



PHARMACEUTICAL SERVICES PROGRAMME
MINISTRY OF HEALTH



**NATIONAL ESSENTIAL
MEDICINES LIST**

6th Edition

2023



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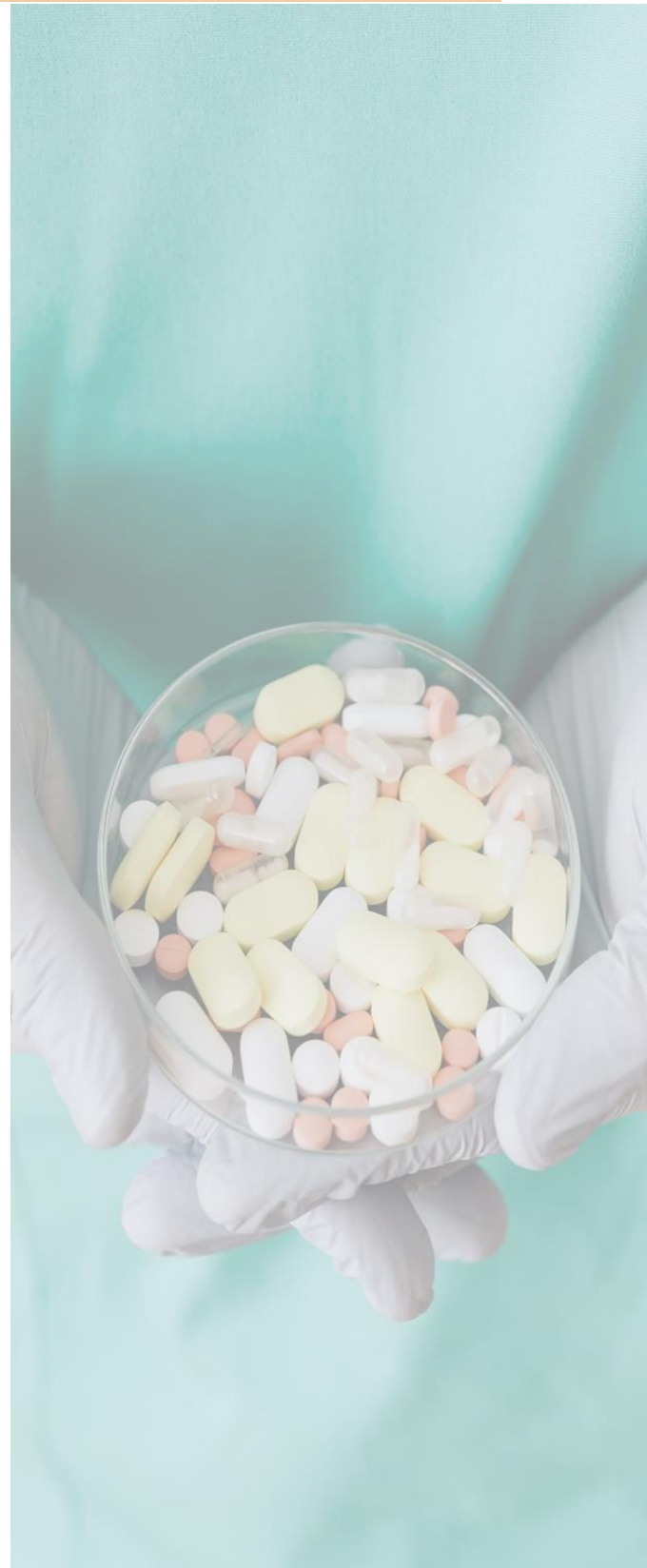
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THE NATIONAL ESSENTIAL MEDICINES LIST (NEML)

BACKGROUND

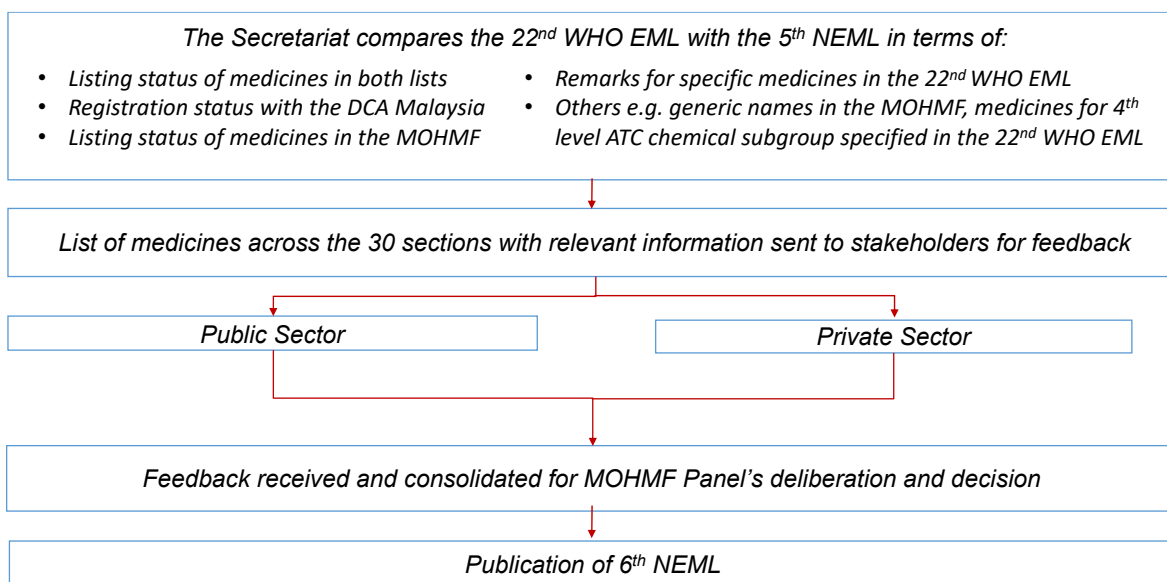
The Malaysian National Essential Medicines List (NEML) was first approved by the Ministry of Health (MOH) in January 2000. Since then, in line with the Malaysian National Medicines Policy to ensure universal access to medicines, the NEML has been updated every two to three years following the publication of the World Health Organization Model List of Essential Medicines (WHO EML). The NEML is a list of basic medicines that satisfy the national health care needs of majority of the population. The medicines in the appropriate dosage forms should be made accessible to individuals or the communities, in appropriate quantities with guaranteed quality and at affordable prices.

The main goal is to safeguard the availability and affordability of essential medicines to the Malaysian population. In addition, this list aims to rationalise the procurement of medicines and encourage the rational use of medicines. This NEML aims to act as a uniformed guide for facilities in the public and the private sectors to formulate their essential lists according to their needs.

REVIEW PROCESS

The NEML is regularly reviewed and updated to ensure the availability, accessibility, affordability and quality of medicines for the population. The NEML review process involves gathering feedback and opinions from healthcare professionals including consultants, specialists, doctors and pharmacists from the Ministry of Health, other ministries and private sector.

Since a full assessment has been carried out by the WHO Expert Committee in terms of disease prevalence, public health relevance, clinical efficacy, safety and cost-effectiveness, the 22nd WHO EML was adopted and adapted to national needs. The entire process of reviewing and updating the 6th NEML is as shown in **Figure 1**.



Notes:
WHO EML – World Health Organisation Model List of Essential Medicines; NEML – National Essential Medicines List; DCA – Drug Control Authority; MOHMF; Ministry of Health Medicines Formulary; ATC – Anatomical Therapeutic Classification

Figure 1. Review and Update Process of NEML



HOW TO USE THE NATIONAL ESSENTIAL MEDICINES LIST

NEML 5th edition comprises 359 chemical entities and categorises the medicines into two lists:

- **Core list:** Minimum medicine needs for a basic health care system, listing the most efficacious, safe and cost-effective medicines for priority conditions¹.
- **Complementary list:** Essential medicines for which specialised diagnostic or monitoring facilities, and/or specialist medical care, and/or specialist training are needed¹.

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

Dosage forms for each chemical entity listed are defined as below:

Term	Definition
Oral	All forms of tablet: immediate release and modified release preparation, uncoated or coated, unscored and scored, chewable, dispersible, soluble, crushable, sublingual or others; All forms of capsule: hard or soft capsule, modified release preparation, capsule-shaped tablet or caplet or others; All forms of granule; Oral powder: powder to be taken in or with water or another suitable liquid or others; Oral liquid: oral solution, syrup, suspension, emulsion and oral drop or others
Injection	All forms of injection: solution, suspension, emulsion including those constituted from powder or solution or others
Topical	All forms of topical: cream, ointment, lotion, paint or others
Eye preparation	All forms of eye preparation: drop, ointment or others
Ear preparation	All forms of ear preparation: drop, ointment or others
Inhalation	All forms of inhalation
Miscellaneous*	Other forms: enema, implant, intrauterine device, irrigation, transdermal patch, suppository, parenteral solution, pessary or others

*The specific dosage form will be stated in the list.

The **[a]** symbol indicates that there is an age or weight restriction on the use of the medicine.

¹ World Health Organization Model List of Essential Medicines, 22nd List, 2021.



THE NEML 6TH EDITION

I. ANAESTHETICS, PREOPERATIVE MEDICINES AND MEDICAL GASES

Chemical Entity	Dosage Form	Notes
1.1. General anaesthetics and oxygen		
1.1.1 Inhalational medicines		
Nitrous oxide	Inhalation	
Sevoflurane	Inhalation	
1.1.2 Injectable medicines		
Ketamine	Injection	
Propofol Therapeutic alternative(s): - Thiopental*	Injection	* May be used as an alternative depending on availability and cost
Rocuronium	Injection	
1.2 Local anaesthetics		
Bupivacaine	Injection	
Lignocaine	Injection	
Lidocaine + epinephrine	Injection	
Complementary list		
<i>Ephedrine</i>	<i>Injection</i>	
1.3 Preoperative medications and sedation for short-term procedures		
Atropine	Injection	
Midazolam	Injection Oral	
Morphine	Injection	
1.4 Medical Gases		
Oxygen*	Inhalation	* 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

Chemical Entity	Dosage Form	Notes
2.1 Non-opioids and non-steroidal anti-inflammatory medicines		
Acetylsalicylic acid	Oral	
Ibuprofen [a]	Oral	[a] > 3 months
Paracetamol	Oral Suppository	
2.2 Opioid analgesics		
Fentanyl	Transdermal patch	
Morphine Therapeutic alternative(s): – Oxycodone	Injection Oral	
Complementary lists		
Oxycodone	Oral	
Tramadol [a]	Injection Oral	[a] > 12 years
Dihydrocodeine tartrate	Oral	
2.3 Medicines for other common symptoms in palliative care		
Amitriptyline	Oral	
Dexamethasone	Injection Oral	
Diazepam	Injection Oral Rectal solution	
Fluoxetine [a]	Oral	[a] > 8 years old
Haloperidol	Injection Oral	
Hyoscine butylbromide	Injection	
Hyoscine hydrobromide	Injection	
Lactulose	Oral	
Loperamide	Oral	
Lorazepam	Oral	
Metoclopramide [a]	Injection Oral	[a] Not for neonates
Midazolam	Injection Oral	
Ondansetron [a] Therapeutic alternative(s): – Granisetron	Injection Oral	[a] > 1 month
Complementary list		
Gabapentin	Oral	



3. ANTIALLERGENICS AND MEDICINES USED IN ANAPHYLAXIS

Chemical Entity	Dosage Form	Notes
Chlorpheniramine [a]	Injection Oral	[a] > 2 years
Dexamethasone	Injection	
Epinephrine	Injection	Also known as Adrenaline
Hydrocortisone	Injection	
Loratadine Therapeutic alternative(s): - Cetirizine	Oral	
Prednisolone	Oral	

4. ANTIDOTES AND OTHER SUBSTANCES USED IN POISONINGS

Chemical Entity	Dosage Form	Notes
4.1 Non-specific		
Charcoal, activated	Oral	
4.2 Specific		
Acetylcysteine	Injection	
Atropine	Injection	
Calcium gluconate	Injection	
Flumazenil	Injection	
Methylthioninium chloride	Injection	Also known as Methylene blue
Naloxone	Injection	
Penicillamine	Oral	
Pralidoxime	Injection	
Sodium nitrite	Injection	
Sodium thiosulfate	Injection	
Complementary list		
<i>Desferrioxamine</i>	<i>Injection</i>	<i>Also known as Deferoxamine</i>
<i>Dimercaprol</i>	<i>Injection</i>	



5. ANTICONVULSANTS/ANTIEPILEPTICS

Chemical Entity	Dosage Form	Notes
Carbamazepine	Oral	
Clonazepam	Oral	
Diazepam	Injection Rectal solution	
Lamotrigine	Oral	
Levetiracetam	Injection Oral	
Magnesium sulphate	Injection	
Midazolam	Injection	
Phenobarbital	Injection Oral	
Phenytoin	Injection Oral	
Valproic acid *	Oral	Also known as 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.
Complementary list		
<i>Valproic acid *</i>	<i>Injection</i>	<i>Also known as 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.</i>



6. ANTI-INFECTIVE MEDICINES

Chemical Entity	Dosage Form	Notes
6.1 Anthelmintics		
6.1.1 Intestinal anthelmintics		
Albendazole	Oral	
Pyrantel	Oral	
6.1.2 Anti-filarials		
Diethylcarbamazine	Oral	
6.2 Anti-bacterials		
Antibiotics are divided into three different categories namely ACCESS, WATCH and RESERVE groups to facilitate the development of tools for antibiotic stewardship at local and national levels and to reduce antimicrobial resistance. These groups were made to emphasize the importance of their proper use.		
ACCESS GROUP ANTIBIOTICS:		
<ul style="list-style-type: none"> Antibiotics that have activity against a wide range of commonly encountered susceptible pathogens Antibiotics that also show lower resistance potential than antibiotics in the other groups These are essential antibiotics that should be widely available in Malaysian health facilities.		
WATCH GROUP ANTIBIOTICS:		
<ul style="list-style-type: none"> Antibiotics with higher resistance potential when compared with the Access group which includes antibiotics such as third generation cephalosporins, fluoroquinolones and carbapenems These antibiotics should be prescribed only for specific indications These medicines should be prioritised as key targets of stewardship programs and monitoring.		
RESERVE GROUP ANTIBIOTICS		
<ul style="list-style-type: none"> Antibiotic classes that should be reserved for treatment of confirmed or suspected infections due to multi-drug-resistant organisms These antibiotics should be treated as “last resort” options		
6.2.1.1 Access group antibiotics		
Amikacin	Injection	
Amoxycillin	Injection Oral	
Amoxycillin + clavulanic acid	Injection Oral	
Ampicillin	Injection	
Benzathine benzylpenicillin	Injection	
Benzylpenicillin	Injection	
Cefazolin [a]	Injection	[a] > 1 month
Cephalexin	Oral	
Clindamycin	Injection Oral	
Cloxacillin	Injection Oral	
Doxycycline [a]	Oral	[a] Use in children < 8 years only for life-threatening infections when no alternative exists
Erythromycin	Oral	
Gentamicin	Injection	



Chemical Entity	Dosage Form	Notes
Metronidazole	Injection Oral Suppository	
Nitrofurantoin	Oral	
Phenoxymethylpenicillin	Oral	
Procaine benzylpenicillin	Injection	
Sulphamethoxazole + trimethoprim	Injection Oral	
Trimethoprim	Oral	
6.2.1.2 Watch group antibiotics		
Azithromycin	Injection Oral	
Cefotaxime	Injection	
Ceftriaxone [a]	Injection	[a] >41 weeks corrected gestational age
Cefuroxime	Injection	
Ciprofloxacin	Injection Oral	
Clarithromycin Therapeutic alternative(s): – Erythromycin	Injection Oral	
Piperacillin + tazobactam	Injection	
Complementary list		
<i>Ceftazidime</i>	<i>Injection</i>	
<i>Meropenem</i> Therapeutic alternative(s): – <i>Imipenem + cilastatin</i>	<i>Injection</i>	[a] > 3 months
<i>Vancomycin</i>	<i>Injection</i>	
6.2.1.3 Reserve group antibiotics		
Complementary list		
<i>Cefepime</i>	<i>Injection</i>	
<i>Colistin</i>	<i>Injection</i>	
<i>Linezolid</i>	<i>Injection</i> <i>Oral</i>	
<i>Polymycin B</i>	<i>Injection</i>	
6.2.2 Anti-leprosy 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.		
Clofazimine	Oral	
Dapsone	Oral	
Rifampicin	Oral	
6.2.3 Anti-tuberculosis medicines		
Ethambutol	Oral	
Ethambutol + isoniazid + pyrazinamide + rifampicin	Oral	
Isoniazid	Oral	



Chemical Entity	Dosage Form	Notes
Isoniazid + rifampicin	Oral	
Pyrazinamide	Oral	
Rifampicin	Oral	
Complementary list		
<i>Amikacin</i>	<i>Injection</i>	
<i>Amoxicillin + clavulanic acid</i>	<i>Oral</i>	
<i>Bedaquiline</i>	<i>Oral</i>	[a] ≥5 years
<i>Cycloserine</i>	<i>Oral</i>	
<i>Ethionamide</i>	<i>Oral</i>	
<i>Kanamycin</i>	<i>Injection</i>	
<i>Linezolid</i>	<i>Injection</i>	
<i>Streptomycin</i>	<i>Injection</i>	
6.3 Antifungal medicines		
Amphotericin B	Injection	
Clotrimazole	Pessary	
Fluconazole	Injection Oral	
Flucytosine	Injection Oral	
Griseofulvin	Oral	
Itraconazole	Oral	
Nystatin	Oral	
Voriconazole	Injection Oral	
Complementary list		
<i>Micafungin</i> Therapeutic alternatives: – <i>Anidulafungin</i> – <i>Caspofungin</i>	<i>Injection</i>	
6.4 Antiviral medicines		
6.4.1 Antiherpes medicines		
Acyclovir	Injection Oral	
6.4.2 Antiretrovirals		
6.4.2.1 Nucleoside/Nucleotide reverse transcriptase inhibitors		
Abacavir	Oral	
Lamivudine	Oral	
Tenofovir disoproxil fumarate	Oral	
Zidovudine	Injection Oral	
6.4.2.2 Non-nucleoside reverse transcriptase inhibitors		
Efavirenz [a]	Oral	[a] > 3 years or > 10 kg weight
Nevirapine [a]	Oral	[a] > 6 weeks



Chemical Entity	Dosage Form	Notes
6.4.2.3 Protease inhibitors		
Atazanavir [a]	Oral	[a] >25kg
Darunavir [a]	Oral	[a] > 3 years
Lopinavir + ritonavir	Oral	
Ritonavir	Oral	
6.4.2.4 Integrase inhibitors		
Dolutegravir [a]	Oral	[a] ≥25kg
FIXED-DOSE COMBINATIONS		
Abacavir + lamivudine	Oral	
Dolutegravir + lamivudine + tenofovir	Oral	
Efavirenz + emtricitabine + tenofovir	Oral	
Efavirenz + lamivudine + tenofovir	Oral	
Emtricitabine + tenofovir	Oral	
Lamivudine + zidovudine	Oral	
6.4.3 Other antivirals		
Ribavirin	Oral	
Valganciclovir	Oral	
Complementary list		
<i>Oseltamivir</i>	<i>Oral</i>	
<i>Valganciclovir</i>	<i>Oral</i>	
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	
Tenofovir disoproxil fumarate	Oral	
6.4.4.2 Medicines for hepatitis C		
6.4.4.2.1 Pangenotypic direct-acting antiviral combinations		
Daclatasvir*	Oral	* Pangenotypic when used in combination with sofosbuvir
Sofosbuvir*	Oral	* Pangenotypic when used in combination with daclatasvir
Sofosbuvir + velpatasvir	Oral	
6.4.4.2.2 Non-pangenotypic direct-acting antiviral combinations		
Ravidasvir	Oral	
6.4.4.2.3 Other antivirals for Hepatitis C		
Ribavirin	Oral	
Complementary list		
<i>Pegylated interferon alfa 2a or 2b</i>	<i>Injection</i>	
6.5 Antiprotozoal medicines		
6.5.1 Antiamoebic and anti giardiasis medicines		
Metronidazole	Injection Oral	



Chemical Entity	Dosage Form	Notes
6.5.2 Antileishmaniasis medicines		
Amphotericin B	Injection	
6.5.3 Antimalarial medicines		
6.5.3.1 For curative treatment		
Artemether + lumefantrine*	Oral	* Not recommended in the first trimester of pregnancy or children < 5 kg.
Artesunate	Injection	
Artesunate + mefloquine	Oral	
Chloroquine	Oral	
Doxycycline	Oral	
Mefloquine	Oral	
Primaquine	Oral	
Quinine	Injection Oral	
6.5.3.2 For prophylaxis		
Chloroquine	Oral	
Doxycycline [a]	Oral	[a] > 8 years
6.5.4 Antipneumocystosis and anti-toxoplasmosis medicines		
Sulfamethoxazole + trimethoprim	Oral	
Complementary list		
Pentamidine	Oral	

7. ANTIMIGRAINE MEDICINES

Chemical Entity	Dosage Form	Notes
7.1 For treatment of an acute attack		
Ibuprofen	Oral	
Paracetamol	Oral	
Sumatriptan	Oral	
7.2 For prophylaxis		
Propranolol	Oral	



8. IMMUNOMODULATORS AND ANTINEOPLASTICS

Chemical Entity	Dosage Form	Notes
8.1 Immunomodulators for non-malignant disease		
Complementary list		
Adalimumab* Therapeutic alternative(s)*: – Etanercept – Golimumab – Infliximab * including quality assured biosimilars	Injection	
Azathioprine	Oral	
Ciclosporin	Injection Oral	
Interferon beta 1a	Injection	
Interferon beta 1b	Injection	
Mycophenolate mofetil	Oral	
Secukinumab	Injection	
Tacrolimus	Injection Oral	
Teriflunomide	Oral	
Tocilizumab	Injection	
8.2 Antineoplastics and supportive medicines		
8.2.1 Cytotoxic medicines		
Complementary list		
Arsenic trioxide	Injection	
Asparaginase	Injection	
Bendamustine	Injection	
Bleomycin	Injection	
Calcium folinate	Injection Oral	
Capecitabine	Oral	
Carboplatin	Injection	
Chlorambucil	Oral	
Cisplatin	Injection	
Cyclophosphamide	Injection Oral	
Cytarabine	Injection	
Dacarbazine	Injection	
Dactinomycin	Injection	Also known as Actinomycin D
Daunorubicin	Injection	
Docetaxel	Injection	
Doxorubicin	Injection	
Etoposide	Injection Oral	



Chemical Entity	Dosage Form	Notes
<i>Fludarabine</i>	<i>Injection</i> <i>Oral</i>	
<i>Fluorouracil</i>	<i>Injection</i>	
<i>Gemcitabine</i>	<i>Injection</i>	
<i>Hydroxyurea</i>	<i>Injection</i>	
<i>Ifosfamide</i>	<i>Injection</i>	
<i>Irinotecan</i>	<i>Injection</i>	
<i>Melphalan</i>	<i>Injection</i> <i>Oral</i>	
<i>Mercaptopurine</i>	<i>Oral</i>	
<i>Methotrexate</i>	<i>Injection</i> <i>Oral</i>	
<i>Oxaliplatin</i>	<i>Injection</i>	
<i>Paclitaxel</i>	<i>Injection</i>	
<i>Pegaspargase</i> <i>* including quality assured biosimilars</i>	<i>Injection</i>	
<i>Procarbazine</i>	<i>Oral</i>	
<i>Tioguanine</i>	<i>Oral</i>	
<i>Vinblastine</i>	<i>Injection</i>	
<i>Vincristine</i>	<i>Injection</i>	
<i>Vinorelbine</i>	<i>Injection</i>	
8.2.2 Targeted therapies		
Complementary list		
<i>All-trans retinoid acid (ATRA)</i>	<i>Oral</i>	
<i>Bortezomib</i>	<i>Injection</i>	
<i>Erlotinib*</i> <i>Therapeutic alternative(s):</i> - <i>Afatinib</i> - <i>Gefitinib</i>	<i>Oral</i>	
<i>Everolimus</i>	<i>Oral</i>	
<i>Ibrutinib</i>	<i>Oral</i>	
<i>Imatinib</i>	<i>Oral</i>	
<i>Nilotinib</i>	<i>Oral</i>	
<i>Ribociclib</i>	<i>Oral</i>	
<i>Rituximab*</i> <i>* Including quality assured biosimilars</i>	<i>Injection</i>	
<i>Ruxolitinib</i>	<i>Oral</i>	
<i>Trastuzumab*</i> <i>* Including quality assured biosimilars</i>	<i>Injection</i>	
8.2.3 Immunomodulators		
Complementary list		
<i>Filgrastim*</i> <i>* Including quality assured biosimilars</i>	<i>Injection</i>	
<i>Lenalidomide*</i>	<i>Oral</i>	



Chemical Entity	Dosage Form	Notes
<i>Pembrolizumab*</i> <i>* Including quality assured biosimilars</i>	<i>Injection</i>	
<i>Thalidomide</i>	<i>Oral</i>	
8.2.4 Hormones and antihormones		
Complementary list		
<i>Abiraterone</i> <i>Therapeutic alternative(s):</i> – <i>Enzalutamide</i>	<i>Oral</i>	
<i>Anastrozole</i> <i>Therapeutic alternative(s):</i> – <i>4th level ATC chemical subgroup (L02BG Aromatase inhibitors)</i>	<i>Oral</i>	
<i>Bicalutamide</i>	<i>Oral</i>	
<i>Dexamethasone</i>	<i>Injection</i> <i>Oral</i>	
<i>Hydrocortisone</i>	<i>Injection</i>	
<i>Leuprorelin</i> <i>Therapeutic alternative(s):</i> – <i>Goserelin</i> – <i>Triptorelin</i>	<i>Injection</i>	
<i>Methylprednisolone</i>	<i>Injection</i>	
<i>Prednisolone</i>	<i>Oral</i>	
<i>Tamoxifen</i>	<i>Oral</i>	
8.2.5 Supportive medicines		
Complementary list		
<i>Allopurinol</i>	<i>Oral</i>	
<i>Mesna</i>	<i>Injection</i> <i>Oral</i>	
<i>Zoledronic acid</i>	<i>Injection</i>	



9. ANTIPARKINSONISM MEDICINES

Chemical Entity	Dosage Form	Notes
Entacapone	Oral	
Levodopa + carbidopa Therapeutic alternative(s): – Benserazide (for carbidopa)	Oral	
Pramipexole	Oral	
Ropinirole	Oral	
Trihexyphenidyl	Oral	Also known as benzhexol

10. MEDICINES AFFECTING THE BLOOD

Chemical Entity	Dosage Form	Notes
10.1 Antianaemia medicines		
Ferrous salt	Oral Injection	
Ferrous salt + folic acid	Oral	
Folic acid	Oral	
Complementary list		
<i>Erythropoiesis-stimulating agents*</i> Therapeutic alternative(s): – epoetin alfa – epoetin beta – epoetin theta – darbepoetin alfa <i>*Including quality assured biosimilars</i>	<i>Injection</i>	
10.2 Medicines affecting coagulation		
Dabigatran Therapeutic alternative(s): – Apixaban – Rivaroxaban	Injection	
Enoxaparin	Injection	
Heparin sodium	Injection	
Phytomenadione	Injection	
Protamine sulfate	Injection	
Tranexamic acid	Injection Oral	
Warfarin	Oral	
Complementary list		
<i>Desmopressin</i>	<i>Injection</i>	
10.3 Other medicines for haemoglobinopathies		
Complementary list		
<i>Emicizumab</i>	<i>Injection</i>	
<i>Desferrioxamine</i> Therapeutic alternative(s): <i>Deferasirox (oral)*</i>	<i>Injection</i>	<i>Also known as Deferoxamine</i> <i>*May be used as an alternative depending on availability and cost</i>



11. BLOOD PRODUCTS OF HUMAN ORIGIN AND PLASMA SUBSTITUTES

Chemical Entity	Dosage Form	Notes
11.1 Blood and blood components		
Fresh frozen plasma	Transfusion bag	
Platelets	Transfusion bag	
Red blood cells	Transfusion bag	
Whole blood	Transfusion bag	
11.2 Plasma-derived medicines		
11.2.1 Human immunoglobulins		
Anti-D immunoglobulin	Injection	
Anti-rabies immunoglobulin	Injection	
Anti-tetanus immunoglobulin	Injection	
Complementary list		
<i>Normal immunoglobulin</i>	<i>Injection</i>	
11.2.2 Blood coagulation factors		
Complementary list		
<i>Coagulation factor VIII</i>	<i>Injection</i>	
<i>Coagulation factor IX</i>	<i>Injection</i>	
11.3 Plasma substitutes		
Human Albumin	Injection	
Modified fluid gelatin	Injection	

**12. CARDIOVASCULAR MEDICINES**

Chemical Entity	Dosage Form	Notes
12.1 Antianginal medicines		
Bisoprolol Therapeutic alternative(s): – Metoprolol – Carvedilol	Oral	
Glyceryl trinitrate	Oral	
Isosorbide dinitrate	Oral	
Verapamil	Oral	
12.2 Antiarrhythmic medicines		
Bisoprolol Therapeutic alternative(s): – Carvedilol – Metoprolol – Propranolol (Injection)	Oral	
Digoxin	Injection Oral	
Epinephrine	Injection	Also known as Adrenaline
Lignocaine	Injection	
Verapamil	Injection Oral	
Complementary list		
<i>Amiodarone</i>	<i>Injection Oral</i>	
<i>Norepinephrine</i>	<i>Injection</i>	<i>Also known as Noradrenaline</i>
12.3 Antihypertensive medicines		
Amlodipine	Oral	
Bisoprolol Therapeutic alternative(s): – Atenolol* – Carvedilol – Metoprolol	Oral	*Atenolol should not be used as a first-line agent in uncomplicated hypertension in patients > 60 years.
Enalapril Therapeutic alternative(s): – 4th level ATC chemical subgroup (C09AA ACE inhibitors, plain)	Oral	
Esmolol	Injection	
Hydralazine	Injection	* Use only in the acute management of severe pregnancy-induced hypertension.
Hydrochlorothiazide	Oral	
Losartan	Oral	
Labetalol	*Oral **Injection	* for pregnancy **for hypertension crisis
Methyldopa*	Oral	* Use only in the management of pregnancy-induced hypertension.



Chemical Entity	Dosage Form	Notes
12.4 Medicines used in heart failure		
Bisoprolol Therapeutic alternative(s): – Carvedilol – Metoprolol	Oral	
Digoxin	Injection Oral	
Enalapril Therapeutic alternative(s): – 4th level ATC chemical subgroup (C09AA ACE inhibitors, plain)	Oral	
Furosemide Therapeutic alternative(s): – Bumetanide	Injection Oral	
Losartan	Oral	
Sacubitril + Valsartan	Oral	
Spironolactone	Oral	
Complementary list		
<i>Dopamine</i>	<i>Injection</i>	
12.5 Antithrombotic medicines		
12.5.1 Anti-platelet medicines		
Acetylsalicylic acid	Oral	
Clopidogrel	Oral	
12.5.2 Thrombolytic medicines		
Complementary list		
<i>Alteplase</i>	<i>Injection</i>	
<i>Streptokinase</i>	<i>Injection</i>	
12.6 Lipid-lowering agents		
Gemfibrozil	Oral	
Simvastatin* Therapeutic alternative(s): – Atorvastatin	Oral	* For use in high-risk patients



13. DERMATOLOGICAL MEDICINES (topical)

Chemical Entity	Dosage Form	Notes
13.1 Antifungal medicines		
Miconazole Therapeutic alternative(s): <ul style="list-style-type: none">– 4th level ATC chemical subgroup (D01AC Imidazole and triazole derivatives) excluding combinations	Topical	
Selenium sulfide	Topical	
Terbinafine	Topical	
13.2 Anti-infective medicines		
Mupirocin	Topical	
Potassium permanganate	Miscellaneous	
Silver sulfadiazine [a]	Topical	[a] > 2 months
Neomycin	Topical	
13.3 Anti-inflammatory and antipruritic medicines		
Betamethasone [a] Therapeutic alternative(s): <ul style="list-style-type: none">– 4th level ATC chemical subgroup (D07AC Corticosteroids, potent (group III))	Topical	[a] not preferred in neonates
Calamine	Topical	
Hydrocortisone*	Topical	*preferred in neonates
13.4 Medicines affecting skin differentiation and proliferation		
Aqueous cream	Topical	
Benzoyl peroxide	Topical	
Calcipotriol	Topical	
Coal tar	Topical	
Salicylic acid	Topical	
13.5 Scabicides and pediculicides		
Benzyl benzoate [a]	Topical	[a] > 2 years
Permethrin	Topical	



14. DIAGNOSTIC AGENTS

Chemical Entity	Dosage Form	Notes
14.1 Ophthalmic medicines		
Fluorescein	Miscellaneous	
Tropicamide Therapeutic alternative(s): <ul style="list-style-type: none">- Atropine- Cyclopentolate	Eye Preparation	
14.2 Radiocontrast media		
Barium sulfate	Oral	
Iohexol	Injection	

15. ANTISEPTICS AND DISINFECTANTS

Chemical Entity	Dosage Form	Notes
15.1 Antiseptics		
Acriflavin	Topical	
Alcohol	Topical	
Chlorhexidine	Topical	
Povidone iodine	Topical	
15.2 Disinfectants		
Alcohol-based hand rub	Topical	
Chlorine-based hand rub	Topical	

16. DIURETICS

Chemical Entity	Dosage Form	Notes
Furosemide Therapeutic alternative(s): <ul style="list-style-type: none">- Bumetanide	Injection Oral	
Hydrochlorothiazide	Oral	
Mannitol	Injection	
Spironolactone	Oral	
Complementary list		
<i>Mannitol</i>	<i>Injection</i>	



17. GASTROINTESTINAL MEDICINES

Chemical Entity	Dosage Form	Notes
Complementary list		
<i>Pancreatic enzymes</i>	<i>Age-appropriate formulations and doses including lipase, protease and amylase.</i>	
17.1 Antiulcer medicines and Antacid		
Omeprazole Therapeutic alternative(s): – 4th level ATC chemical subgroup (A02BC Proton pump inhibitors) excluding combinations	Injection Oral	
Famotidine	Oral	
Magnesium trisilicate	Oral	
17.2 Antiemetic medicines		
Dexamethasone	Injection Oral	
Metoclopramide [a]	Injection Oral	[a] not in neonates
Ondansetron [a] Therapeutic alternative(s): – Granisetron	Injection Oral	[a] > 1 month
Complementary list		
<i>Aprepitant</i>	<i>Oral</i>	
17.3 Anti-inflammatory medicines		
Sulfasalazine Therapeutic alternatives: - – Mesalazine	Oral Enema Suppository	
17.4 Laxatives		
Bisacodyl	Oral Suppository	
Glycerin 25% and Sodium Chloride 15% Enema	Enema	
Lactulose	Oral	
17.5 Medicines used in diarrhoea		
Oral rehydration salts	Oral	
17.6 Antispasmodic Medicines		
Hyoscine	Injection Oral	

**18. MEDICINES FOR ENDOCRINE DISORDERS**

Chemical Entity	Dosage Form	Notes
18.1 Adrenal hormones and synthetic substitutes		
Dexamethasone	Injection Oral	
Fludrocortisone	Oral	
Hydrocortisone	Oral	
18.2 Androgens		
Complementary list		
<i>Testosterone</i>	<i>Injection</i>	
18.3 Estrogens		
18.4 Progestogens		
Medroxyprogesterone acetate	Oral	
18.5 Medicines for diabetes		
18.5.1 Insulins*		
*including quality-assured biosimilars		
Fast-acting insulin: – Insulin aspart	Injection	
Insulin injection (soluble)	Injection	
Intermediate-acting insulin	Injection	
Long-acting insulin analogues: – Insulin detemir – Insulin glargine		
Premix insulin: – Insulin aspart 30% and protaminated insulin aspart 70% – Insulin degludec/ insulin aspart 70/30	Injection	
18.5.2 Oral hypoglycaemic agents		
Gliclazide	Oral	
Metformin	Oral	
Vildagliptin	Oral	
Complementary list		
<i>Metformin</i>	<i>Oral</i>	
18.6 Thyroid hormones and antithyroid medicines		
Carbimazole	Oral	
Cinacalcet	Oral	
Levothyroxine	Oral	
Lugol's solution	Oral	
Propranolol	Injection	
Propylthiouracil	Oral	

**19. IMMUNOLOGICALS**

Chemical Entity	Dosage Form	Notes
19.1 Diagnostic agents		
Tuberculin, purified protein derivative (PPD)	Injection	
19.2 Sera and immunoglobulins		
Antirabies Immunoglobulin (Human)	Injection	
Antithymocyte immunoglobulin (rabbit)	Injection	
Antivenene Cobra Injection	Injection	
Antivenene Pit Viper Injection	Injection	
Antivenene Serum (Sea snake) 1000 units Injection	Injection	
Diphtheria antitoxin	Injection	
Hemato Polyvalent Snake Antivenene Injection	Injection	
Hepatitis B Immunoglobulin	Injection	
Neuro Polyvalent Snake Antivenene Injection	Injection	
19.3 Vaccines		
National Immunisation Policy recommendations are determined by MOH Malaysia. Immunisation schedule is updated periodically and be accessed www.myhealth.gov.my/jadual-imunisasi/ . The following list of vaccines is in accordance with immunisation schedule 2019. All vaccines should comply to MOH requirements.		
BCG vaccine	Injection	
Cholera vaccine*	Injection	* For high-risk population
Diphtheria + Tetanus vaccine	Injection	
Diphtheria, Tetanus, Acellular Pertussis, Inactivated Polio Virus, Haemophilus Influenza Type B Vaccine [DTaP-IPV- Hib]	Injection	
Haemophilus influenzae type b vaccine	Injection	
Hepatitis A vaccine	Injection	* For high-risk population
Hepatitis B vaccine	Injection	
HPV vaccine	Injection	
Influenza vaccine (seasonal)	Injection	
Japanese encephalitis vaccine*	Injection	*Only applicable for Sarawak
Measles vaccine	Injection	
Measles, Mumps & Rubella Vaccine (Live)	Injection	
Meningococcal meningitis vaccine*	Injection	* For high-risk population
Pneumococcal vaccine	Injection	
Poliomyelitis vaccine	Injection	



Chemical Entity	Dosage Form	Notes
Rabies vaccine	Injection	* For high-risk population
Rubella vaccine	Injection	
Tetanus vaccine	Injection	
Typhoid vaccine	Injection	* For high-risk population
Varicella vaccine	Injection	

20. MUSCLE RELAXANTS (PERIPHERALLY-ACTING) AND CHOLINESTERASE INHIBITORS

Chemical Entity	Dosage Form	Notes
Atracurium	Injection	
Neostigmine	Injection	
Suxamethonium	Injection	
Complementary list		
<i>Pyridostigmine</i>	<i>Oral</i>	



21. OPHTHALMOLOGICAL PREPARATIONS

Chemical Entity	Dosage Form	Notes
21.1 Anti-infective agents		
Acyclovir	Eye Preparation	
Ciprofloxacin Therapeutic alternative(s): – 4th level ATC chemical subgroup (S01AE Fluoroquinolones)	Eye Preparation	
Chloramphenicol	Eye Preparation	
Gentamicin	Eye Preparation	
Natamycin	Eye Preparation	
21.2 Anti-inflammatory agents		
Prednisolone	Eye preparation	
21.3 Local anaesthetics		
Proparacaine	Eye preparation	
21.4 Miotics and antiglaucoma medicines		
Acetazolamide	Injection Oral	
Brimonidine	Eye Preparation	
Dorzolomide	Eye Preparation	
Latanoprost	Eye Preparation	
Pilocarpine	Eye Preparation	
Timolol	Eye Preparation	
21.5 Mydriatics		
Atropine [a]	Eye Preparation	[a] >3 months.
Complementary lists		
<i>Phenylephrine</i>	<i>Eye Preparation</i>	
21.6 Ocular vascular disorder agents		
Complementary lists		
<i>Ranibizumab</i>	<i>Injection</i>	



22. MEDICINES FOR REPRODUCTIVE HEALTH AND PERINATAL CARE

Chemical Entity	Dosage Form	Notes
22.1 Contraceptives		
22.1.1 Oral hormonal contraceptive		
Ethinylestradiol + levonorgestrel	Oral	
Levonorgestrel	Oral	
Ulipristal	Oral	
22.1.2 Injectable hormonal contraceptives		
Medroxyprogesterone acetate	Injection	
Norethisterone enanthate	Injection	
22.1.3 Intrauterine devices		
Copper-containing device	Intrauterine Device	
Levonorgestrel-releasing intrauterine system	Intrauterine Device	
22.1.4 Implantable contraceptive		
Etonogestrel-releasing implant	Implant	
Levonogestrel-releasing implant	Implant	
22.2 Ovulation inducers		
Complementary list		
<i>Clomifene</i>	<i>Oral</i>	
22.3 Uterotonics		
Misoprostol*	Pessary	* Only for use for induction of labour where appropriate facilities are available.
Oxytocin	Injection	
Oxytocin + Ergometrine maleate	Injection	
22.4 Medicines administered to the mother		
Dexamethasone	Injection	
Tranexamic acid	Injection	
22.5 Medicines administered to the neonate		
Chlorhexidine*	Topical Solution	*Chlorhexidine 2% in 70% alcohol for umbilical cord care
Complementary list		
<i>Prostaglandin E1</i>	<i>Injection</i>	
<i>Surfactant</i>	<i>Injection</i>	

23. PERITONEAL DIALYSIS SOLUTION

Chemical Entity	Dosage Form	Notes
Complementary lists		
<i>Intraperitoneal dialysis solution (of appropriate composition)</i>	<i>Parenteral solution</i>	



24. MEDICINES FOR MENTAL AND BEHAVIOURAL DISORDERS

Chemical Entity	Dosage Form	Notes
24.1 Medicines used in psychotic disorders		
Chlorpromazine	Oral	
Fluphenazine	Injection	
Haloperidol	Injection Oral	
Risperidone	Oral	
Complementary list		
<i>Chlorpromazine</i>	<i>Oral</i>	
<i>Clozapine</i>	<i>Oral</i>	
<i>Haloperidol</i>	<i>Injection</i> <i>Oral</i>	
24.2 Medicines used in mood disorders		
24.2.1 Medicines used in depressive disorders		
Amitriptyline	Oral	
Fluoxetine [a] Therapeutic alternative(s): – Escitalopram – Fluvoxamine	Oral	[a] > 8 years
Sertraline	Oral	
Complementary list		
<i>Fluoxetine [a]</i>	<i>Oral</i>	<i>[a] > 8 years</i>
24.2.2 Medicines used in bipolar disorders		
Lithium carbonate	Oral	
Valproic acid (sodium valproate) *	Oral	* 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.
24.3 Medicines for anxiety disorders		
Diazepam	Oral	
Clonazepam	Oral	
24.4 Medicines used for obsessive-compulsive disorders		
Clomipramine	Oral	
24.5 Medicines for disorders due to psychoactive substance use		
Nicotine replacement therapy (NRT)	Oral Patch	
Varenicline	Oral	
Complementary list		
<i>Methadone*</i>	<i>Oral</i>	<i>*The medicines should only be used within an established support programme.</i>



25. MEDICINES ACTING ON THE RESPIRATORY TRACT

Chemical Entity	Dosage Form	Notes
25.1 Anti-asthmatic and medicines for chronic obstructive pulmonary disease		
Aminophylline	Injection	
Budesonide Therapeutic alternative(s): – Beclomethasone – Ciclesonide – Fluticasone	Inhalation	
Budesonide + formoterol Therapeutic alternative(s): – Beclomethasone + Formoterol – Fluticasone + Formoterol – Fluticasone Propionate + Salmeterol	Inhalation	
Epinephrine	Injection	Also known as Adrenaline
Ipratropium bromide	Inhalation	
Prednisolone	Oral	
Salbutamol Therapeutic alternative(s): – Terbutaline	Injection Inhalation	
Theophylline	Oral	
Tiotropium Therapeutic alternative(s): – Glycopyrronium	Inhalation	
Umeclidinium + vilanterol	Inhalation	
25.2 Antitussives		
Diphenhydramine	Oral	[a] > 2 years
25.3 Mucolytics		
Bromhexine	Oral	[a] > 2 years



26. SOLUTIONS CORRECTING WATER, ELECTROLYTE AND ACID-BASE DISTURBANCES

Chemical Entity	Dosage Form	Notes
26.1 Oral		
Oral rehydration salts	Oral	
Potassium chloride	Oral	
26.2 Parenteral		
Glucose	Injection	
Glucose with sodium chloride	Injection	
Potassium chloride	Injection	
Sodium bicarbonate	Injection	
Sodium chloride	Injection	
Sodium lactate, compound solution	Solution	
26.3 Miscellaneous		
Water for injection	Injection Irrigation	

27. VITAMINS AND MINERALS

Chemical Entity	Dosage Form	Notes
Ascorbic acid	Oral	
Calcium	Oral	
Cholecalciferol	Oral	
Pyridoxine	Oral	
Retinol	Oral	Also known as Vitamin A
Thiamine	Oral	
Complementary list		
<i>Calcium gluconate</i>	<i>Injection</i>	

28. EAR, NOSE AND THROAT MEDICINES

Chemical Entity	Dosage Form	Notes
Budesonide	Nasal spray	
Chloramphenicol	Ear drops	
Ofloxacin	Ear drops	
Oxymetazoline	Nasal spray/nasal drops	[a] > 6 years
Polymyxin B + Neomycin + Hydrocortisone	Ear drops	



29. MEDICINES FOR DISEASES OF THE JOINTS

Chemical Entity	Dosage Form	Notes
29.1 Medicines used to treat gout		
Allopurinol	Oral dosage form	
Colchicine	Oral dosage form	
Indomethacin	Oral dosage form	
29.2 Disease-modifying agents used in rheumatoid disorders (DMARDs)		
Chloroquine	Oral dosage form	
Complementary list		
<i>Azathioprine</i>	<i>Oral dosage form</i>	
<i>Hydroxychloroquine</i>	<i>Oral dosage form</i>	
<i>Methotrexate</i>	<i>Oral dosage form</i>	
<i>Sulfasalazine</i>	<i>Oral dosage form</i>	
29.3 Juvenile joint diseases		
Complementary list		
<i>Acetylsalicylic acid* (acute or chronic use)</i>	<i>Oral</i>	<i>*For use for rheumatic fever, juvenile arthritis, Kawasaki disease.</i>

30. MEDICINES FOR ALZHEIMER'S DISEASE

Chemical Entity	Dosage Form	Notes
Donepezil	Oral	
Rivastigmine	Patch	

APPENDIXES

NEML STATISTICS

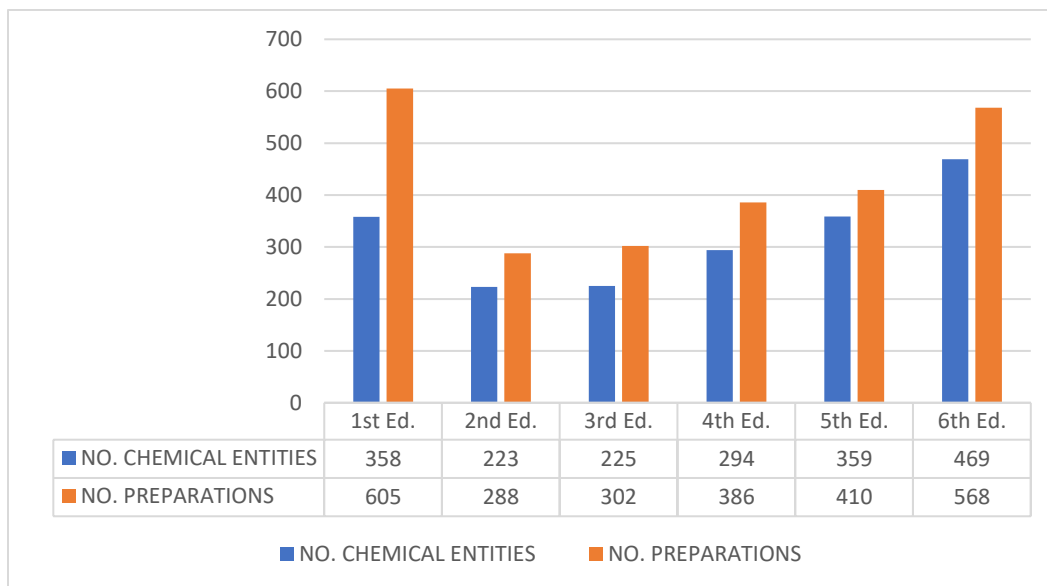


Figure 2: Number of chemical entities and number of preparations in NEML

Table 1: Number of chemical entities for each therapeutic group

NO.	THERAPEUTIC GROUP	NO OF CHEMICAL ENTITIES
1.	Antidotes and Other Substances Used In Poisonings	13
2.	Anaesthetics, Preoperative Medicines and Medical Gases	14
3.	Antiallergics and Medicines Used In Anaphylaxis	7
4.	Anticonvulsants/Antiepileptics	10
5.	Anti-Infective Medicines	90
6.	Antimigraine Medicines	4
7.	Antiparkinsonism Medicines	6
8.	Antiseptics and Disinfectants	6
9.	Blood Products Of Human Origin And Plasma Substitutes	12
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17.	Immunomodulators And Antineoplastics	80
18.	Medicines Acting On The Respiratory Tract	18
19.	Medicines Affecting The Blood	19
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21.	Medicines For Diseases Of Joints	9
22.	Medicines For Endocrine Disorders	21
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24.	Medicines For Pain And Palliative Care	23
25.	Medicines For Reproductive Health And Perinatal Care	16
26.	Muscle Relaxants (Peripherally-Acting) And Cholinesterase Inhibitors	4
27.	Ophthalmological Preparations	17
28.	Peritoneal Dialysis Solution	1
29.	Solutions Correcting Water, Electrolyte And Acid-Base Disturbances	8
30.	Vitamins And Minerals	7

**Note: One chemical entity may be listed in more than one group.*

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- 4th level ATC chemical subgroup (A02BC Proton pump inhibitors) excluding combinations, 21
- 4th level ATC chemical subgroup (C09AA ACE inhibitors, plain), 17, 18
- 4th level ATC chemical subgroup (D01AC Imidazole and triazole derivatives) excluding combinations, 19
- 4th level ATC chemical subgroup (D07AC Corticosteroids, potent (group III)), 19
- 4th level ATC chemical subgroup (*L02BG Aromatase inhibitors*), 14
- 4th level ATC chemical subgroup (S01AE Fluoroquinolones), 25
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- Antivenene Pit Viper Injection, 23
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