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Pharmacy Department, Hospital Permai Johor Bahru

Highlight

Insomnia Treatment Update with a Focus on Orexin Receptor Antagonist

A Message from the Editorial Board

Greetings,

We are delighted to introduce to you the second edition of our Pharmacy Bulletin Vol. 2/2022, now with a new look and reorganized design. We present to you a diverse selection of articles from our co-editors with this month's cover story highlighting the orexin receptor antagonist in the treatment of insomnia, which we hope will interest you.

We would like to extend our appreciation to the advisor of this bulletin for her support to its publication. We are also grateful to the HPJB Multimedia Committee for their time and effort in reviewing this publication.

We hope you enjoy reading this bulletin and our new presentation. We welcome any feedback, comments or enquiries you may have on the articles in this publication.

We look forward to seeing you again with a new issue.

The editorial board

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Highlight

Insomnia Treatment Update with a Focus on Orexin Receptor Antagonist

By Hanis Sofia Binti Naiyer Afzal

Insomnia

- Insomnia is a sleep disorder affecting 10% to 50% of the global population[2].
- It is defined as difficulty initiating or maintaining sleep that results from daytime circumstances and is not caused by environmental factors or lack of sleep opportunity[3].

Types of insomnia[3]

Types of insomnia	Definition
Transient insomnia	Duration: < 1 week Possible cause: acute situational or environmental stressors, such as sleeping in a hotel room
Short-term insomnia	Duration: < 3 months Possible cause: related to personal stressors, such as moving into a new house or the death of a spouse
Chronic insomnia	Duration: > 3 months Possible cause: related to psychiatric illness, medical issues, substance-abuse disorders, or behavioural factors

Treatment for insomnia

- The first-line treatment for insomnia is cognitive-behavioural therapy (CBT) [2].
- Historical pharmacological target for insomnia includes histamine, gamma-aminobutyric acid (GABA), and melatonin receptors.
- Antidepressants and antipsychotics may be used as alternative medications in patients with comorbidities such as depression or psychotic disorders[3].
- The **newest class of medications** works by antagonizing orexin receptors, and currently three agents have been approved by the FDA - **suvorexant, lemborexant, and daridorexant**.

Orexins and orexin receptor antagonists

- Orexins are endogenous neuropeptides that activate orexin receptors 1 and 2 in the lateral hypothalamic region of the brain[4].
- Stimulation of orexin receptors is predominantly excitatory which is involved in the maintenance of arousal, wakefulness, and appetite
- Orexin receptor antagonists have shown superiority over placebo in terms of improvement in total sleep time, awakening after sleep onset and subjective sleep latency[8-9].

Comparison between FDA-approved orexin receptor antagonist agents[5-7]

	Suvorexant	Lemborexant	Daridorexant
Dosage form & strength	Tablets: 5mg, 10mg, 15mg, 20mg	Tablets: 5mg, 10mg	Tablets: 25mg, 50mg
Initial dose	10-20mg	5-10mg	25-50mg
Metabolism	CYP3A4 (major), CYP2C19 (minor)	CYP3A4 (major), CYP3A5 (minor)	CYP3A4
Onset	30 minutes	<30 minutes	<30 minutes
T_{max}	2 hours; delayed by high-fat meal	1-3 hours; delayed by high-fat meal	1-2 hours; delayed by high-fat meal
Excretion	Faeces: 66%; urine: 23%	Faeces: 57.4%; urine: 29.1%	Faeces: 57%; urine: 28%
Half-life	12 hours	5mg: 17 hours; 10mg: 19 hours	8 hours

T_{max}: time to reach maximum concentration

Adverse effects of orexin receptor antagonists[1]

- Somnolence and fatigue
- Occurrence of complex sleep behaviours (e.g., sleepwalking, sleep driving)
- Hypnagogic/hypnopompic hallucinations
- Sleep paralysis
- Worsening of depression or suicidal ideation

Contraindications

- Narcolepsy
- Not recommended in patients with severe hepatic dysfunction

Benefits and Limitations[8-9]

- Benefits
  a. Well tolerated in elderly
  b. Improve rapid eye movement (beneficial in Alzheimer's Disease)
  c. Limited cognitive impairment over benzodiazepines and other hypnotics
  d. No evidence of addiction potential
  e. Do not appear to produce dependency or tolerance-inducing effects
  f. Ability to quickly arouse patients from sleep with adequate stimulation
- Limitation
  a. High cost (> USD 10 per day)

Guideline recommendations[1]

- The orexin receptor antagonists are not addressed in all clinical practice guidelines, as some guidelines have not been updated since the approval of these agents.
- Sleep medications should ideally be used in conjunction with CBT-I.
- Treatment selection and duration for insomnia should be individualized depending on the patient's clinical response.
- Pharmacologic treatment of insomnia begins with the lowest effective dose.

References:

1. Monkemeyer N, Thomas SV, Hilleman DE, Malesker MA. Insomnia treatment update with a focus on orexin receptor antagonists [Internet]. U.S. Pharmacist – The Leading Journal in Pharmacy. 2022 [cited 2022 Jun 18]. Available from: https://www.uspharmacist.com/article/insomnia-treatment-update-with-a-focus-on-orexin-receptor-antagonists
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News

Do Statins Reduce Negative Affective Bias?

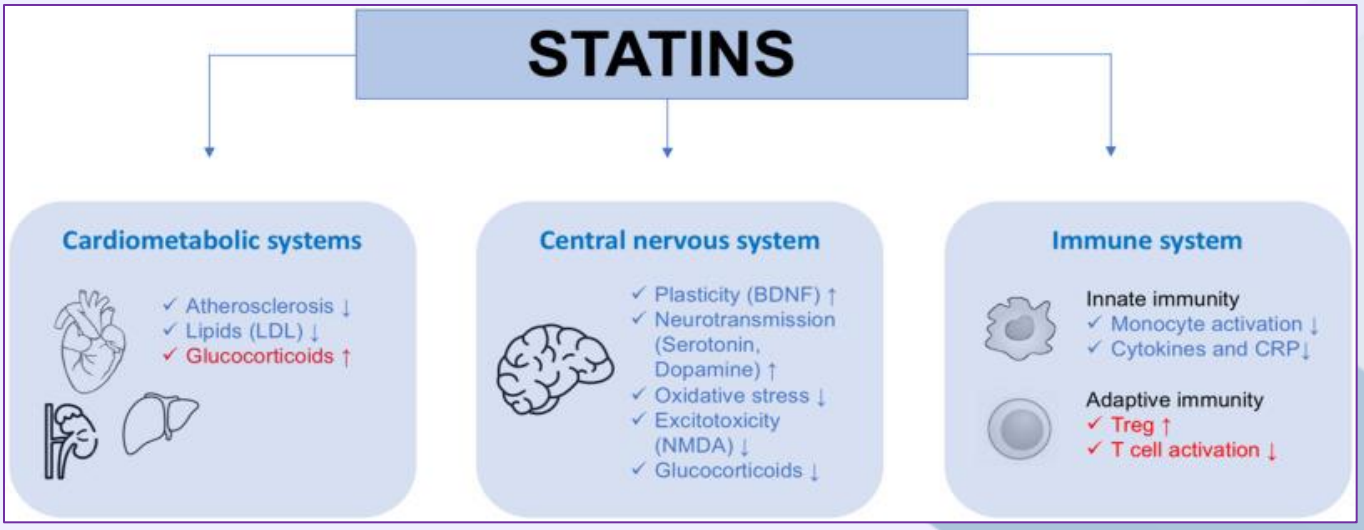
By Wee Sze Ling

Negative affective bias is the tendency of an individual reacting to negative experiences than the positive ones. Depressive patients have the tendency to interpret, integrate and perceive experiences in a negative way. Depression is one of the most widespread and prevailing mental disorders, which affect most of the individuals especially during COVID-19 due to social restrictions, financial problems and grief[1-2].

Statins are widely prescribed in patients with lipid disorders, prevention of cardiovascular disease and diabetes. Owing to its antioxidant, anti-inflammatory and neuroprotective properties, potential drug repurposing of statins to target alternative pathways implicated in depression have been considered[3].

A recent observational study directed by Dr. Gillespie and her team of researchers in University of Oxford identified that usage of statins was associated with a reduction of negative affective bias, indicating reduced psychological vulnerability to depression[4]. All the participants (n=2043) involved were required to determine facial expressions such as happiness, anger, sadness, or terror. Participants taking statins (4%) had shown a reduced level of recognition in angry ($F_1 = 9.19$, $p = .002$), fearful ($F_1 = 6.9$, $p = .009$) faces yet they misinterpreted these expressions as positive when compared to other participants who either not taking medications (84%) or different class of anti-hypertensive medications (6%) or both (5%) [4].

It is believed that the anti-inflammatory properties of statins on peripheral and central nervous system could contribute to mental illness protections, but the exact mechanism remained uncertain[4].



Antidepressants such as selective serotonin reuptake inhibitors, target the negative affective bias as the main mechanism to show clinical response in depressive patients[5-6]. Findings by Gillespie et al., highlighted the possibility of statins used in reducing negative affective bias, supporting the potential use as a prophylaxis of depression in high-stress periods. More research involving randomised controlled trials with larger sample sizes should be conducted before considering the use of statins in depression.

STRENGTH:

- ✓ Non-specific differences were addressed by controlling demographic characteristics, past medical history, depression severity and use of antidepressant.

WEAKNESSES:

- ❖ Relatively small number of participants taking statins.
- ❖ Self-reported data were used which may be subject to bias.

References:

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Medication Safety

Updates on High Alert Medications and Look Alike Sound Alike Medications

By Nur Sabrina Binti Bahkir

Medication errors are serious and frequent but potentially avoidable. Although most of the medication errors do not cause serious detrimental effects to patients, there are some drugs that carry a higher risk of harm than others.

High Alert Medications (HAM) used within the facility require specific policies for enhancing patient safety regarding their utilization[1]. Some medications have a very small margin of safety and might cause severe patient harm when implicated in an adverse drug event and require increased care. Special precautions for the overall management of HAM must be in place to prevent serious harm to patients. Hence, high alert medications are defined as medications that carry a higher risk of affecting significant patient harm when these medications are used in error[2].

Common risk factor of medication errors:

- Poorly written medication orders
- Incorrect dilution procedures
- Confusion between IM, IV, Intrathecal, epidural preparations
- Confusion between different strengths of the same medications
- Ambiguous labelling on concentration and total volume of medications
- Wrong infusion rate
- Look alike or sound alike product and similar packaging

Managing high alert medications:

- High alert medications should be labelled with “HIGH ALERT MEDICATION” on storage shelves, containers, product packages and loose vials or ampoules.

a) High alert stickers for containers or product packages

b) High alert stickers for loose ampoules or vials

c) High alert labels for storage shelves in pharmacy

- HAM must be counterchecked before prepared, dispensed and administered to the patients.
- Any changes of brand, colour or preparation of HAM should be informed to the users as soon as possible.
- Staffs involved in the usage of HAM must be educated with the Guideline on Safe Use of HAM.

Handling of Look Alike and Sounds Alike Medications

Look Alike Sound Alike (LASA) medications refer to medications that have similar physical appearance or packaging as well as similar medication names. Nowadays, there are a variety of medications and new brands are being marketed with similar names and they may look or sound alike. Medication errors may occur as a result of similar product packaging and confusing medication names. Healthcare organizations need to institute risk management strategies to minimize adverse events with LASA medications and enhance patient safety[3]. A Guide on Handling of Look Alike Sound Alike Medications has been published by the Ministry of Health in order to counter this issue. The objective of the guideline is to reduce number of medication errors related to LASA medications or at least identification and implementation of safety precautions[3].

Error Avoidance Strategies

- **Procurement:** Reduce the number of multiple strengths and avoid purchasing medications that have similar physical appearance.
- **Storage:** Emphasize the use of Tall Man lettering method in sound alike medications. Besides, emphasize use of warning labels on storage bins or medication trolleys for look alike medications.
- **Prescribing:** Write the prescription or inpatient order clearly to include medication name, dose, frequency, duration, direction of use and diagnosis.
- **Dispensing:** Identify the medication name and strength carefully and countercheck the appropriateness of medication's dose.
- **Administration:** Emphasize the importance of reading the labels carefully during the administration process. Apply triangle check method by checking the prescription, medication label and medicine.
- **Monitoring:** All facilities must review and update LASA list periodically.
- **Information:** All the relevant staffs can assess the LASA list and update if there are any additional medications into LASA list.
- **Patient education:** Educate patients or caretakers to be alert with medication appearances if there are any changes from previous medications that usually taken. Emphasize them to learn the medication name as well.
- **Evaluation:** Evaluate medication errors related to LASA medications.

References:

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List of Look Alike Medications in Hospital Permai

No.	Look Alike Medications	
1	Inj. Adenosine 6 mg/2ml	Inj. Atropine 1 mg/ml
2	Inj. Fluphenazine 25 mg/ml	Inj. Haloperidol 5 mg/ml
3	Inj. Potassium Chloride 10% w/v	Inj. Sodium Bicarbonate 8.4% w/v
4	Inj. Zuclopenthixol Acetate 50 mg/ml	Inj. Zuclopenthixol Decanoate 200 mg/ml
5	T. Amisulpride 100 mg	T. Amisulpride 400 mg
6	T. Amlodipine 5 mg	T. Amlodipine 10 mg
7	T. Asenapine S/L 5 mg	T. Asenapine S/L 10 mg
8	T. Benzhexol 2 mg	T. Haloperidol 1.5 mg
9	T. Benzhexol 2 mg	T. Thiamine Mononitrate 10 mg
10	T. Calcium Carbonate 500 mg	T. Lithium Carbonate 300 mg
11	T. Chlorpromazine 25 mg	T. Chlorpromazine 100 mg
12	T. Clozapine 25mg	T. Clozapine 100 mg
13	T. Fluvoxamine 50mg	T. Fluvoxamine 100 mg
14	T. Lamotrigine 50mg	T. Lamotrigine 100 mg
15	T. Olanzapine 5mg	T. Olanzapine 10 mg
16	T. Olanzapine Orodispersible 5mg	T. Olanzapine Orodispersible 10 mg
17	T. Duloxetine 30 mg	T. Duloxetine 60 mg
18	T. Mirtazapine Orodispersible 15 mg	T. Mirtazapine Orodispersible 30 mg
19	T. Paliperidone ER 3 mg	T. Paliperidone ER 6 mg
20	T. Paliperidone ER 9 mg	
21	T. Prazosin 1 mg	T. Prazosin 2 mg
22	T. Quetiapine IR 100 mg	T. Quetiapine IR 200 mg
23	T. Quetiapine XR 300 mg	T. Quetiapine XR 400 mg
24	C. Rifampicin 150 mg	C. Rifampicin 300 mg
25	T. Risperidone 1mg	T. Risperidone 2 mg
26	Rivastigmine 4.6 mg/24 hour Transdermal Patch	Rivastigmine 9.5 mg/24 hour Transdermal Patch
	Rivastigmine 13.3 mg/24 hour Transdermal Patch	
27	C. Cloxacillin 250 mg	C. Amoxicillin 250 mg
28	Potassium Citrate 3g/10ml and Citric Acid Mixture	Calamine lotion
29	T. Vitamin B Complex	T. Folic Acid

List of Sound Alike Medications in Hospital Permai

No.	Sound Alike Medications	
1	**AMI**sulpride	**SUL**piride
2	**AMOXI**cillin	**CLOXA**cillin
3	**ARIPI**prazole	**OME**prazole **PANTO**prazole
4	**ATE**nolol	**BISO**prolol **METO**prolol **PROPRA**nolol
5	Chlor**PHENIRAMINE**	Chlor**PROMAZINE**
6	**CLON**azepam	**LORA**zepam
7	**CLO**zapine	**OLAN**zapine
8	**DOBUT**amine	**DOP**amine
9	**FLUO**xetine	**FLUVOX**amine **DULO**xetine
10	Flu**PENTHIXOL**	Flu**PHENAZINE**
11	**NIFE**dipine	**FELO**dipine **AMLO**dipine

Know Your Medicine

Spravato™ (esketamine) C III nasal spray

By Nur Arissa Nadia Binti Md Norrisham

Generic Name: Esketamine

Product Name: SPRAVATO®

Approved Indication:

SPRAVATO® is a prescription medicine that is used in conjunction with an oral antidepressant to treat:

- Treatment-resistant depression (TRD) in adults.
- MDD with suicidal ideation or behaviour in adults.

Dosage Form and Strengths:

Nasal Spray: Each device contains 28 mg of Esketamine. Each nasal spray device provides two sprays, containing a total of 28 mg of Esketamine.

Contraindication[1-2]:

- Known hypersensitivity to Esketamine, ketamine, or any of the excipients.
- Aneurysmal vascular disease (including thoracic and abdominal aorta, intracranial, and peripheral arterial vessels) or arteriovenous malformation.
- Known history of intracerebral hemorrhage.

Dosage[1]:

1. **TRD:**

		Adults
Induction Phase	**Weeks 1 to 4:** Administer twice per week	Day 1 starting dose: 56 mg Subsequent doses: 56 mg or 84 mg
Maintenance Phase	**Weeks 5 to 8:** Administer once weekly	56 mg or 84 mg
	Week 9 and after: Administer every 2 weeks or once weekly*	56 mg or 84 mg

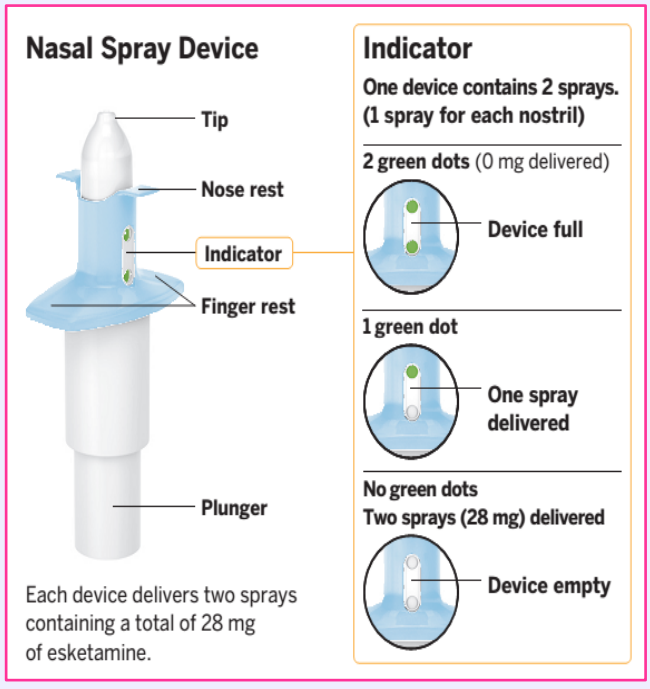
* Dosing frequency should be individualized to the least frequent dosing to maintain remission/response.

2. **MDD with suicidal ideation or behavior:** 84 mg twice a week for 4 weeks. Based on tolerability, the dose can be lowered to 56 mg twice a week.

Administration:

1.1 Important Considerations Before Starting and During Therapy

- Blood Pressure Assessment Before and After Treatment
  - ✓ If an increase in blood pressure or intracranial pressure poses a major risk, do not use SPRAVATO®[1].
  - ✓ Reassess the patient 40 minutes after administration; the patient may be discharged only if blood pressure is falling, and the patient appears clinically stable for at least 2 hours[2].
- Nasal corticosteroid or nasal decongestant
  - ✓ These medications should be taken at least 1 hour before SPRAVATO®[1].
- Neuropsychiatric and motor impairments
  - ✓ SPRAVATO® has been related to somnolence, drowsiness, dissociative symptoms, perceptual disturbances, dizziness, vertigo, and anxiety, all of which have the potential to impair attention, judgment, reasoning, and reaction time, and motor abilities. Patients should be observed under the supervision of a healthcare practitioner at each treatment session to assess whether the patient is considered stable based on clinical judgment[3].



1.2 Administration Instruction:

Step 1 Get ready

Before first device only:

Instruct patient to blow nose **before first device only**.

Confirm required number of devices.

56 mg = 2 devices
84 mg = 3 devices

Step 2 Prepare device

Healthcare professional:

- Check expiration date ('EXP'). If expired, get a new device.
- Peel blister and remove device.

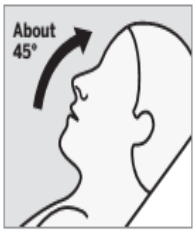
Healthcare professional:

- Do not prime device. This will result in a loss of medication.
- Check that indicator shows **2 green dots**. If not, dispose of device and get a new one.
- Hand device to patient.

Step 3 Prepare patient

Instruct the patient to:

- Hold device as shown with the thumb gently supporting the plunger.
- **Do not** press the plunger.

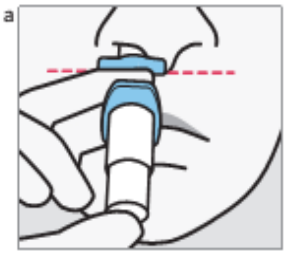


Instruct the patient to:

- Recline head at about **45 degrees** during administration to keep medication inside the nose.

Step 4 Patient sprays once into each nostril

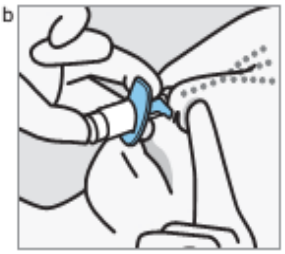
a



Instruct the patient to:

- Insert tip straight into the **first nostril**.
- Nose rest should touch the **skin between the nostrils**.

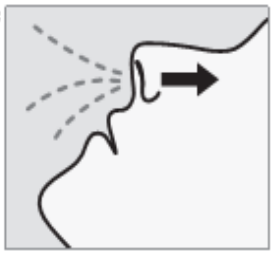
b



Instruct the patient to:

- Close opposite nostril.
- **Breathe in through nose** while pushing plunger all the way up until it stops.

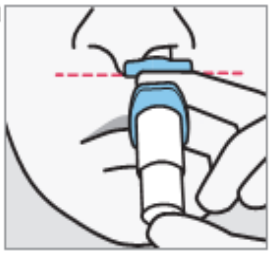
c



Instruct the patient to:

- **Sniff gently** after spraying to keep medication inside nose.

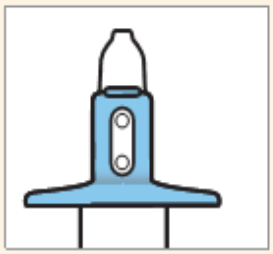
d



Instruct the patient to:

- Switch hands to insert tip into the **second nostril**.
- Repeat Step 4 to deliver second spray.

Step 5 Confirm delivery and rest



Healthcare professional:

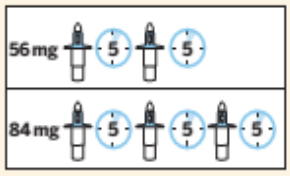
- Take device from patient.
- **Check that indicator shows no green dots**. If you see a green dot, have patient spray again into the second nostril.
- Check indicator again to confirm device is empty.

Instruct the patient to:

- Rest in a comfortable position (preferably, semi-reclined) for **5 minutes after each device.**
- If liquid drips out, dab nose with a tissue.

⚠ **Do not** blow nose.

Next device



Healthcare professional:

- **Repeat Steps 2-5** for the next device.

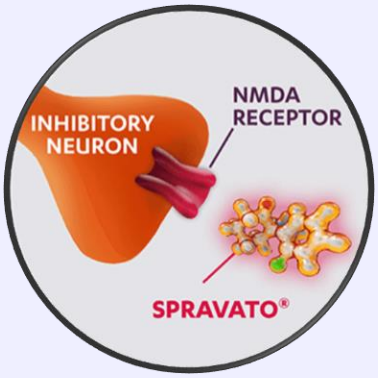
IMPORTANT: Ensure that patient **waits 5 minutes after each device** to allow medication to absorb.

Disposal

Dispose of used device(s) per facility procedure for a Schedule III drug product and per applicable federal, state, and local regulations.

Mechanism of Action:

The S-enantiomer of racemic ketamine, esketamine, is a non-selective, non-competitive antagonist of the ionotropic glutamate receptor N-methyl-D-aspartate (NMDA). The mechanism of action on how Esketamine exerts its antidepressant effect is unknown. Meanwhile, the main circulating metabolite of esketamine (noresketamine) acts on the same receptor with lower affinity[1].



Use in a Specific Population:

Pregnant and breastfeeding: Not recommended.
Can harm the foetus (embryo-foetal toxicity) [1-2].

Paediatric: Not recommended. No safety and efficacy data has been established[1].

Geriatric: The recommended dose for treatment-resistant Major Depressive Disorder (MDD) is 28 mg esketamine (day 1, starting dose; subsequent doses should be raised in 28 mg increments up to 56 mg or 84 mg, depending on efficacy and tolerability). SPRAVATO® has not been evaluated in elders as a therapy for acute-short treatment caused by MDD[2].

Renal impairment: No dose adjustment is required in patients with mild to severe renal impairment[2].

Hepatic impairment:

- Mild (Child-Pugh score 5-6) or moderate (Child-Pugh score 9-10): No dose adjustment is required in patients with mild or moderate hepatic impairment. However, in a patient with moderate hepatic impairment, the maximum dose of 84 mg should be used with caution[2].
- Severe (Child-Pugh score 10-15): Not recommended in patients with severe impairment[1-2].

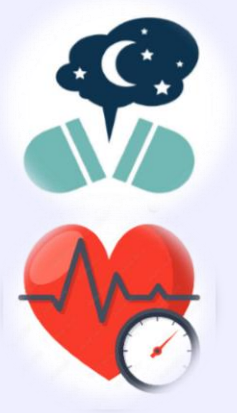
Very Common Side Effects:

TRD: dizziness, dissociation (feeling disconnected from yourself, your thoughts, feelings, space, and time), sedation, nausea, hypoesthesia, vertigo, anxiety, lethargy, elevated blood pressure, vomiting and feeling drunk[1].

MDD with acute suicidal ideation or behaviour: Dissociation, dizziness, drowsiness, elevated blood pressure, vomiting, euphoric mood, hypoesthesia and vertigo[1].

Drug Interactions

Esketamine is a prodrug that is primarily metabolized to noresketamine (metabolite) via CYP450, CYPB26, and CYP3A4 (major) and to a lesser degree CYP2C9 and CYP2C19 (minor). Noresketamine is metabolized by CYP-dependent pathways, and some of the by-products undergo glucuronidation. Study has been conducted and none of the drug-drug interactions with inducer or inhibitor of those enzymes (e.g., rifampin, ticlopidine, and clarithromycin) are clinically significant[1].



- Concomitant use with CNS depressants (benzodiazepine, opioids, alcohol) may increase sedation
- Concomitant use with psychostimulant (methylphenidate) may increase blood pressure
- Concomitant use with MAOIs may increase blood pressure

Warning

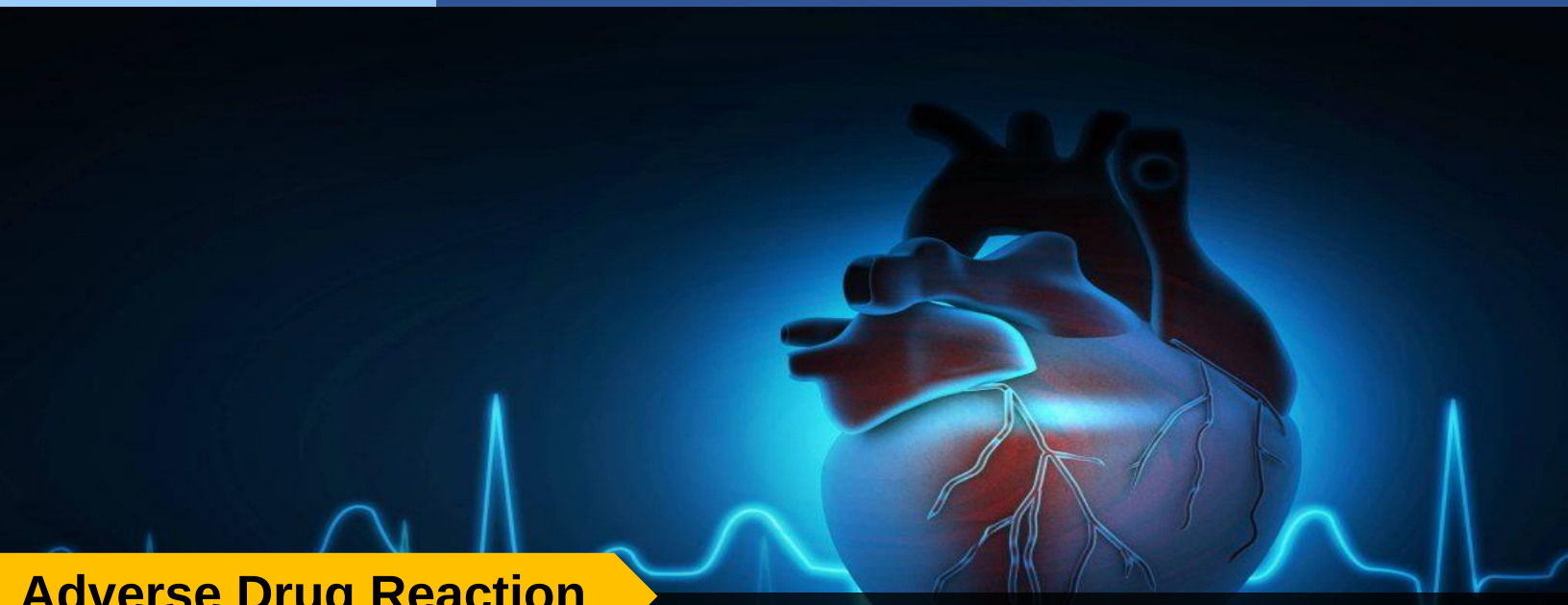
Esketamine has been associated with abuse, misuse, dissociation, sedation, suicidal thoughts and behaviours[4].

Counselling Points

- Advise caregivers to pay close attention to any changes in mood, behaviour, thoughts, or feelings, especially if they are sudden, or if patients have suicidal thoughts or attempts[1-2].
- Advise patients to avoid undertaking activities requiring mental alertness after taking SPRAVATO®. Do not engage in these activities until the following day, after a full night's rest[1-2].

References:

1. Janssen Pharmaceuticals. SPRAVATO ® (esketamine) nasal spray, CIII Hightlights of Prescribing Information [Internet]. 2020 [cited 2022 Jun 18]. Available from: https://www.janssenlabels.com/package-insert/product-monograph/prescribing-information/SPRAVATO-pi.pdf.
2. Spravato® Full Prescribing Information, Dosage & Side Effects | MIMS Malaysia [Internet]. [cited 2022 Jun 22]. Available from: https://www.mims.com/malaysia/drug/info/spravato?type=full.



Adverse Drug Reaction

A reminder: Risk of Severe Cardiovascular Effects on Restarting Clozapine

By: Tan Geik Peng

Clozapine is classified as a second-generation antipsychotic. It is indicated in patients with treatment-resistant schizophrenia who fail to response adequately to standard antipsychotic therapy. The adverse effects of clozapine are dose-dependent and often associated with the speed of titration[1]. Therefore, the titration during initiation and restarting clozapine is important to minimize the risk of adverse reactions[1].

In Malaysia, there are currently nine registered products containing Clozapine. The current available dosage forms in Malaysia include:

- 25 mg Tablets
- 100 mg Tablets
- 50 mg/ml Oral Suspension

Clozapine is associated with cardiovascular adverse reactions. According to the data from World Health Organization (WHO) VigiAccess, there were 177,060 cases reported adverse reactions related to clozapine. A total of 20,826 were cardiovascular-related adverse reactions such as tachycardia (7122), myocarditis (3542) and myocardial infarction (1733). Risk of fatal myocarditis or cardiomyopathy is estimated to be around 1 in 1000 patients treated with clozapine[2].

The risk of severe cardiovascular adverse effect is highest during titration phase and associated with rapid titration. The reaction may occur even with dose as low as 12.5mg. Severe adverse cardiovascular adverse reactions including cardiac arrest may occur, especially when restarting clozapine after abrupt discontinuation of more than 2 days[3].

Restarting Clozapine after a break in treatment[1]

- Initiate with 12.5 mg and increase to 25 mg for the next dose if there is no adverse effects e.g. sedation, increase heart rate.
- If the 25 mg dose was tolerated well, subsequent dose can be increased to 50 mg, titrating at the same rate until target dose is achieved.
- In the case of poor tolerability, the titration rate should be slowed down.
- Dose titration should be based on patient tolerability.

Advice to Healthcare Professionals

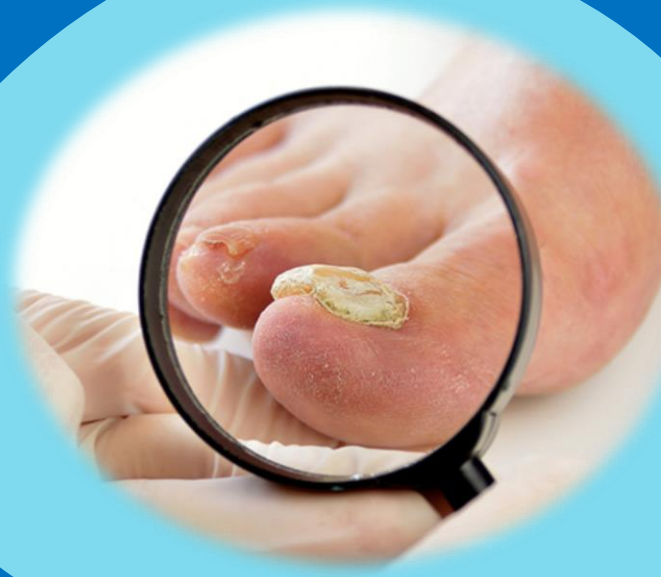
- **Be aware** of the potential risk of cardiovascular effects associated with restarting clozapine.
- **Exercise extra caution** when restarting clozapine, always follow the protocol to restart clozapine at low dose and titrate slowly (for patient who had missed dose >48 hours).
- **Counsel patients** on signs and symptoms of cardiovascular adverse reactions such as hypotension, tachycardia, dyspnoea, chest pain and fatigue.
- **Advise patients** to seek immediate medical attention if they develop any of those signs and symptoms of cardiovascular adverse reactions.
- **Report any adverse drug reactions** suspected to be related to the use of clozapine to the NPRA.

References:

1. Taylor DM, Barnes TRE, Young AH. The Maudsley Prescribing Guidelines in Psychiatry, 14th ed. John Wiley and Sons Ltd. 2021.
2. VigiAccess [Internet]. [cited 2022 Jun 23]. Available from: https://www.vigiaccess.org/
3. "Reference ID: 3676237 - Food and Drug Administration." CLOZARIL® (Clozapine) Prescribing Information, Novartis Pharmaceuticals Corporation, Sept. 2014. Available from: https://www.accessdata.fda.gov/drugsatfda_docs/label/2014/019758s073lbl.pdf.

Counselling Points

FUNGAL INFECTION



By Thivya Bharathy A/P N.Saravanan

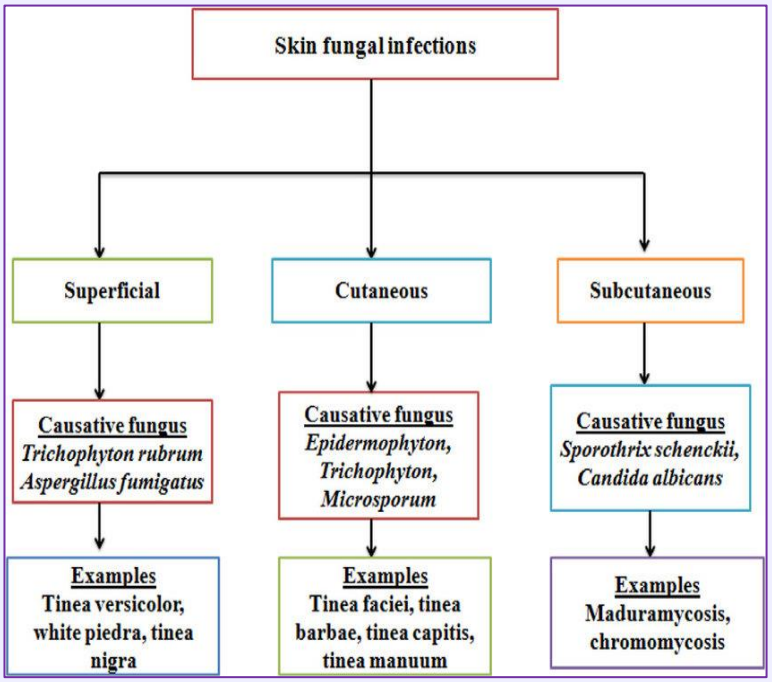
1. Types of fungal skin infections

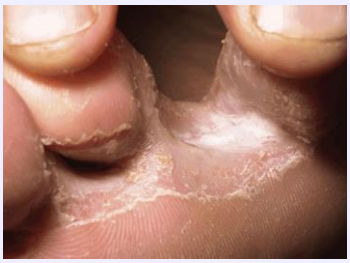
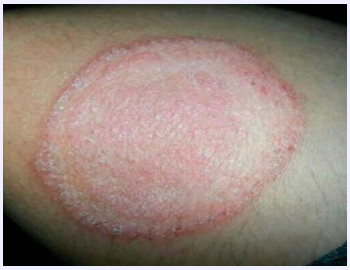
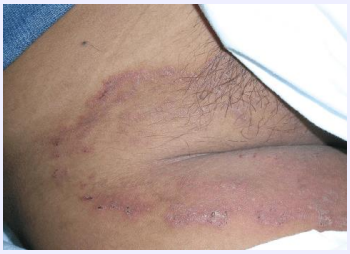
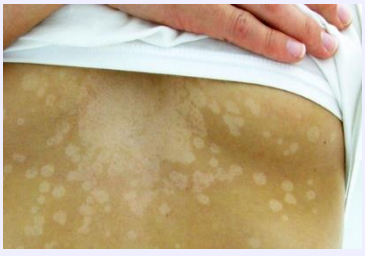
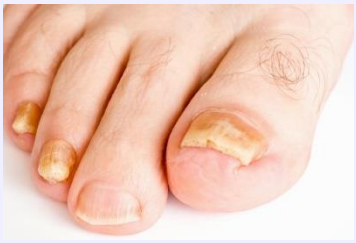
Fungi are the most infectious organisms that damage the skin and internal organ mucosa.

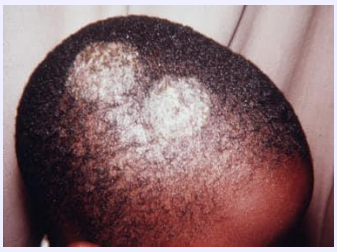
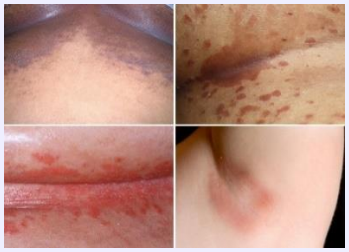
It is estimated that around 20–25% of the human population has skin fungal infections. Fungal skin infections are very contagious, spreading mostly through contaminated towels, clothing, and other household items, as well as through the infected bathroom floor.

The visible symptoms of skin changes such as cracking, redness, peeling, and itching can be used to diagnose a fungal infection.

Yeast infection, ringworm infection, athlete's foot, and other fungal infections are among the most frequent. Fungal infections can be subcutaneous, superficial, or cutaneous[1].Classification of fungal skin infections based on the depth of penetration of fungi into the skin are as shown below[2]:



Common fungal skin infections[3-5]	Characteristics
Tinea pedis 	• Moist and warm areas of feet especially between the underside of toes. • Skin becomes soft and whitish with cracks and a red eruption. • Itching, unpleasant smell, burning, stinging
Tinea corporis 	• Exposed or occluded areas of the body • Red, circular patches with scaly edge and clear skin at the center
Tinea cruris 	• Itchy, red rash in the groin and thighs
Tinea versicolor 	• Fine, scaly discolored patches on the skin • Appears on shoulders and trunks
Tinea unguium 	• Nails are malformed, thickened, discolored (white or yellowish) and crumbly

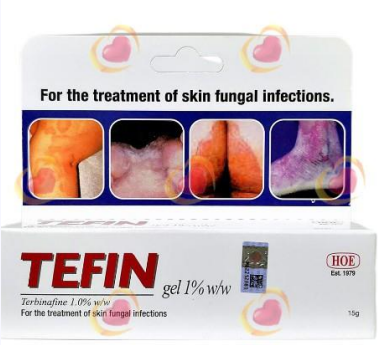
Tinea capitis 	• Hair loss with inflammation of the affected area
Cutaneous candidiasis 	• Red patches with papules and pustules • Commonly appears under breasts, groin, buttocks, underarms • May appear in the mouth, oesophagus and vagina

2. Treatment available locally[5-6]

Topical Antifungals

Clotrimazole 1% cream

Clotrimazole powder



Terbinafine 1% gel

Clotrimazole Lotion

Combination Treatment

Combination fungal nail treatment

Antifungal and Corticosteroid

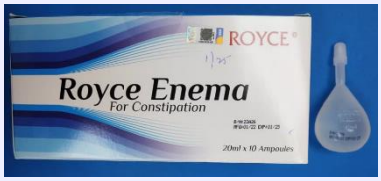
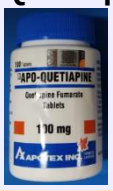
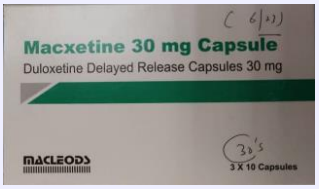
Counselling points[3, 5]

- ✓ Keep the affected areas clean and dry. Practice good personal hygiene.
- ✓ Shower or take a bath at least once daily. Wash feet twice daily and dry in a patting motion.
- ✓ Do not share personal items e.g. clothing, towels, sheets to avoid the spread of infection.
- ✓ Use emollients or soap substitutes instead of soap to wash the affected areas.
- ✓ Wear cotton underwear and shoes that allow air to circulate freely.
- ✓ Change stockings frequently. Leave and dry your shoes out overnight.
- ✓ Avoid wearing tight-fitting clothes, and thick clothing in warm humid weather to avoid excessive sweating.
- ✓ Do not go outdoors barefoot. Keep nails clean and short.

References:

1. Manju N, Malkiet K. Nanomaterials for skin antifungal therapy: An updated review. Journal of Applied Pharmaceutical Science. 2021.
2. Verma S, Utreja P. Vesicular nanocarrier based treatment of skin fungal infections: Potential and emerging trends in nanoscale pharmacotherapy. Asian Journal of Pharmaceutical Sciences. 2019;14(2):117-129.
3. Fungal Infection - PORTAL MyHEALTH [Internet]. PORTAL MyHEALTH. 2022 [cited 19 June 2022]. Available from: http://www.myhealth.gov.my/en/fungal-infection/.
4. 10 common fungal infections that affect the skin - Perdana University [Internet]. Perdana University. 2022 [cited 19 June 2022]. Available from: https://www.perdanauniversity.edu.my/10-common-fungal-infections/.
5. Pascual R, Legaspi C, Guerrero P. MIMS Pharmacy - Patient Counselling Guide. 13th Edition. Hong Kong: MIMS (Hong Kong) Limited; 2020.
6. Tinea Corporis, Cruris & Pedis Treatment | MIMS Malaysia [Internet]. Specialty.mims.com. 2022 [cited 19 June 2022]. Available from: https://specialty.mims.com/tinea%20corporis,%20cruris%20-and-%20pedis/treatment.

Product Brand Switching

Previous	Current
Glycerin 25% and Sodium Chloride 15% Enema	
HLP Raven Enema 	**Royce Enema** 
Sodium Chloride 0.9% Eye Drops	
i-Fresh Eye Drops 	**Rinz Normal Saline Eye Drops** 
Rifampicin 150mg, Isoniazid 75mg, Pyrazinamide 400mg, Ethambutol HCL 275mg Tablet	
AKuriT-4 	**FORECOX-Trac** 
Quetiapine Fumarate 100mg, 200mg Tablet	
Seroquel Quetiapine 	**Apo-Quetiapine** 
Duloxetine 30mg, 60mg Tablet	
Dulox 	**Macxetine** 

What's New?

Introducing the HPJB Medicines Formulary Mobile App

HPJB Medicines Formulary
Hospital Permai Johor Bahru
Medicines Formulary
hpjbformulary.wistify.ap

Android

1. Click "More Menu" ☰ or ⋮
2. Select "Install app" or Add to home screen" ⊞

iOS

1. Click "Share" button
2. Select "Add to home screen" ⊞

✓ Free to use ✓ Ads-free

✓ Usable offline & updated with a click when online

	QUESTIONS	TRUE	FALSE
1	Suvorexant, lemborexant, and daridorexant are orexin receptor antagonists approved by the FDA for the treatment of insomnia.		
2	Statin use was associated with reduced recognition of angry and fearful faces and with increased misclassification of these expressions as positive.		
3	The risk of severe cardiovascular adverse effect is highest during clozapine titration phase and associated with rapid titration.		
4	Esketamine has not been associated with abuse, misuse, dissociation, sedation, suicidal thoughts and behaviours.		
5	Reduce the number of multiple strengths and avoid purchasing medications with similar physical appearance are strategies to avoid errors with look alike and sound alike mediations		

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