substitutes	
☐ dextran 70 Therapeutic alternatives: - Polygeline injectable solution 3.5%	Injectable solution: 6%.
12. CARDIOVASCULAR MEDICINES	
~~12.1 Antianginal medicines~~	
~~12.2 Antiarrhythmic medicines~~	
12.3 Antihypertensive medicines	
☐ enalapril Therapeutic alternatives: - 4th level ATC chemical subgroup (C09AA ACE inhibitors, plain)	Oral liquid: 1 mg/mL (as hydrogen maleate). Tablet: 2.5 mg; 5 mg; 10 mg (as hydrogen maleate).
12.4 Medicines used in heart failure	
furosemide	Injection: 10 mg/mL in 2 mL, 5 mL ampoule. Oral liquid: 20 mg/5 mL; 50 mg/5 mL. Tablet: 20 mg; 40 mg.
Complementary List	
digoxin	*Injection: 100 micrograms/mL in 1 mL ampoule; 250 micrograms/mL in 2 mL ampoule.* *Oral liquid: 50 micrograms/mL.* *Tablet: 62.5 micrograms; 125 micrograms; 250 mg micrograms.*
dopamine	*Injection: 40 mg/mL (hydrochloride) in 5 mL vial.*
~~12.5 Antithrombotic medicines~~	
~~12.6 Lipid-lowering agents~~	

~~12.7 Fixed-dose combinations for prevention of atherosclerotic cardiovascular disease~~	
13. DERMATOLOGICAL MEDICINES	
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%.
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	**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%.
☐ podophyllum resin Therapeutic alternatives: - podophyllotoxin	**Solution:** 10% to 25%.
salicylic acid	**Solution:** 5%.
urea	**Cream or ointment:** 5%; 10%.
Complementary List	
methotrexate	***Tablet:*** *2.5 mg; 10 mg (as sodium).*

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	
Complementary List	
barium sulfate	*Aqueous suspension.*
15. ANTISEPTICS AND DISINFECTANTS	
15.1 Antiseptics	
☐ chlorhexidine Therapeutic alternatives to be reviewed	**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	
furosemide	**Injection:** 10 mg/mL in 2 mL, 5 mL ampoule. **Oral liquid:** 20 mg/5 mL; 50 mg/5 mL. **Tablet:** 20 mg; 40 mg.
Complementary List	
☐ *hydrochlorothiazide* *Therapeutic alternatives:* *- chlorothiazide* *- chlortalidone*	***Tablet (scored):*** *25 mg.*
mannitol	***Injectable solution:*** *10%; 20%.*
spironolactone	***Oral liquid:*** *5 mg/5 mL; 10 mg/5 mL; 25 mg/5 mL.* ***Tablet:*** *25 mg.*
17. GASTROINTESTINAL MEDICINES	
Complementary List	
pancreatic enzymes	*Age-appropriate formulations and doses including lipase, protease and amylase.*
17.1 Antiulcer medicines	
☐ omeprazole Therapeutic alternatives: - 4th level ATC chemical subgroup (A02BC Proton pump inhibitors) excluding combinations	**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 in 1 mL ampoule (as disodium phosphate salt). **Oral liquid:** 0.5 mg/5 mL; 2 mg/5 mL. **Solid oral dosage form:** 0.5 mg; 0.75 mg; 1.5 mg; 4 mg.
metoclopramide a	**Injection:** 5 mg/mL (hydrochloride) in 2 mL ampoule. **Oral liquid:** 5 mg/5 mL. **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. 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~~	
~~17.4 Laxatives~~	
17.5 Medicines used in diarrhoea	
oral rehydration salts – zinc sulfate	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~~	
~~18.3 Estrogens~~	
~~18.4 Progestogens~~	

18.5 Medicines for diabetes	
18.5.1 Insulins	
insulin injection (soluble)* **including quality-assured biosimilars*	**Injection:** 100 IU/mL in 10 mL vial; 100 IU/mL in 3 mL cartridge or pre-filled pen.
intermediate-acting insulin* **including quality-assured biosimilars*	**Injection:** 100 IU/mL in 10 mL vial; 100 IU/mL in 3 mL cartridge or pre-filled pen (as compound insulin zinc suspension or isophane insulin).
☐ long-acting insulin analogues* Therapeutic alternatives: - insulin detemir - insulin degludec - insulin glargine **including quality-assured biosimilars*	**Injection:** 100 IU/mL in 3 mL cartridge or pre-filled pen.
18.5.2 Oral hypoglycaemic agents	
Complementary List	
metformin	***Tablet:*** *500 mg (hydrochloride).*
18.6 Medicines for hypoglycaemia	
glucagon	**Injection:** 1 mg/mL.
Complementary List	
diazoxide	***Oral liquid:*** *50 mg/mL* ***Tablet:*** *50 mg*
18.7 Thyroid hormones and antithyroid medicines	
levothyroxine	**Tablet:** 25 micrograms; 50 micrograms; 100 micrograms (sodium salt).
Complementary List	
Lugol's solution	***Oral liquid:*** *about 130 mg total iodine/mL.*
☐ *methimazole* *Therapeutic alternatives:* *- carbimazole (depending on local availability)*	***Tablet:*** *5mg, 10mg, 20mg.*
potassium iodide	***Tablet:*** *60 mg.*
*propylthiouracil**	***Tablet:*** *50 mg.* **For use when alternative first-line treatment is not appropriate or available*
~~18.8 Medicines for disorders of the pituitary hormone system~~	

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 on the basis of recommendations made by the Strategic Advisory Group of Experts on Immunization (SAGE).

WHO vaccine position papers are updated three to four times per year. The list below details the vaccines for which there is a recommendation from SAGE and a corresponding WHO position paper as at March 2023. 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	
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 Therapeutic alternatives: - atracurium	**Powder for injection:** 10 mg (bromide) in vial.
Complementary List	
pyridostigmine	***Injection:*** *1 mg in 1 mL ampoule.* ***Tablet:*** *60 mg (bromide).*
21. OPHTHALMOLOGICAL PREPARATIONS	
21.1 Anti-infective agents	
aciclovir	**Ointment:** 3% w/w.
azithromycin	**Solution (eye drops):** 1.5% – *Trachoma*
erythromycin	**Ointment:** 0.5% – *Infections due to Chlamydia trachomatis or Neisseria gonorrhoeae.*
☐ 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	**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~~	
21.5 Mydriatics	
☐ atropine [a] Therapeutic alternatives: - homatropine hydrobromide - cyclopentolate hydrochloride	**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~~	
22. MEDICINES FOR REPRODUCTIVE HEALTH AND PERINATAL CARE	
~~22.1 Contraceptives~~	
~~22.2 Ovulation inducers~~	
~~22.3 Uterotonics~~	
~~22.4 Antioxytocics (tocolytics)~~	
~~22.5 Other medicines administered to the mother~~	
22.6 Medicines administered to the neonate	
caffeine citrate	**Injection:** 20 mg/mL (equivalent to 10 mg caffeine base/mL). **Oral liquid:** 20 mg/mL (equivalent to 10 mg caffeine base/mL).
chlorhexidine	**Solution or gel:** 7.1% (digluconate) delivering 4% chlorhexidine (for umbilical cord care).
Complementary List	
☐ *ibuprofen* *Therapeutic alternatives:* *- indometacin*	***Solution for injection:*** 5 mg/mL.
☐ *prostaglandin E1* *Therapeutic alternatives:* *- prostaglandin E2*	***Solution for injection:*** 0.5 mg/mL in alcohol.
surfactant	***Suspension for intratracheal instillation:*** *25 mg/mL or 80 mg/mL*
23. PERITONEAL DIALYSIS SOLUTION	
Complementary List	
intraperitoneal dialysis solution	***Parenteral solution:*** *of appropriate composition*

24. MEDICINES FOR MENTAL AND BEHAVIOURAL DISORDERS	
~~24.1 Medicines for psychotic disorders~~	
~~24.2 Medicines for mood disorders~~	
~~*24.2.1 Medicines for depressive disorders*~~	
~~*24.2.2 Medicines for bipolar disorders*~~	
~~24.3 Medicines for anxiety disorders~~	
~~24.4 Medicines for obsessive compulsive disorders~~	
~~24.5 Medicines for disorders due to psychoactive substance use~~	
~~*24.5.1 Medicines for alcohol use disorders*~~	
~~*24.5.2 Medicines for nicotine use disorders*~~	
~~*24.5.3 Medicines for opioid use disorders*~~	
25. MEDICINES ACTING ON THE RESPIRATORY TRACT	
25.1 Antiasthmatic medicines	
☐ budesonide Therapeutic alternatives: - beclometasone - ciclesonide - flunisolide - fluticasone - mometasone	**Inhalation (aerosol):** 100 micrograms per dose; 200 micrograms per dose.
epinephrine (adrenaline)	**Injection:** 1 mg/mL (as hydrochloride or hydrogen tartrate) in 1 mL ampoule.
☐ salbutamol Therapeutic alternatives: - terbutaline	**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).
26. SOLUTIONS CORRECTING WATER, ELECTROLYTE AND ACID–BASE DISTURBANCES	
26.1 Oral	
oral rehydration salts	See section 17.5.1.
potassium chloride	**Powder for solution.**
26.2 Parenteral	
glucose	**Injectable solution:** 5% (isotonic); 10% (hypertonic); 50% (hypertonic).
glucose with sodium chloride	**Injectable solution:** 5% glucose, 0.9% sodium chloride (equivalent to Na+ 150 mmol/L and Cl- 150 mmol/L); 5% glucose, 0.45% sodium chloride (equivalent to Na+ 75 mmol/L and Cl- 75 mmol/L).
potassium chloride	**Solution for dilution:** 7.5% (equivalent to K+ 1 mmol/mL and Cl- 1 mmol/mL); 15% (equivalent to K+ 2 mmol/mL and Cl- 2 mmol/mL).
sodium chloride	**Injectable solution:** 0.9% isotonic (equivalent to Na+ 154 mmol/L, Cl- 154 mmol/L).
sodium hydrogen carbonate	**Injectable solution:** 1.4% isotonic (equivalent to Na+167 mmol/L, HCO_3- 167 mmol/L). **Solution:** 8.4% in 10 mL ampoule (equivalent to Na+ 1000 mmol/L, HCO_3-1000 mmol/L).

sodium lactate, compound solution	**Injectable solution.**
26.3 Miscellaneous	
water for injection	2 mL; 5 mL; 10 mL ampoules.
27. VITAMINS AND MINERALS	
ascorbic acid	**Tablet:** 50 mg.
☐ colecalciferol Therapeutic alternatives: - ergocalciferol	**Oral liquid:** 400 IU/mL. **Solid oral dosage form:** 400 IU; 1000 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	**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
pyridoxine	**Tablet:** 25 mg (hydrochloride).
retinol	**Capsule:** 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	**Topical:** 2%, in alcohol.
☐ budesonide Therapeutic alternatives to be reviewed	**Nasal spray:** 100 micrograms per dose.
☐ ciprofloxacin Therapeutic alternatives: - ofloxacin	**Solution (ear drops):** 0.3% (as hydrochloride).
☐ xylometazoline [a] Therapeutic alternatives to be reviewed	**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~~	
29.2 Disease-modifying anti-rheumatic drugs (DMARDs)	
Complementary List	
hydroxychloroquine	***Solid oral dosage form:*** *200 mg (as sulfate).*
methotrexate	***Tablet:*** *2.5 mg (as sodium).*
29.3 Medicines for 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.*
☐ *adalimumab** *Therapeutic alternatives*:* *- etanercept* *- infliximab* **including quality-assured biosimilars*	***Injection:*** *10 mg/0.2 mL; 20 mg/0.4 mL; 40 mg/0.8 mL; 40 mg/0.4 mL.*
methotrexate	***Tablet:*** *2.5 mg (as sodium).*
☐ *triamcinolone hexacetonide* *Therapeutic alternatives:* *- triamcinolone acetonide*	***Injection:*** *20 mg/mL in vial.*
30. DENTAL MEDICINES AND PREPARATIONS	
fluoride	**Gel:** containing 2500 to 12 500 ppm fluoride (any type). **Mouthrinse:** containing 230 to 900 ppm fluoride (any type). **Toothpaste: cream or gel:** containing 1000 to 1500 ppm fluoride (any type). **Varnish:** containing 22 500 ppm fluoride (any type).
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.
resin-based composite (low-viscosity)*	**Single-use applicator or multi-use bottle** *of any type for use as dental sealant
resin-based composite (high-viscosity)*	**Single-use capsule or multi-use syringe** *of any type for use as dental filling material
silver diamine fluoride	**Solution: 38% w/v**

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