Series 2.2025

PHARMACY BULLETIN

-Disease Highlight-

BIPOLAR DISORDER

-Safety Catch-Up-

STATINS

-Drugs Update-

- **SODIUM CHLORIDE 3% W/V NEBULISER SOLUTION BP**
- **TARLATAMAB 1MG & 10MG INJECTION**
- **CROVALIMAB 340MG INJECTION**
- **RESPIRATORY SYNCYTIAL VIRUS(RSV) VACCINE**

-Achievements and Activities-

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July- Dec 2025

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July- Dec 2025

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July- Dec 2025

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STAFF UPDATES
July- Dec 2025

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BIPOLAR DISORDER

By: Noor Alia binti Hanafiah & Amirah Ilyana binti Muhaimim

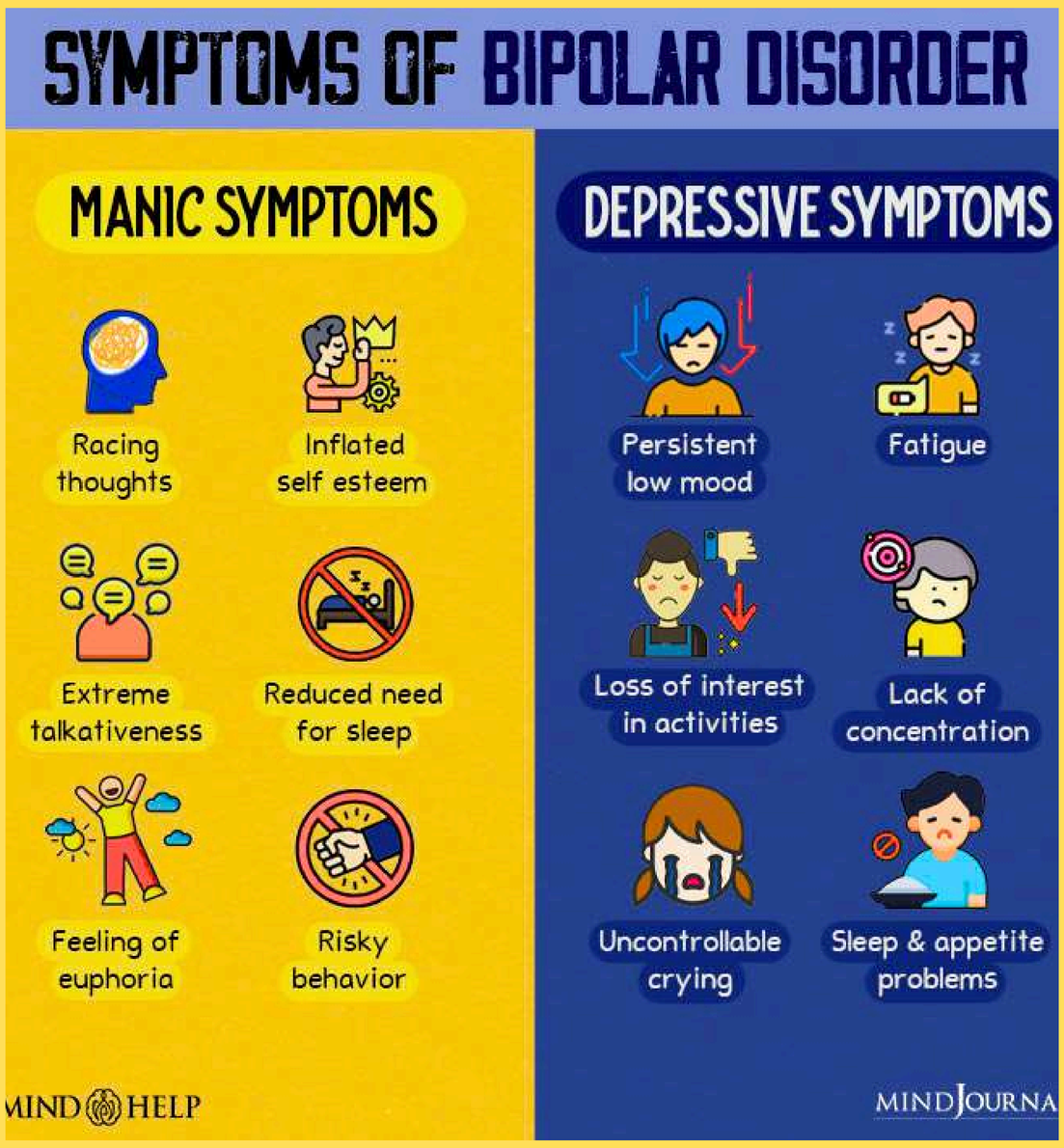
What is Bipolar Disorder?

🧠 Bipolar disorder is a chronic brain condition that causes extreme mood swings — from episodes of mania or hypomania (high energy, overactivity) to depression (low mood, loss of interest).

🌓 It usually begins in early adulthood and affects a person's thinking, behaviour, work performance, and relationships.

⚖️ The illness develops through a mix of genetic vulnerability, brain chemistry changes, and life stressors

💥With early detection, consistent treatment, and support, most individuals can achieve stable mood control and good quality of life.



Prevalence in Malaysia

- According to the Malaysian Psychiatric Association (MPA), about 1% of the Malaysian population suffers from bipolar disorder.
- Translating that estimate, there are roughly 250,000 people in Malaysia living with bipolar disorder.
- It usually begins in early adulthood, often before age 35, though it can affect children and adolescents (in more severe forms).

Risk factors

Several risk factors that increase the risk of developing BD:

- offspring of maternal age group ≥40 years old
- presence of major depression with attention-deficit hyperactivity disorder (ADHD)
- family history of BD6
- young age (<25 years old)
- low educational level
- low employment level

Classification

- Bipolar disorder (BD) are categorized as either bipolar I disorder (BD I) or bipolar II disorder (BD II). BD I is characterised by episodes of mania (abnormally elevated mood or irritability and related symptoms with severe functional impairment or psychotic symptoms for 7 days or more).
- On the other hand, BD II is characterised by episodes of hypomania (abnormally elevated mood or irritability and related symptoms with decreased or increased function for 4 days or more) and depressive episodes.

DISEASE MANAGEMENT

Diagnosis

The diagnosis of BD relies on signs and symptoms elicited during clinical interviews with the patient and often with corroborative history from informants.

The tools are available for the screening of BD:

- Mood disorder questionnaire (MDQ)13
- Hypomania checklist (HCL-32)14
- Bipolar spectrum diagnostic scale (BSDS)15
- Rapid mood screener (RMS)

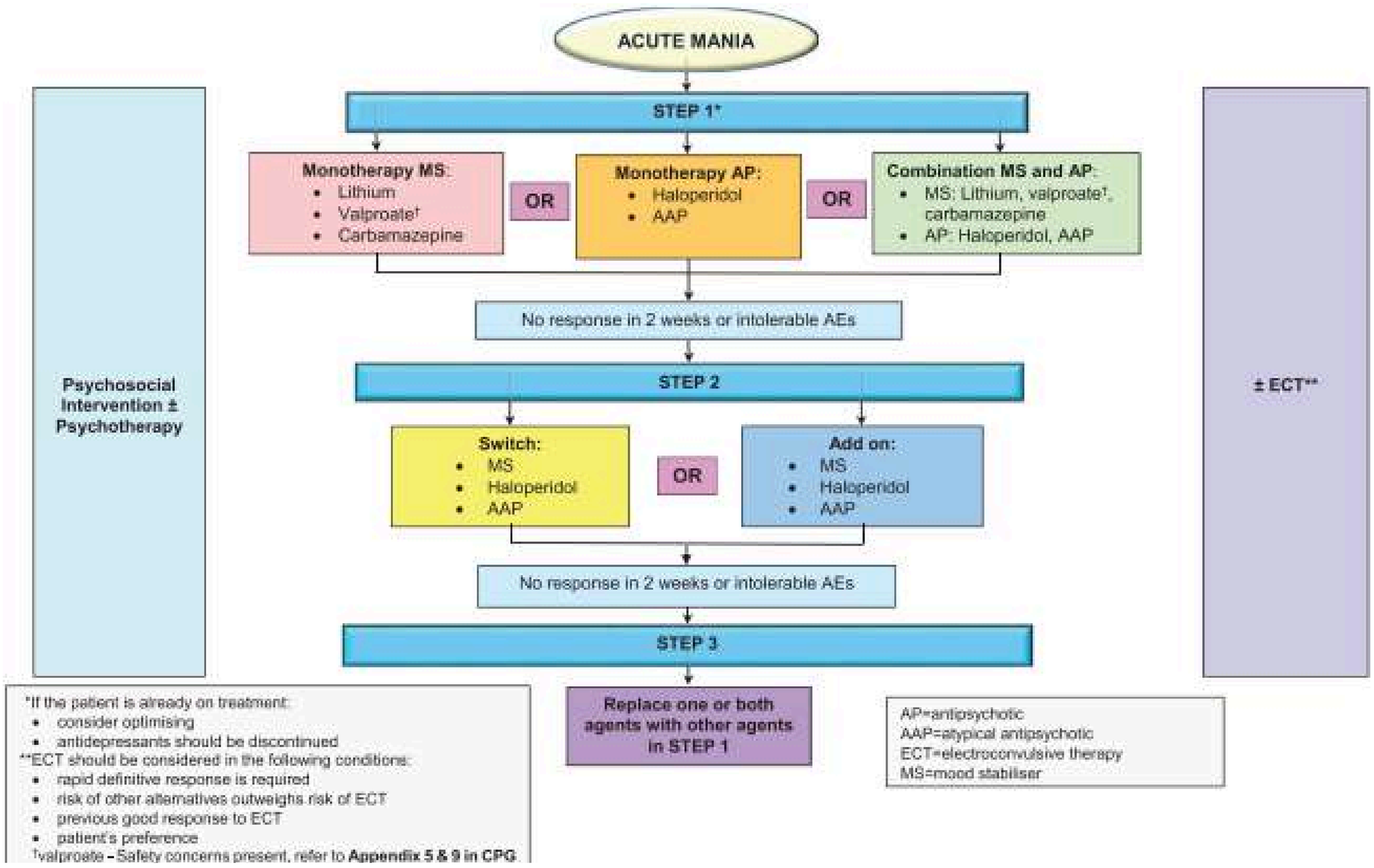
It may be difficult to screen for BD in the general population. A group of researchers from the University of Melbourne introduced Bipolar at-risk (BAR) criteria which may assist in identifying those at risk of BD in the age range of 15 - 25 years. It included sub-threshold mania, depressive symptoms, cyclothymic features and genetic risk.

Table 1: Bipolar At-Risk (BAR) criteria

Criterion	Description
Group 1: Subthreshold mania	2 - 4 consecutive days of abnormally and persistently elevated, expansive or irritable mood with at least two of the following: 1. inflated self-esteem or grandiosity 2. decreased need for sleep (e.g. feels rested after only three hours of sleep) 3. more talkative than usual or pressure to keep talking 4. flight of ideas or subjective experience that thoughts are racing 5. distractibility 6. increased goal-directed activity (socially, at work or sexually) or psychomotor agitation
Group 2: Depression and cyclothymic features	Depression defined as at least one week of depressed mood or loss of interest/pleasure with at least two of the following: 1. significant weight loss 2. insomnia or hypersomnia nearly every day 3. psychomotor retardation or agitation 4. fatigue or loss of energy 5. feelings of worthlessness or excessive/inappropriate guilt 6. diminished ability to think or concentrate 7. recurrent thoughts of death and/or recurrent suicidal ideation Cyclothymic features are defined as numerous episodes with subthreshold manic symptoms not meeting group 1 criteria and numerous episodes with depressive symptoms. e.g. sub-threshold mania as defined in group
	1 only for four hours within a 24-hour period and at least four cumulative lifetime days meeting the criteria
Group 3: Depression and genetic risk	Depression same as for group 2; genetic risk defined as first-degree relative with BD

Pharmacotherapy

Figure 1: Treatment algorithm for Acute Mania



Antipsychotics or mood stabilisers, either as monotherapy or combination, can be used to treat acute mania in bipolar disorder.

Monotherapy APs:

- haloperidol, risperidone, paliperidone, olanzapine, quetiapine, aripiprazole, cariprazine, ziprasidone or asenapine

Monotherapy mood stabilisers:

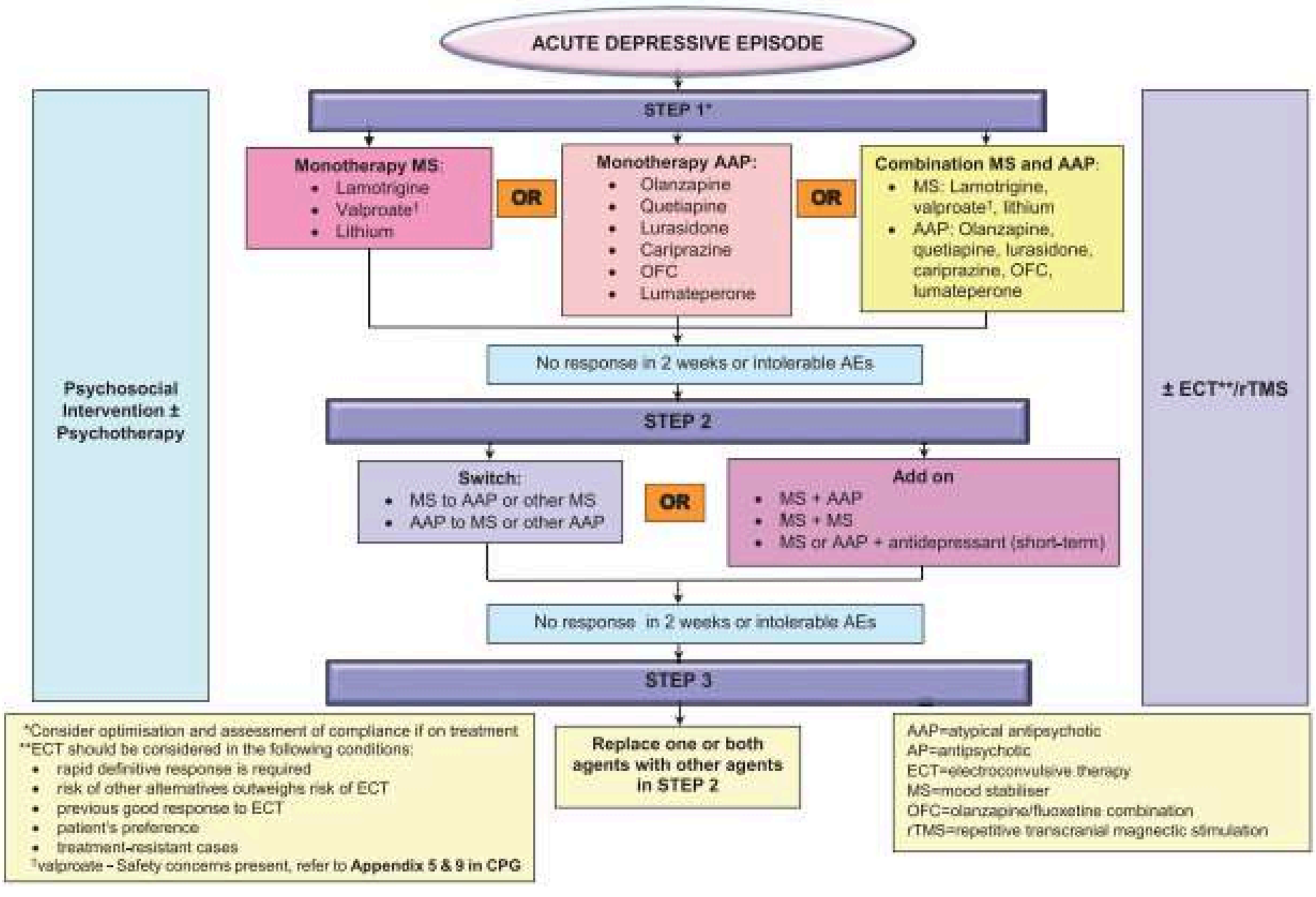
- lithium, valproate or carbamazepine

Combination therapies:

- lithium with either valproate, carbamazepine, risperidone, olanzapine, quetiapine or asenapine
- valproate with olanzapine

Pharmacotherapy

Figure 2: Treatment algorithm for Acute Depressive Episode



- Atypical antipsychotic or mood stabilisers, either as monotherapy or combination, should be used to treat depressive episodes in bipolar disorder.

- Antidepressants may be used as short term adjunctive treatment but not as monotherapy in acute bipolar depression.

- Occurence of treatment-emergent manic switch should be monitored.

Maintenance phase focuses on prevention of recurrence after remission of acute mood episodes.

For maintenance pharmacotherapy of bipolar disorder (BD),

- lithium and quetiapine are the preferred first-line monotherapy while lithium plus quetiapine or aripiprazole are the preferred first line combination therapy
- antidepressant monotherapy should be avoided
- aripiprazole or risperidone long-acting injectables may be considered in patients who have poor adherence to oral medications especially in preventing manic episodes

Table 2: Treatment for Maintenance Phase

Pharmacological agents	Prevention of any mood episode	Prevention of manic episode	Prevention of depressive episode
First line: Monotherapy	Lithium, valproate, lamotrigine, quetiapine, olanzapine, aripiprazole, asenapine, paliperidone, aripiprazole LAI (long-acting injectable/LAI)	Lithium, valproate, quetiapine, olanzapine, aripiprazole, asenapine, paliperidone, aripiprazole LAI	Lithium, valproate, lamotrigine, quetiapine, olanzapine, asenapine
Combination therapy	Lithium or valproate + quetiapine Lithium + aripiprazole	Lithium or valproate + quetiapine Lithium + aripiprazole	Lithium or valproate + quetiapine
Second line: Monotherapy	Carbamazepine, ziprasidone, clozapine, risperidone LAI	Carbamazepine, lamotrigine, ziprasidone, clozapine, risperidone LAI	Carbamazepine, clozapine
Combination therapy	Valproate + aripiprazole Lithium or valproate + olanzapine Lithium or valproate + ziprasidone Lithium or valproate + lurasidone Lithium or valproate + risperidone LAI Lithium + valproate	Valproate + aripiprazole Lithium or valproate + olanzapine Lithium or valproate + ziprasidone Lithium or valproate + risperidone LAI Lithium + valproate	Olanzapine fluoxetine combination Lithium or valproate + olanzapine Lithium or valproate + lurasidone Lithium or valproate + lamotrigine

List of Medication Available in HTAA

MEDICATION	DOSING GUIDE	RENAL DOSE	HEPATIC DOSE	COMMON/SIGNIFICANT ADVERSE EFFECTS
MOOD STABILISERS				
Lithium	**Acute mania, acute episodes with mixed features, acute hypomania, acute bipolar depression** *Oral* - Initial: 600 - 900 mg/day in 2 - 3 divided doses. Titrate in increment of 300 - 600 mg to usual therapeutic dose range of 900 - 1800 mg/day in divided doses. (Max dose: 1.8 g/day in 1 to 3 divided doses)	**CrCl <30 ml/min**: Use not recommended	No dosage adjustment provided in the manufacturer's labelling	**Cardiac**: cardiac arrhythmia, T-wave inversion, oedema, hypotension **CNS:** drowsiness, abnormal EEG, confusion, memory impairment, tremor **Dermatologic:** acne, exacerbation psoriasis **GI:** dyspepsia, nausea, vomiting, abdominal pain, diarrhoea, dysgeusia **Renal:** changes in eGFR **Endocrine and metabolic:** polydipsia and polyuria, weight gain, hyperparathyroidism, hypercalcemia, hypothyroidism, diabetes insipidus **Others**: sexual dysfunction **Lithium toxicity:** tremor, tinnitus, seizure, ataxia
Valproate	**Acute manic or acute episodes with mixed features, depressive episodes** *Oral* - IR: 600 mg daily and increase by 200 mg/day at 3-day interval until control is achieved. ER: 1000mg daily (in once or twice daily regimen) Usual dose range : 1000 to 2000 mg/day (i.e 20 - 30 mg/kg/day) (Max dose: 2500mg/day or 60 mg/kg/day)	**CrCl <10 ml/min:** No specific dosage adjustment necessary. However, free valproate clearance may be reduced up to ~30%.	**Severe impairment**: Use is contraindicated	**CNS:** dizziness, drowsiness, **Hematologic:** thrombocytopenia, decreased platelet aggregation **Liver:** hepatotoxicity/hepatic failure, hyperammonaemia, hepatic encephalopathy **Dermatologic:** SJS, TEN, DRESS **GI:** abdominal pain, diarrhoea, nausea, vomiting, pancreatitis **Psychiatric:** suicidal Ideation
Lamotrigine	**Acute bipolar depression** *Oral* - **Patients not taking any interacting medications:** Week 1 and 2: 25 mg once daily Week 3 and 4: 50 mg/day in 1 - 2 divided doses Week 5: 100 mg/day in 1 - 2 divided doses Week 6 and maintenance: 200 mg/day in 1 - 2 divided doses (up to 400 mg/day) **Patients taking valproate** Week 1 and 2: 25 mg every other day Week 3 and 4: 25 mg once daily Week 5: 50 mg/day in 1 - 2 divided doses Week 6 and maintenance: 100 mg/day in 1 - 2 divided doses **Patients taking drug(s) that induce lamotriginine metabolism but not taking valproate** Week 1 and 2: 50 mg/day in 1 - 2 divided doses Week 3 and 4: 100 mg/day in 1 - 2 divided doses Week 5: 200 mg/day in 1 - 2 divided doses Week 6 and maintenance: 300 mg/day in 1 - 2 divided doses	**CrCl <30 ml/min:** Titrate with caution as some pharmacokinetics parameters (e.g. half life) may vary considerably	**Moderate to severe impairment WITHOUT ascites**: Decrease doses by ~25% **Moderate to severe impairment WITH ascites:** Decrease doses by ~50%	**Hematologic:** agranulocytosis, neutropaenia, pancytopenia, pure red cell aplasia, aplastic anaemia **Dermatologic:** skin rash, SJS, TENS, DRESS **GI:** nausea, vomiting, diarrhoea **Ophthalmic:** blurred vision, diplopia **CNS:** ataxia, dizziness, drowsiness, headache, tremor, aseptic meningitis
Carbamazepine	**Bipolar I disorder, acute manic or mixed episodes, depressive episodes** *Oral* - IR: 200 mg twice daily; may increase in increment of 200 mg/day every 1 to 4 days. ER: To be given in twice daily regimen Usual dose range: 400 -1600 mg/day in 2 to 3 divided doses (Max dose: 1.6 g/day)	No dosage adjustment necessary	No dosage adjustment provided in the manufacturer's labelling. Use with caution and consider dose reduction as it is metabolised primarily in the liver.	**Hematologic:** Aplastic anaemia, leukopenia, neutropenia, thrombocytopenia **Cardiac:** sinus tachycardia **Liver:** Hepatotoxicity/hepatic failure, increased serum transaminases **Dermatologic:** maculopapular rash, SJS, TEN, DRESS, AGEP **Electrolytes:** hyponatraemia, SIADH **CNS:** ataxia, dizziness, drowsiness
ANTIPSYCHOTICS				
Aripiprazole	**<u>Acute mania or episodes with mixed features, acute hypomania and maintenance treatment</u>** *Oral* - 10 - 15 mg once daily; increase dose in 5 - 10mg/day increment at intervals of ≥1 week (Max dose: 30 mg/day) *LAI* - 400 mg once monthly	No dosage adjustment necessary	No dosage adjustment necessary	**Endocrine and metabolic:** weight gain, hypertriglyceridaemia, hypercholesterolaemia, hyperglycaemia **CNS:** drowsiness, extrapyramidal reaction, headache, insomnia **Hematologic:** neutropenia
Asenapine	**<u>Acute mania or episodes with mixed features</u>** *Oral* - 5 - 10 mg twice daily (Max dose: 10 mg twice daily)	No dosage adjustment necessary	**Child-Pugh class C**: Use is contraindicated	**CNS:** drowsiness, insomnia, akathisia, extrapyramidal reaction, headache, dizziness **Endocrine and metabolic:** weight gain, hypertriglyceridemia, hypercholesterolemia, hyperglycaemia, **GI**: oral hypoesthesia
	Initial 1.5 mg once daily; increase to 3 mg on day 15. (Max dose: 3 mg/day)			
Clozapine	**Maintenance/treatment resistant** *Oral* - Initial: 25 mg daily; titrate in increments of 25 mg at intervals >1 day (Max dose: 550 mg/day in divided doses)	No dosage adjustment provided in the manufacturer's labelling	Dose reduction may be necessary with significant impairment	**Cardiac:** hypotension, syncope, tachycardia **Endocrine metabolic**: sweating, increased weight, hyperglycaemia **GI**: constipation, excessive salivation, nausea, xerostomia **CNS:** dizziness, headache, somnolence **Ophthalmic**: visual disturbance **Other**: fever
Haloperidol	**Acute mania, episodes with mixed features and acute hypomania** *Oral* - 2 - 15 mg/day **or** 0.2 mg/kg/day (up to 15 mg/day), in 1 or 2 divided dose. Titrate in increment of <5 mg every 2 days (Max dose: 30 mg/day)	No dosage adjustment necessary	No dosage adjustment provided in the manufacturer's labelling. Concentrations may increase in patients with hepatic impairment as it is metabolised primarily in liver and protein binding may decrease.	**Cardiac**: hypotension **GI**: constipation, xerostomia **CNS**: akathisia, extrapyramidal reaction, somnolence **Ophthalmic**: blurred vision
Olanzapine	**<u>Acute mixed or manic episodes</u>** *Oral* - Initial: 10 - 15 mg once daily, titrate in increment of 5 mg at intervals of ≥1 day (Max dose: 20 mg/day) **<u>Acute depressive episode</u>** *Oral* - Initial: 5 mg once daily; titrate in increment of 5 mg every 1 - 7 days (Max dose: monotherapy = 20 mg/day; combination = 15 mg/day)	No dosage adjustment necessary	**When used in combination with fluoxetine:** Initial: 2.5 - 5 mg daily	**Cardiac**: orthostatic hypotension, peripheral oedema **Endocrine and metabolic**: hypercholesterolaemia, hyperglycaemia, hyperprolactinaemia, increased appetite, hypertriglycerides, weight gain **GI:** constipation, xerostomia **CNS**: akathisia, asthenia, dizziness, tremor, dystonia
Paliperidone	**<u>Acute manic and mixed episodes</u>** *Oral* - Initial, 6 mg once daily; titrate in increment of 3 mg/day every ≥5 days (Max dose: 12 mg/day)	**<u>CrCl 50 - <80 ml/min</u>:** Initial: 3 mg OD Max: 6 mg OD **<u>CrCl 10 - <50 mL/min:</u>** Initial: 1.5 mg OD Max:3 mg OD **<u>CrCl <10 mL/min:</u>** Not recommended	No adjustment provided in the manufacturer's labelling.	**Cardiac:** tachycardia, prolonged QT interval **Endocrine and metabolic**: weight gain, hyperprolactinaemia, **GI:** constipation, indigestion **CNS:** akathisia, dyskinesia, dystonia, extrapyramidal reaction, parkinsonism somnolence, tremor **Psychiatric:** anxiety
Quetiapine	**<u>Acute mania, acute episodes with mixed features and acute hypomania</u>** *IR* - 100 – 200 mg once daily at bedtime or in 2 divided doses; titrate in increment of <200 mg/day *ER* - 300 mg once daily on Day 1, increase to 600 mg once daily on Day 2, then adjust accordingly (Max dose: 800 mg/day) **Acute depressive episode** *IR, ER* - 50 mg once daily at bedtime; increase to 100 mg once daily on Day 2. Further increase by 50 – 100 mg/day to reach usual target dose of 300 mg OD by Day 4 - 7. (Max dose: 300 mg/day)	No dosage adjustment necessary	**Child-Pugh class A and B:** Initial: 25 mg once daily; may increase by 25 - 50 mg/day based on response and tolerability until effective dose achieved, dividing total daily dose into 1 - 3 divided doses **Child-Pugh class C**: Avoid use	**Cardiac**: orthostatic hypotension **Endocrine and metabolic**: hypercholesterolemia, hpertriglycerides, weight gain **GI**: xerostomia **CNS**: asthenia, dizziness, extrapyramidal reaction, headache, Insomnia, somnolence **Psychiatric**: agitation
Risperidone	**Acute mania, acute episodes with mixed features and acute hypomania** *Oral* - 1- 3 mg/day in 1 or 2 divided doses, increase 1 mg/day at interval >24 hours (Max dose: 8 mg/day) *LAI* - 25 mg every 2 weeks; may increase dose in increment of 12.5 mg no sooner than every 4 weeks (Max dose: 50 mg every 2 weeks)	**CrCl 30 - 60 ml/min:** Administer 50 - 75% of usual indication-specific dose **CrCl 10 - 30 ml/min:** Administer 50% of usual indication-specific dose **CrCl <10 ml/min:** Consider alternative agent. If necessary, administer 25% of usual indication-specific dose	**Child-Pugh class C**: 0.5 mg twice daily; titration in increment of no more than 0.5 mg twice daily. Increase to dosages above 1.5 mg twice a day occurring at interval of at least 1 week.	**Endocrine and metabolic:** weight gain, hyperprolactinaemia **GI:** constipation, excessive salivation, indigestion, nausea, abdominal pain, vomiting, xerostomia **CNS:** akathisia, dizziness, dystonia, sedation, parkinsonism, tremor **Ophthalmic:** blurred vision **Psychiatric:** anxiety
SELECTIVE SEROTONIN REUPTAKE INHIBITOR (SSRI)				
Fluoxetine	**<u>Acute depressive episode</u>** *Oral* - Initial: 20 mg once daily in the evening with another AAP (e.g. olanzapine) or mood stabilisers; titrate in increment of 10 – 20 mg every 1 - 7 days (Usual dose range: 20 -50 mg/day)	No dosage adjustment necessary	Use lower dose (up to 50%) reduction and less frequent interval in patients with cirrhosis and chronic liver disease	**GI:** diarrhoea, indigestion, loss of appetite, nausea, xerostomia **CNS**: asthenia, dizziness, insomnia, somnolence, tremor **Psychiatric**: anxiety, suicidal ideation **Respiratory**: pharyngitis, rhinitis **Other**: influenza-like illness

REFERENCES

1. CPG Management of Bipolar Disorder (2th Edition) 2024
2. Malaysian Psychiatric Association – psychiatry-malaysia.com

Medication Safety

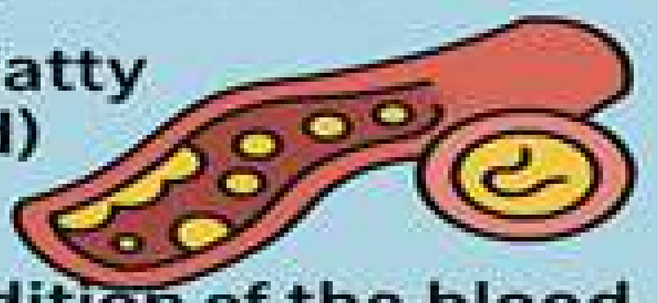
Statins Explained Simply: What Happens Inside Your Body?

BY: PRP WAN MUHAMMAD IRFAN BIN WAN RUSHDI

HYPERCHOLESTEROLEMIA

Hyper = High / Excessive

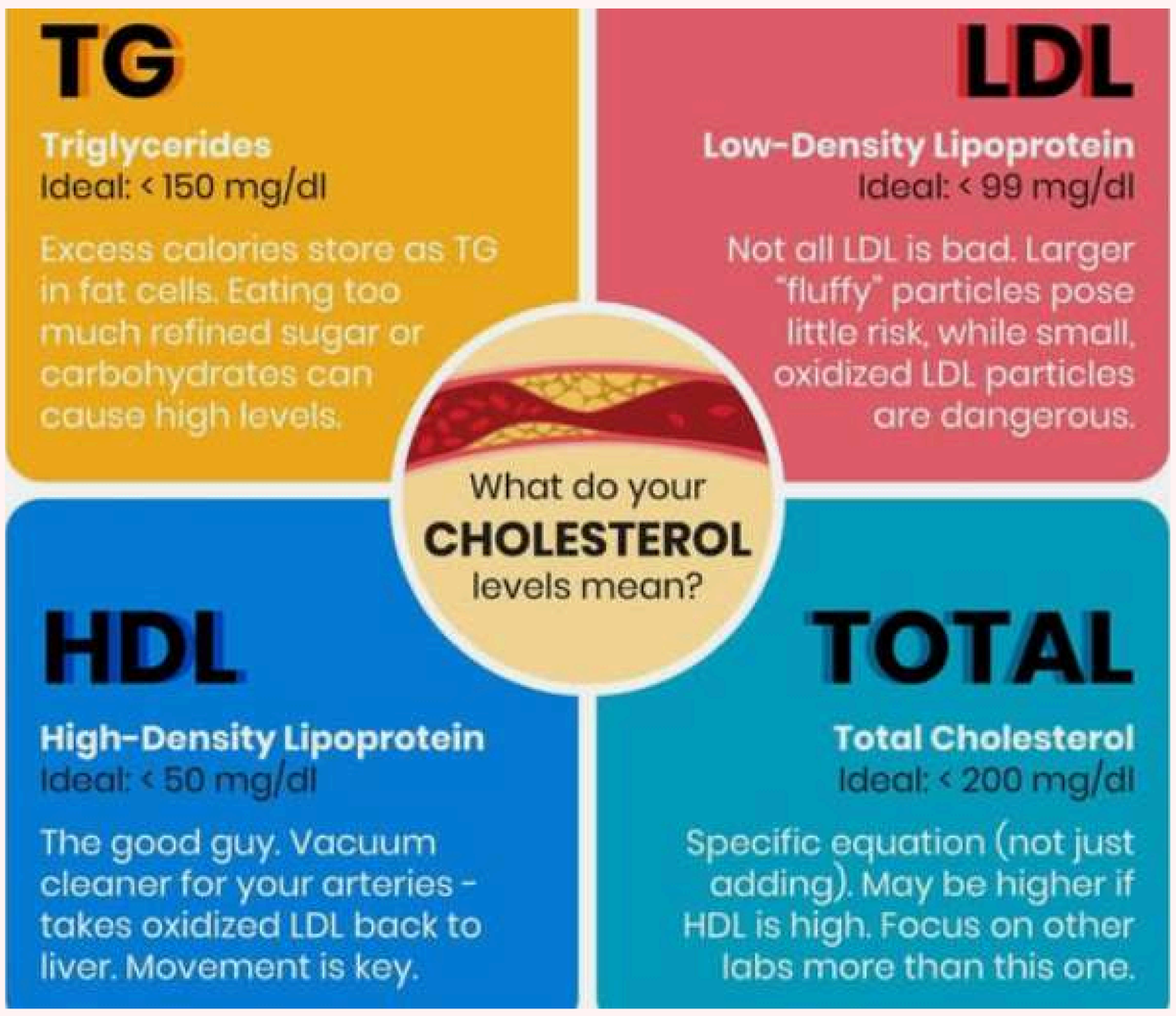
Cholesterol = A fatty substance (lipid) in the blood



–emia = Condition of the blood

DEFINITION:

CHOLESTEROL LEVEL HIGHER THAN NORMAL RANGE IN BLOOD.
(TOTAL CHOLESTEROL > 5.2mmol/L)



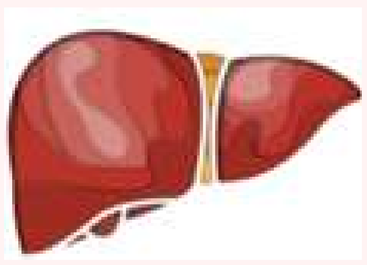
WHAT HAPPEN IF THE LEVELS ARE HIGH?

IF LDL IS LOW AND HDL IS HIGH, IT CAN INCREASE THE RISK OF CARDIOVASCULAR EVENTS, WHICH LEADS TO THE CHOLESTEROL DEPOSITING ON THE BLOOD VESSEL WALL, CAUSING THE BLOOD VESSEL TO NARROW AND DISRUPT BLOOD FLOW.

HOW DOES HYPERCHOLESTEROLEMIA HAPPEN, AND WHAT ARE THE RISKS & COMPLICATIONS?

SOURCES

Cholesterol from food intake.

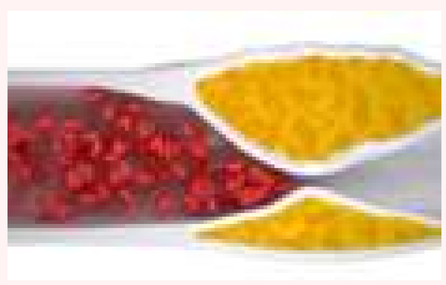


Cholesterol produced by the liver in the human body.

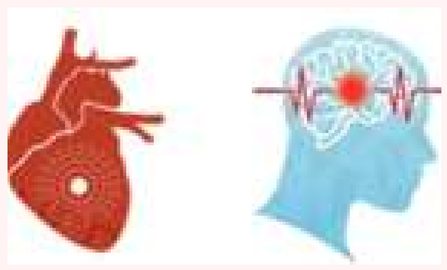
RISKS

- Excessive intake of high-cholesterol foods
- Genetic factor
- Smoking
- Obesity
- Liver problems
- Lack of physical activity
- Aging
- Have other diseases such as diabetes, hypertension

COMPLICATIONS



Cholesterol deposits in blood vessels cause narrowing of blood vessels...



...and can cause heart disease, heart failure or stroke.

Medication Safety

ANTICHOLESTEROL DRUG GROUP

- Statin
- Fibrate
- Ezetimibe
- Bile acid binding resins
- PCSK9 inhibitors

WHAT IS STATIN?

A STATIN IS A TYPE OF MEDICINE THAT HELPS OWER CHOLESTEROL IN BLOOD. IT WORK BY BLOCKING THE LIVER FROM MAKING TOO MUCH CHOLESTEROL AND REDUCING BUILD UP OF FATTY DEPOSITS IN BLOOD VESSEL.

TYPE OF STATIN

- Pravastatin
- Simvastatin
- Atorvastatin
- Rosuvastatin

DOSE OF STATIN

	STANDARD DOSE	MAXIMUM DOSE
ATORVASTATIN	10mg ONCE DAILY	80mg ONCE DAILY
ROSUVASTATIN	5-10mg ONCE DAILY	40mg ONCE DAILY
SIMVASTATIN	10-20mg ONCE DAILY	40mg ONCE DAILY
PRAVASTATIN	10-20mg ONCE DAILY	80mg ONCE DAILY
EZETIMIBE + SIMVASTATIN	10mg/20mg (1 TAB DAILY)	10mg/40mg (1 TAB DAILY)

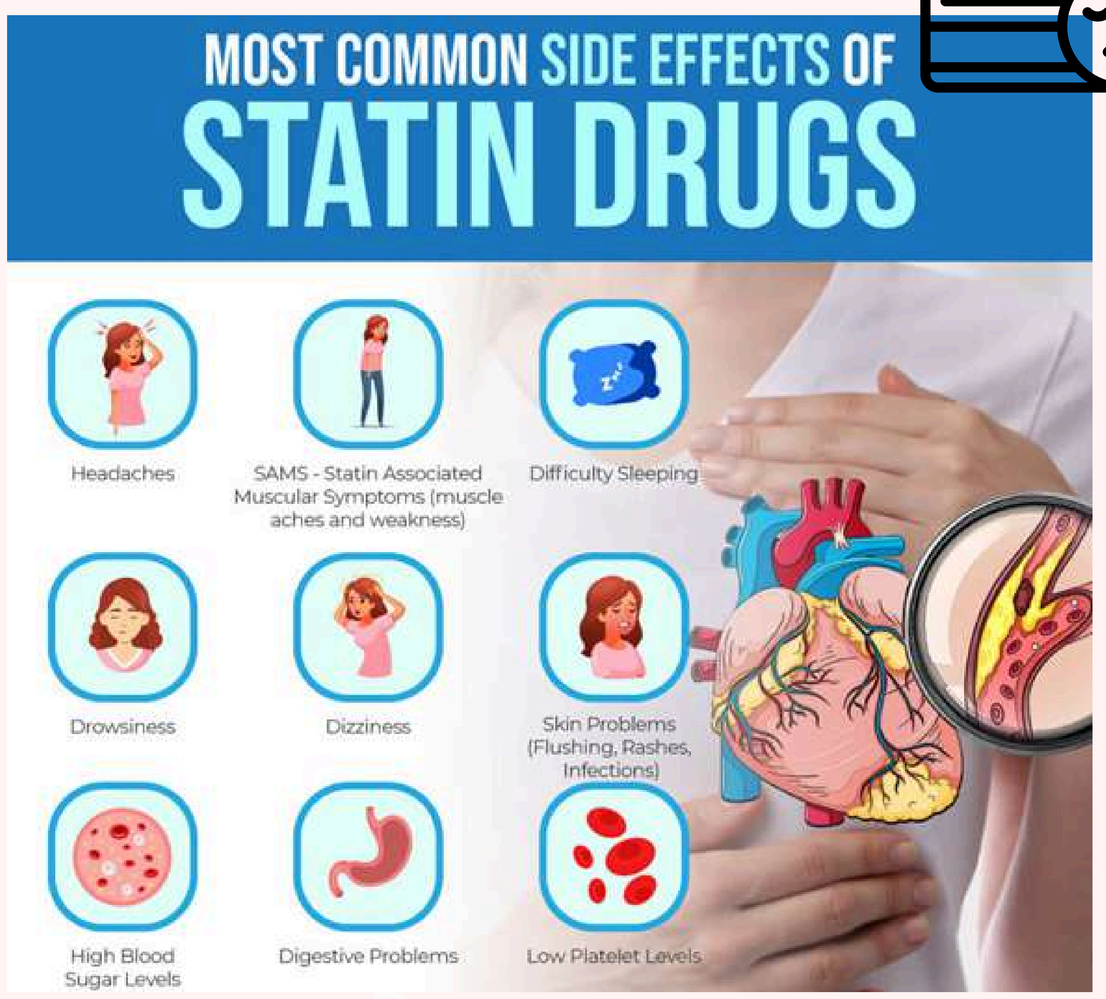
Ref: CPG Management Dyslipidemia 2023. 6th ed.

*Ezetimibe - Anticholesterol medication that is usually added when cholesterol levels are not controlled by statin drugs that have been given at maximum doses.

Medication Safety

★ WHEN TO TAKE STATIN?

★ SIDE EFFECTS OF STATIN



★ INTERACTIONS WITH STATIN

Other medications

STATIN
+
Fibric acid derivatives (anticholesterol), Erythromycin (antibiotics), certain antifungal medications or Cyclosporin (immunosuppresant)

↓

The level of statin in the body will increase.

Traditional preparations

STATIN
+
Gastric medicine containing Magnesium and/or Aluminium hydroxide

↓

The level of statin in the body will decrease.

STATIN
+
St. John's Wort

↓

The level of statin in the body will increase.

STATIN
+
Red Yeast Rice

↓

The level of statin in the body will increase.

Foods

STATIN
+
Lime grapefruit

↓

The level of statin in the body will increase.

STATIN
+
Alcoholic beverages

↓

The level of statin in the body will increase.

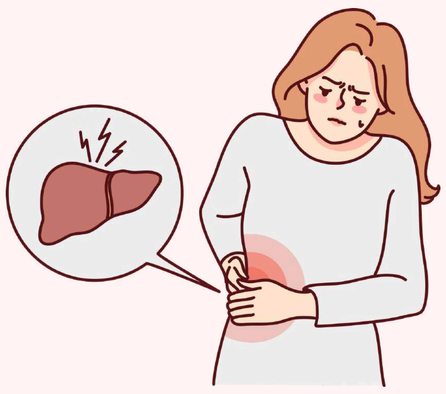
*if statin level increase - increase side effects
*if statin level decrease - reduce effectiveness

Medication Safety

INFORM THE DOCTOR OR PHARMACIST IF YOU ARE:

PREGNANT OR PLAN TO GET PREGNANT

BREASTFEEDING



HAVE LIVER PROBLEM

HAVE SERIOUS MUSCLE PROBLEM

TAKE THE MEDICINE AT THE RIGHT TIME. DON'T ADJUST THE DOSE WITHOUT ADVICE FROM THE DOCTOR.

GET A ROUTINE MEDICAL CHECKUP.

IF EXPERIENCE SERIOUS SIDE EFFECTS, SEEK MEDICAL CARE IMMEDIATELY.

EAT A BALANCED DIET & STAY HYDRATED AND ACTIVE.

PRACTISE A HEALTHY LIFESTYLE.

ALWAYS REPORT NEW SYMPTOMS TO DOCTOR OR PHARMACIST.

REFERENCES

1. UBAT ANTIKOLESTEROL STATIN- BAHAGIAN AMALAN & PERKEMBANGAN FARMASI, PROGRAM PERKHIDMATAN FARMASI, KEMENTERIAN KESIHATAN MALAYSIA.
2. CPG MANAGEMENT DYSLIPIDEMIA 2023 6TH EDITION.

DRUG UPDATES

SODIUM CHLORIDE 3% W/V NEBULISER SOLUTION BP

A. DESCRIPTION

HYPERNEB 3% is a clear and colourless solution. Each single-use ampoule contains 4 mL sterile, preservative-free and non-pyrogenic Sodium Chloride 3% w/v Nebuliser Solution BP for inhalation.

B. REGISTRATION NUMBER

MAL18116048XZ

C. DEPARTMENT

Usage : Open for all department
UKK Pukal : General Medicine
Budget : Pharmacy

D. ITEM CATEGORY

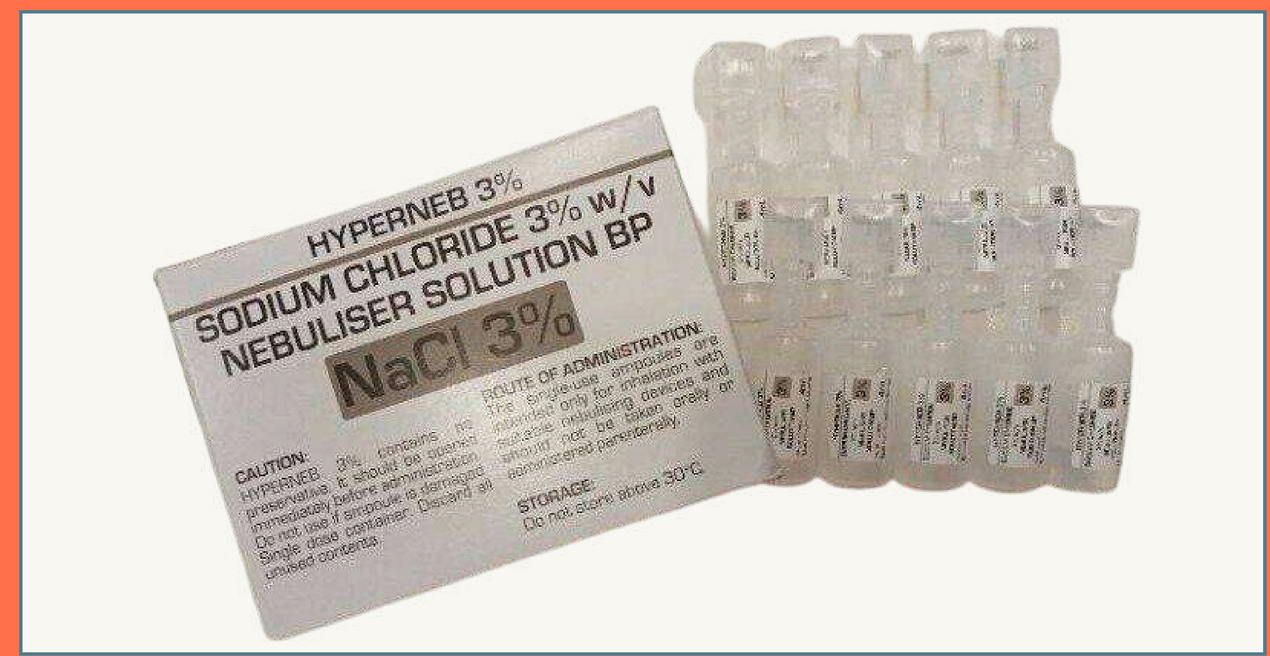
Non-FUKKM

E. PRESCRIBER CATEGORY

Non-FUKKM

F. MECHANISM OF ACTION

It works by thinning the phlegm and making it easier to clear when coughing. This can afford patients with cystic fibrosis, bronchiolitis and acute viral bronchitis to have a considerable relief.



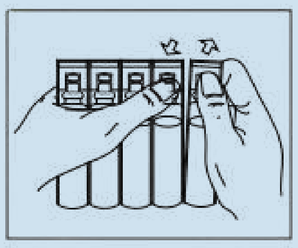
G. INDICATION

- Mobilise lower respiratory tract secretions in mucous consolidation (e.g. cystic fibrosis).
- Mild to moderate acute viral bronchiolitis in infants.

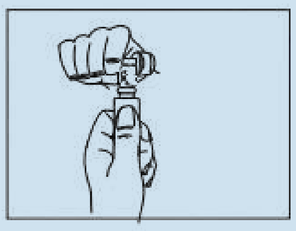
H. DOSE AND ADMINISTRATION

4mL to be taken 2 to 4 times daily as required.

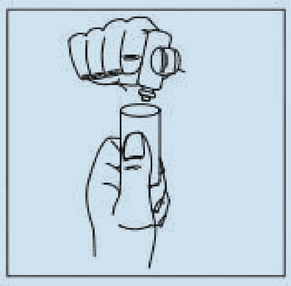
- The single-use ampoules are intended only for inhalation with suitable nebulising devices and should not be taken orally or administered parenterally.



- Detach ampoule along parting line.



- Twist off tab



- Squeeze the content of the single-use ampoule into the nebuliser reservoir. Assemble the nebuliser and use as directed. After use, throw away any solution left in the reservoir and clean the nebuliser according to the manufacturer's instructions.

I. ADVERSE REACTIONS

In rare cases, temporary irritations (e.g. coughing) or reversible constriction of the bronchia can occur. The doctor will often recommend that a bronchodilator be used before treatment. If undesirable side effects do occur, discontinue treatment and seek advice from your doctor or pharmacist.

DRUG UPDATES

J. USE IN SPECIFIC POPULATION

- **Pediatric:** Indicated for infants with mild to moderate acute viral bronchiolitis. Dosage and administration should be determined by a physician. Must be used with caution in children, and ideally under medical supervision with appropriate nebulizing equipment.
- **Geriatric Population** No specific data provided for elderly use. Caution is advised, especially in those with pre-existing conditions like heart disease, hypertension, or kidney/liver dysfunction, which are more common in older adults.
- **Pregnant & Breastfeeding Women:** Consultation with a physician is advised before use during pregnancy or lactation.

K. PRECAUTIONS

Drug Interactions

- Inform the doctor if taking:
  - Potassium supplements
  - Diuretics
  - Steroids
  - Blood pressure medicines
  - Any drugs containing sodium
- Do not use in patients with:
  - Hypersensitivity or allergic reactions.
  - A tendency to develop dyspnea (difficulty breathing).
- Consult a doctor first if the patient has: Asthma, heart disease or high blood pressure, epilepsy, kidney or liver disease, migraine, edema (swelling), recent surgery or low-salt diet
- Avoid mixing with other medications in the nebulizer unless prescribed — it may cause chemical cross-reactions that reduce efficacy.
- Use only with a suitable nebuliser.
- If using bronchodilators, take them 20 minutes prior
- Avoid food 1 hour before and after therapy.
- Do not use before bedtime, as it may disturb sleep.
- Do not share the medicine with others.
- Do not ingest or inject the solution — it's strictly for inhalation.
- Discard unused solution in single-use ampoules.
- Protect eyes during nebulization as the mist can cause irritation.
- Monitor for signs of bronchospasm, especially early in treatment.

L. CONTRAINDICATION

Non specified

M. STORAGE

Do not store above 30°C
Keep out of the reach of children.

N. PHARMACIST ROLE

- Explain that it is used to clear mucus in conditions such as cystic fibrosis and bronchiolitis.
- Instruct patients on the correct use of a nebuliser and emphasize that ampoules are for single use only.
- Advise patients to use a bronchodilator about 20 minutes before inhaling the drug if prescribed.
- Inform patients to avoid food one hour before or after nebulisation and not to use the medicine just before bedtime.
- Counsel patients about possible side effects, including coughing, chest pain, and symptoms of electrolyte imbalance. Advise patients to stop using the medication and seek medical help if serious side effects occur.
- Store below 30°C and keep it out of reach of children.
- Ensure that patients discard any unused contents of the ampoule after one use.
- Warn patients not to use the solution if it appears cloudy or discoloured.
- Caution against mixing with other medications unless directed by a doctor.
- Review the patient's current medications to avoid interactions, especially with diuretics, steroids, or sodium-containing drugs.

O. REFERENCE

Product information leaflet, MIMS, UpToDate, Medscape

BY: NUR HANNAN NAJIHAH BINTI MOHAMAD TAWPIK

DRUG UPDATES

TARLATAMAB 1MG & 10MG INJECTION

A. DESCRIPTION

IMDELLTRA® is the first and only DLL3-targeting Bispecific T-cell Engager (BiTE®)therapy that activates the patient's T cells to attack DLL3-expressing cells

B. REGISTRATION NUMBER

Not listed in QUEST3+

C. DEPARTMENT

General Medicine (Respiratory)

D. ITEM CATEGORY

Sample drug

E. PRESCRIBER CATEGORY

Non-FUKKM

F. MECHANISM OF ACTION

Bispecific T-cell engager (BiTE) that binds to delta-like ligand 3 (DLL3) expressed on the surface of cells, including tumor cells, and CD3 expressed on the surface of T-cells. Binding causes T-cell activation, release of inflammatory cytokines, and lysis of DLL3-expressing cells

Tarlatamab 1mg Inj
Intravenous Solution Stabilizer (IVSS)

Tarlatamab 10mg Inj
Intravenous Solution Stabilizer (IVSS)

G. INDICATION

Indicated for adults with extensive stage small cell lung cancer (ES-SCLC) with disease progression on or after platinum-based chemotherapy

H. DOSE AND ADMINISTRATION

Cycle	Day	Dose	24-hour Monitoring Required	Dosing Infusion Duration	Pre-Medication (D1 & D8 of Cycle 1)
Cycle 1	Day 1	1 mg	Yes	60 minutes IV Infusion	Dexamethasone 8 mg IV (or equivalent dose of other corticosteroids) within 1 hour prior to Tarlatamab infusion Prophylaxis with IV hydration (1 L normal saline over 2 to 4 hours) immediately following Tarlatamab dose
	Day 8	10 mg	Yes		
	Day 15	10 mg	No		Not Required
Cycle 2 onwards	Day 1	10 mg	No		
	Day 15	10 mg	No		

Administered as an intravenous infusion with a step-up dosing schedule until disease progression or unacceptable toxicity. Each cycle is 28 days.

I. ADVERSE REACTIONS

Common

- **Clinical Symptoms:**
  - CRS (55%), fatigue (51%), fever (36%), altered taste/dysgeusia (36%), decreased appetite (34%), musculoskeletal pain (30%), constipation (30%), anemia (27%), nausea (22%)
- **Respiratory & Systemic:**
  - Pyrexia (36%), dyspnea (17%), cough (17%)

J. USE IN SPECIFIC POPULATION

- **Geriatric:** No overall differences in safety or effectiveness compared to younger adults.
- **Pediatric**: Safety and efficacy not established; not recommended for those under 18.
- **Pregnancy:** May cause fetal harm; avoid use unless needed.
- **Lactation:** Unknown if excreted in breast milk; discontinue or avoid breastfeeding.
- **Reproductive potential:** Use effective contraception during and for 2 months after treatment.

K. PRECAUTIONS

Serious (Black Box) Warnings
Cytokine Release Syndrome (CRS)
Can be life-threatening. Common symptoms include fever, hypotension, fatigue, tachycardia, headache, hypoxia, nausea/vomiting, potentially leading to cardiac, respiratory, neurologic, renal/hepatic failure

Neurologic Toxicity (including ICANS)
May cause severe headache, confusion, delirium, seizures, motor weakness, syncope. Includes serious events such as headache, confusion, delirium, seizures, motor weakness, syncope, and peripheral neuropathy. ICANS typically occurs by Cycle 2 Day 1, but may overlap with, follow, or occur independently of CRS

Cytopenias
- Significant reductions in neutrophils, platelets, hemoglobin; Grade 3–4 neutropenia in ~6%, thrombocytopenia ~3.2%, anemia ~6

Infections
- Risk of serious and potentially fatal infections (e.g., COVID-19, pneumonia, UTI, candida) — ~41% experienced infection; ~13% were Grade 3–4. Monitor for infection signs; pause or stop treatment as clinically necessary
- Elevated ALT/AST (Grade 3–4 ALT ~2.1%, AST ~3.2%), with or without CRS. Monitor liver enzymes and bilirubin before dosing; hold or stop treatment if levels reach critical thresholds

Hypersensitivity
- Serious allergic events such as rash and bronchospasm may occur. Monitor during infusion and manage symptoms promptly; consider holding or permanently discontinuing treatment

Embryo-Fetal Toxicity
- Mechanism suggests potential for fetal harm; no human pregnancy data. Confirm non-pregnancy before initiating; require effective contraception during and for 2 months post-treatment

CYP450 Interactions
- CRS-associated cytokine surges may transiently suppress CYP450, increasing exposure to concomitant CYP substrates for up to 14 days post-CRS

L. CONTRAINDICATION

Non specified

M. STORAGE

Unopened Vials and IV solution stabilizer (IVSS)
- Store at 2 °C to 8 °C in the original carton to protect from light. May store vials at room temperature (20 °C to 25 °C (still in the original carton) for up to 24 hours before use.

Prepared Infusion Bag
- Once reconstituted and diluted, use immediately. Max storage time (from reconstitution to end of infusion) is:
  - Room temperature (20–25 °C): up to 8 hours
  - Refrigerated (2–8 °C): up to 7 days
- Do not re-refrigerate a bag that has been removed from cold storage. Discard after these time limits.

N. PHARMACIST ROLE

- Ensure correct step-up dosing schedule is ordered and implemented to minimize CRS/neurotoxicity (Cycle 1 Day 1: 1 mg → Days 8/15 onwards: 10 mg). Provide medication administration schedule
- Actively monitor and manage early adverse reactions (CRS, neurotoxicity, and ICANS)
- Advise holding or discontinuing doses and initiating treatments (e.g., corticosteroids, tocilizumab) based on severity. Ensure appropriate post-event monitoring periods (22–24 hours) following re-initiation
- Guide pharmacy staff on aseptic reconstitution and infusion bag preparation, including use of IVSS and compatible bag materials (PVC, polyolefin, EVA)
- Ensure safe workspace handling protocols due to tarlatamab's status as a hazardous drug
- Verify baseline and pre-dose labs (CBC, liver enzymes, bilirubin) and infection assessments before each infusion
- Counsel patients on disease progression context (ES-SCLC post-platinum therapy). How to recognise and to report signs of CRS or neurotoxicity early . Importance of hydration, adherence to monitoring schedules, contraception requirements, and staying near care facilities during early cycles

O. REFERENCE

Product information leaflet, MIMS, UpToDate, Medscape

BY: NUR HANNAN NAJIHAH BINTI MOHAMAD TAWPIK

DRUG UPDATES

CROVALIMAB

A. DESCRIPTION

Clear to opalescent, nearly colourless to brownish-yellow solution (340 mg/2 mL) in single-dose vial for SC or IV use. Contains crovalimab-akkz with arginine HCl, histidine, poloxamer 188, WFI; pH adjusted with aspartic acid.

B. REGISTRATION NUMBER

Not registered in QUEST3+

C. DEPARTMENT

Hematology

D. ITEM CATEGORY

Sample drug

E. PRESCRIBER CATEGORY

Non-FUKKM

F. MECHANISM OF ACTION

Crovalimab is a humanized monoclonal antibody (produced in CHO cells) that binds complement C5, preventing its cleavage into C5a/C5b and blocking the terminal cascade. In PNH, this reduces complement-mediated hemolysis, with sustained inhibition allowing lower dosing

G. INDICATION

Treatment of paroxysmal nocturnal hemoglobinuriain (PNH) patients with haemolysis and high disease activity, or those stable after ≥6 months on a C5 inhibitor (PNH)

H. DOSE AND ADMINISTRATION

Administered via **subcutaneous injection or intravenous infusion**

Loading dose on Day 1

- Diluted and given as slow IV infusion for at least 60 to 90 minutes.
- Another loading dose as a subcutaneous (SC) injection on Days 2, 8, 15, and 22.

Maintenance doses will begin on Day 29 and be given every 4 weeks as subcutaneous injections.

SC administered within the abdomen, be rotated with every injection. Injections should never be given into moles, scars, or areas where the skin is tender, bruised, red, hard, or not intact.

I. STORAGE

Store in a refrigerator **(2 °C – 8 °C)**.
Keep the vial in the outer carton to protect from light.
Do not shake. Do not freeze.
Unopened vial in its original carton may be kept at room temperature up to 30 °C for no longer than 7 days. Discard if it exceeds 7 days.

DRUG UPDATES

J. USE IN SPECIFIC POPULATION

- **Pediatric:** Indicated in ≥13 years with ≥40 kg
- **Geriatric Population** No specific data provided for elderly use. Caution is advised, especially in those with pre-existing conditions like heart disease, hypertension, or kidney/liver dysfunction, which are more common in older adults
- **Pregnant & Breastfeeding Women:** Weigh potential benefits against potential risks before usage. It is not known if crovalimab passes into breast milk. Patient should not breastfeed during treatment with PIASKY and for 9 months after the final dose

K. ADVERSE DRUG REACTIONS

- **Common side effects :** infusion-related reactions, respiratory tract infections including infections of the lungs, cold symptoms, and pain or swelling of the nose or throat, viral infections or Type III hypersensitivity reactions
- **Affects immune system :** Increased risk of severe meningococcal infection and other types of serious infections caused by encapsulated bacteria, including infections caused by Neisseria spp., Streptococcus pneumoniae, and Haemophilus influenzae and Neisseria gonorrhoeae
- **Allergic reactions** may be life-threatening and require immediate medical assistance. **Watch out for** shortness of breath or trouble breathing, pain or tightness in your chest, wheezing, lightheaded, swelling of the throat, lips, tongue, or face, skin itching, hives, or rash, fever or chills
- **Any infusion-related or injection-related reactions (during or after).** **Watch out for** headache, pain at the infusion or injection site or pain in other parts of your body, swelling, bruising or bleeding, red skin, itching and rash

L. CONTRAINDICATION

- Contraindicated in meningococcal infection, serious and unresolved
- Hypersensitive to crovalimab or other excipients in the medication
- Patients who are not currently vaccinated against Neisseria meningitidis unless they receive prophylactic treatment with appropriate antibiotics until 2 weeks after vaccination

M. PRECAUTIONS

- **Vaccinate** against meningococcus (including serogroups A, C, W, Y and B) 2 weeks before starting treatment (if to be started immediately then Dr may prescribe abx)
- **Monitor** for signs of infection and adverse drug reactions
- Crovalimab is used **diluted** for intravenous infusion or **undiluted** for subcutaneous injection
- The medication is for **single use only**

N. PHARMACIST ROLE

- Assist physician in determining **meningococcal vaccines plan** based on patient's vaccination history before first dose of Crovalimab
- Ensure **patient receives a safety card** outlining the risk of serious meningococcal infection, including signs and symptoms and actions to take if they occur.
- Advise the patient to **carry the card at all times and present it during any medical visit**, both throughout treatment and for 11 months after the last dose.
- Obtain a thorough medical history to **assess the risk of Type III hypersensitivity reactions**. These reactions may occur, particularly when switching between PIASKY and other C5 inhibitors. Patients transitioning from another C5 inhibitor to PIASKY, or vice versa, should be closely monitored for 30 days following the switch.
- To **monitor** patient closely for **at least 20 weeks after stopping** medication as may cause hemolysis
- Provide **input on** missed or delayed dose, overdose and other dose modifications required based on patient's clinical condition

O. REFERENCE

Product information leaflet, MIMS, UpToDate, Medscape, Micromedex, Piasky Medication Guide, Piasky Product Information

By : Roshini A/P Ragunathan

DRUG UPDATES

RESPIRATORY SYNCYTIAL VIRUS (RSV) VACCINE

A. DESCRIPTION

Presented as two vials per single dose

Vial 1: White lyophilised RSVPreF3 antigen powder.

Vial 2: Opalescent, colourless to pale brownish AS01E adjuvant suspension.

Reconstitute immediately before administration to yield a 0.5 mL dose for intramuscular injection

B. REGISTRATION NUMBER

MAL24086007ARZ
Approved 25 Sept 2024

C. DEPARTMENT

Geriatric

D. ITEM CATEGORY

Non-FUKKM

E. PRESCRIBER CATEGORY

Non-FUKKM

F. MECHANISM OF ACTION

Contains RSV F glycoprotein in prefusion conformation with AS01E adjuvant, enhancing antigen-specific T-cell and neutralising antibody responses, blocking RSV infection in lower respiratory tract

G. INDICATION

Active immunisation to prevent RSV-associated lower respiratory tract disease in adults ≥60 years, and adults 50–59 years with stable chronic medical conditions increasing RSV risk

H. DOSE AND ADMINISTRATION

Single 0.5 mL intramuscular injection, preferably in the deltoid muscle
No booster indicated currently
Revaccination: Need not yet established; a second dose at 12 months did not improve efficacy. Administer as a separate injection site from other vaccines.
May be given with inactivated seasonal influenza vaccine

I. STORAGE

Store in a refrigerator **(2 °C – 8 °C)**.
Do not freeze. Do not shake.
Keep the vial in the outer carton to protect from light.

Unopened vial in its original carton may be kept at room temperature up to 30 °C for no longer than 7 days. Discard if it exceeds 7 days.
After reconstitution, use immediately or within 4 hours at ≤25 °C or 2 °C–8 °C.

DRUG UPDATES

J. USE IN SPECIFIC POPULATION

- **Pediatric:** Safety/efficacy not established
- **Geriatric Population** Approved for ≥60 years
- **Pregnant & Breastfeeding Women:** Not recommended due to insufficient human data
- **Immunocompromised:** May have reduced immune response

K. ADVERSE REACTIONS

- Very common (≥1/10): Injection site pain, fatigue, myalgia, headache, arthralgia — generally mild to moderate, resolving within 2–3 days.
- Common (≥1/100–<1/10): Injection site swelling/erythema, fever, chills — transient, typically within 48 hours.
- Uncommon (≥1/1,000–<1/100): Nausea, vomiting, abdominal pain, lymphadenopathy, hypersensitivity reactions (e.g., rash), injection site pruritus, malaise.
- Hypersensitivity/Allergic reactions: Rare but may be serious; can present with shortness of breath, chest tightness, wheezing, dizziness, facial/throat swelling, skin itching, hives, rash, or fever/chills. Immediate medical attention required.
- Neurological: Syncope and anxiety-related reactions (vasovagal, hyperventilation) may occur during or after vaccination — observe patients to prevent injury.
- Special notes: Incidence of local/systemic reactions is higher in adults aged 50–59 years compared to ≥60 years, but duration and severity are similar.
- Post-vaccination monitoring: Monitor for at least 15 minutes; longer if history of allergic reactions.

L. CONTRAINDICATION

Hypersensitivity to active substances or excipients

Postpone vaccination in acute severe febrile illness until recovery

M. PRECAUTIONS

- Monitor for allergic reactions post-vaccination
- Counsel on local and systemic transient reactions
- Use with caution in patients with thrombocytopenia/coagulopathy
- Immunocompromised patients may have reduced response
- Consider timing around RSV season (peaks in Malaysia: July–Aug and Oct–Dec)

N. PHARMACIST ROLE

- Screen for age and co-morbidities or other risk factors
- Counsel on RSV risk, vaccine benefits and potential adverse effects
- Ensure proper storage, handling and reconstitution
- Monitor for immediate reactions post-vaccination
- Provide advice on side effects and timing relative to RSV season

O. REFERENCE

Product information leaflet, MIMS, UpToDate, Medscape, Micromedex, Piasky Medication Guide, Piasky Product Information

BY : ROSHINI A/P RAGUNATHAN

2ND INTERNATIONAL LEAN HEALTHCARE CONFERENCE 12-13/8/2025

GOLD MEDAL

(Poster)

Project:

REDUCING PATIENT WAITING TIME DURING SCREENING PROCESS AT HTAA OUTPATIENT PHARMACY

Presenter:

SITI NURUL ASYIQEEN BINTI ABDUL HALIM

1ST EAST COAST PHARMACY RESEARCH & QUALITY ASSURANCE CONFERENCE 29-30/8/2025

CHAMPION

(Oral)

Project:

ASSESSMENT OF PHARMACIST-LED INTERVENTIONS ON DRUG-RELATED PROBLEMS: ADDRESSING CLINICAL AND ECONOMIC IMPACT IN HAEMATOLOGY UNIT

Presenter:

CHUA PECK WEI

1ST EAST COAST PHARMACY RESEARCH & QUALITY ASSURANCE CONFERENCE 29-30/8/2025

2ND RUNNER UP

(Oral)

Project:

EVALUATION OF IRON SUPPLEMENTATION AMONG CHILDREN IN PAHANG

Presenter:

NURATIKAH BINTI M. NORDIN

1ST EAST COAST PHARMACY RESEARCH & QUALITY ASSURANCE CONFERENCE 29-30/8/2025

1ST RUNNER UP

(Poster)

Project:

LOW MOLECULAR WEIGHT HEPARIN VERSUS UNFRACTIONATED HEPARIN AS VENOUS THROMBOEMBOLISM PROPHYLAXIS IN NEUROSURGERY

Presenter:

YEOH MEI TING

PAHANG RESEARCH DAY

16/10/2025

1ST RUNNER UP

(Case Report-Poster)

Project:

INTRAOPERATIVE FLUORESCEIN IN NEUROSURGERY : PHARMACOLOGICAL INSIGHTS INTO SURGICAL BOUNDARIES

Presenter:

ANIS FARIHA BINTI CHE DAROF

CONSOLATION

(Oral)

Project:

EVALUATION OF IRON SUPPLEMENTATION AMONG CHILDREN IN PAHANG

Presenter:

FATIN 'IZZATI BINTI SHAMSUDDIN

PHARMACY ACTIVITIES

PharmCare
Hospital Tengku Ampuan Afzan

PAHANG PHARMACY SPORT CARNIVAL 2.0

18 JULY- 2 AUG 2025

PHARMACY ACTIVITIES

PharmCare
Hospital Tengku Ampuan Afzan

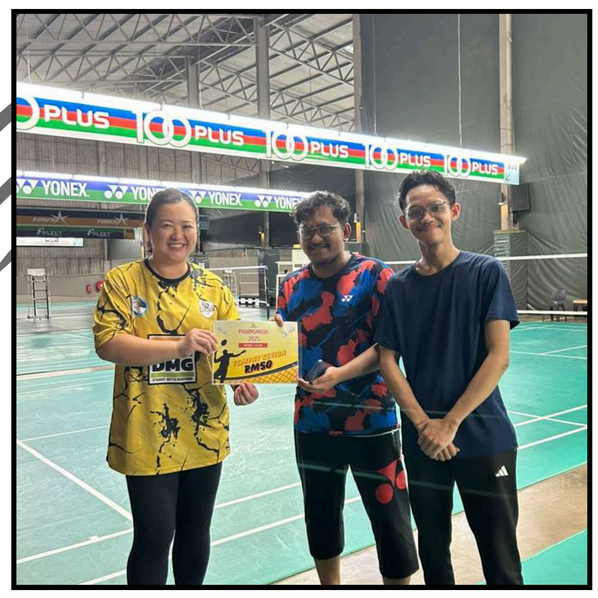
PHARMILY DAY

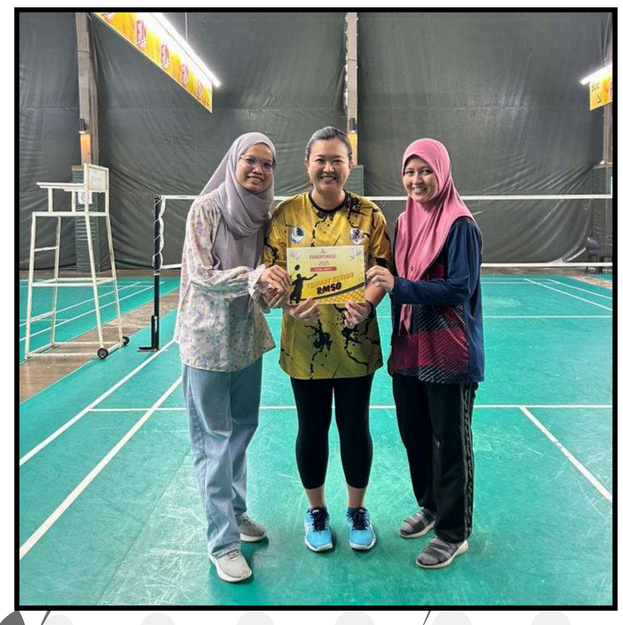
7 SEPT 2025

PharmCare
Hospital Tengku Ampuan Afzan

PHARMSMASH

12 JULY 2025





PHARMACY ACTIVITIES

PAMERAN KENALI UBAT ANDA (KUA)

in conjunction with

HARI PENGAKAP KEBANGSAAN

16/8/2025

PHARMACY ACTIVITIES

COMMUNITY TRANSFORMATION PROGRAM

in conjunction with

WORLD PHARMACISTS DAY

PHARMACY ACTIVITIES

PROGRAM DUTA & HOME MEDICATION REVIEW

HTAA & PKD KUANTAN

30/11/2025

Series 2.2025

PHARMACY BULLETIN

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