KEMENTERIAN KESIHATAN MALAYSIA

# PHARMACY BULLETIN

SEPTEMBER
3RD ED,2022

HOSPITAL SERI MANJUNG

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PHARMACY DEPT
H S M

# Triple Whammy

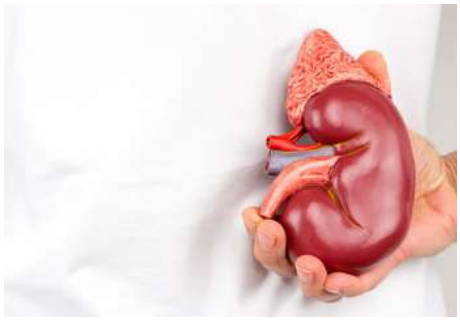
SEPTEMBER
3RD ED, 2022

BY: MUNA IZZAH BINTI MOKHTAR AL-ATHORID

## WHAT IS TRIPLE WHAMMY?

The term "**triple whammy**" refers to the concurrent use of :

- Angiotensin converting enzyme (ACE) inhibitor or An angiotensin-II receptor blocker (ARB) and;
- A diuretic and;
- A non-steroidal anti-inflammatory drug (NSAID), including cyclo-oxygenase-2 (COX-2) inhibitors.



## MECHANISM OF TRIPLE WHAMMY

### Ace inhibitor (ACE-I) or Angotensin-II receptor blocker (ARB)

ACE inhibitors lower blood pressure by preventing the production of angiotensin II, a substance that narrows the blood vessels, while ARBs reduce the action of angiotensin II to prevent blood vessel constriction. Thus will lead to acute kidney injury.

Examples of ACE-I includes captopril, enalapril and perindopril. Examples of ARBs includes valsartan, losartan and telmisartan.

### Diuretics

A class of drugs used for the treatment of several cardiovascular and renal diseases associated with oedema and hypertension.
Eg: Furosemide, hydrochlorothiazide, spirinolactone.

Diuretics can contribute to AKI by causing hypovolemia which may cause decrease blood flow to kidney.

### Non-steroidal anti-inflammatory drugs (NSAIDs)

NSAIDS is a group of drugs commonly given to reduce swelling or relieve pain from headaches, colds, flu, and other ailments. Examples of NSAIDs includes ibuprofen, ketoprofen, and naproxen.

NSAIDs are associated with an increased risk of AKI, due to blockade of the COX-2 enzyme preventing prostacyclin synthesis, which causes afferent arteriolar vasoconstriction.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## WHY IS IT A TRIGGER ALARM?

**Taking NSAID concurrently with an ACE inhibitor/ARB and a diuretic increases the risk of Acute Kidney Injury (AKI) considerably.**


## ACUTE KIDNEY INJURY (AKI)

AKI refers to acute kidney injury. It is a sudden episode of kidney failure or kidney damage that happens within a few hours or a few days. AKI causes a build-up of waste products in your blood and makes it hard for your kidneys to keep the right balance of fluid in your body. AKI can be causes by combination of these factors, such as decrease in blood flow to kidney, it may also causes by direct damage to kidney and also blockage of the urinary tract. There are a few signs and symptoms of AKI which are; patient will be extremely thirsty and feeling lethargic. Some patients may experience orthostatic hypotension, tachycardia, dry mucous membrane and also decreased skin turgor.

PHARMACY DEPT
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# Triple Whammy

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BY: MUNA IZZAH BINTI MOKHTAR AL-ATHORID

## PHARMACIST'S ROLE

Pharmacists play an important role in both inpatient as well as outpatient setting to help reduce the risk of side effects from "Triple Whammy".

When screening through patient's medication, pharmacists should always check the patient's medication history; discourage NSAIDS in patients taking ACE-I/ARBs with diuretics. If an NSAID is needed, emphasize the need to use the lowest dose for a short period of time only. Discuss with the patient the risks and benefits of taking NSAIDS concurrently with other types of medications. Recommend safer painkiller medications such as paracetamol.

In the ward, pharmacists can help to identify patients at risk. Patients with any stage of chronic kidney disease, older age, having volume depletion, diabetes and heart failure are at higher risk of experiencing side effects from "Triple Whammy". When treatment with an ACE-inhibitor or ARB with a diuretic is initiated, it is important to highlight this in the patient's notes to alert clinicians who may consider prescribing NSAIDS in the future.

Currently, there is no guideline for monitoring patients taking an ACE-Inhibitor/ARB, a diuretic and an NSAID. However, pharmacists may monitor patients by using baseline measurements of body weight, blood pressure and serum creatinine.

## COUNSELLING POINTS

There are several **key counselling points** that pharmacists should cover when dealing with patients at risk of experiencing side effects from "Triple Whammy", such as:

1. To always bring medication during the doctor's visit or ward admission, so a complete medication history can be obtained.
2. To avoid inadvertently taking additional NSAIDS.
3. To maintain good water intake.
4. To counsel the patient about the risks and benefits of taking NSAIDS concomitantly with ACE-Inhibitors/ ARB and diuretics.
5. To stop taking NSAIDs and use an alternative analgesic pain relief if having diarrhea or vomiting.
6. To educate the patient to be aware of symptoms of dehydration, such as increased thirst, dry mucous membrane, lethargy and weight loss.
7. To seek medical attention immediately if the patient's condition deteriorates.

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# New Medication is HSM Formulary (JKUT Bil 2/2022)



BY: SITI NUR ADILAH BINTI MOHD YUSDI

## Fondaparinux Sodium 12.5mg/mL Injection (7.5mg/0.6mL)

**Indication:** Treatment of acute Deep Vein Thrombosis (DVT) and acute Pulmonary Embolism (PE).

**Dosage:**
i. BW < 50 kg: 5 mg OD
ii. BW 50 - 100 kg: 7.5 mg OD
iii. BW > 100 kg: 10 mg OD

Treatment should be continued for at least 5 days and until adequate oral anticoagulation is established (INR 2 to 3). Concomitant treatment with vitamin K antagonists should be initiated as soon as possible, usually within 72 hours. The usual duration of treatment is 5 to 9 days.

**Restriction:** To be used only by patients with DVT/PE weighing >80 kg with CrCl>50 mlmin (not for ACS cases)


*Prescriber category: A**

## Valganciclovir 450mg Tablet

**Indication:** Cytomegalovirus retinitis in RVD patient

**Dosage:** 900 mg OD

**Restriction:** To be used only during maintenance phase. To use IV form during induction phase


*Prescriber category: A**

## Tacrolimus PR (Advagraf) 0.5mg, 1mg, 5mg

**Indication:** Prophylaxis of transplant rejection in adult kidney or liver allograft recipients, treatment of kidney or liver allograft rejection resistant to treatment with other immunosuppressive medicinal products in adult

**Dosage:**
Prophylaxis of transplant rejection:
a) Kidney Transplant: 0.20-0.30 mg/kg/day OD
b) Liver Transplant: 0.10-0.20 mg/kg/day OD


*Prescriber category: A**

## Gefitinib 250mg Tablet


*Prescriber category: A**

**Indication:**
i) First line treatment of adult patients with locally advanced or metastatic Non Small Cell Lung Cancer (NSCLC) who have activating mutations of the EGFR TK
ii) For second line treatment of patients with locally advanced or metastatic non-small cell lung cancer (NSCLC) who have previously failed chemotherapy, and who have activating mutation of epidermal growth factor receptor (EGFR)

**Dosage:** 250mg tablet once a day

## Darbepoetin Alfa 20mcg/0.5 mL Injection

**Indication:**
i) Treatment of anaemia associated with chronic renal failure, including patients on dialysis and patients not on dialysis
ii) Anemia with myelodysplastic syndrome

**Dosage:**
i) Haemodialysis patients: Initial dose: 20 mcg IV once weekly
Not on dialysis: Initial dose: 30 mcg IV or SC biweekly
ii) 240 mcg administered as a single subcutaneous injection once weekly

*Prescriber category: A**

# New Medication is HSM Formulary (JKUT Bil 2/2022)



BY: SITI NUR ADILAH BINTI MOHD YUSDI

## Povidone-Iodine 5% w/w antiseptic cream 15gm

**Indication:**
Bacterial and mycotic (fungal) skin infections, bed sore, leg ulcer, minor burns, cuts and abrasions, herpes genitalis.

**Dosage:**
Apply to affected area whenever necessary


*Prescriber category: B*

## Povidone-Iodine 2.5% w/v spray 55gm

**Indication:**
Treatment and prevention of skin infections in wound including ulcers, burns, cuts, abrasions and other minor injuries

**Dosage:**
Apply to affected area whenever necessary

*Prescriber category: B*

## Chlorhexidine Gluconate 0.2% w/v Hand Disinfectant 1L

**Indication:**
Disinfectant for hand hygiene and surgical disinfection

**Dosage:**
to be used undiluted for hand and skin disinfections


*Prescriber category: B*

## Metolazone 5mg Tablet

**KPK**

**Indication:**
Oedema in congestive cardiac failure, nephrotic syndrome and impaired renal function

**Dosage:**
Adult: 5-10 mg daily (Max: 80 mg in 24 hr)
Elderly: Initially, 2.5 mg/day or every other day


*Prescriber category: A**

## Eplerenone 50mg Tablet

**Indication:**
i) Hypertension
ii) Heart failure

**KPK**


**Dosage:**
i) 50 mg daily, may increase to BD
ii) 25 mg daily, may titatre to max 50 mg daily

## Everolimus 0.25mg & 0.75mg Tablet

**Indication:**
Prophylaxis of organ rejection in adult patients at low to moderate immunological risk receiving an allogeneic renal or cardiac transplant in combination with ciclosporin for microemulsion and corticosteroids

**Dosage:**
An initial dose regimen of 0.75 mg BD


*Prescriber category: A**

## Glycopyrrolate 1mg Tablet

**Indication:**
To reduce respiratory secretions for certain types of surgery

**KPK**

**Dosage:**
1 mg TDS

## Methoxy Polyethylene Glycol-epoetin Beta 100mcg/0.3ml, 120mcg/0.3ml and 150mcg/0.3ml Injection in PFS (Mircera)

**Indication:**
Treatment of anaemia associated with chronic renal failure

**KUOTA**


**Dosage:**
i. Non ESA-treated patients : 0.6 mcg/kg, once every two weeks
ii. ESA-treated patients : 120-360 mcg once monthly or 60-180 mcg every two weeks

*Prescriber category: A**

# New Medication is HSM Formulary (JKUT Bil 2/2022)



BY: SITI NUR ADILAH BINTI MOHD YUSDI

## Terazosin 5mg Tablet

**Indication:** Hypertension

**Dosage:**
Initial dose: 1 mg OD at bedtime
Maintenance dose: 1-5 mg OD (morning/evening) or BD
Max: 20-40 mg/day


*Prescriber category: A/KK*

## Mycophenolate Sodium 180mg & 360mg Tablet

**Indication:**
Prophylaxis of acute transplant rejection in adult patients receiving allogenic renal transplant in combination with ciclosporin and corticosteroids

**Dosage:**
720 mg BD


*Prescriber category: A*

## Sildenafil Citrate 50mg Tablet

**KPK**

**Indication:**
Raynaud's Phenomenon
(Off-label FUKKM)

**Dosage:**
50 mg BD


*Prescriber category: A**

## Belimumab 120mg powder for solution for Infusion

**Indication:**
Systemic lupus erythematosus

**Dosage:**
10 mg/kg IV every 2 weeks for
3 doses,then 10mg/kg every month


**KPK**

## Interferon Beta-1a 44mcg Injection

**Indication:**
Multiple sclerosis of the relapsing remitting type with 2 or more relapses within the last 2 years

**Dosage:**
44 mcg 3 times weekly


*Prescriber category: A**

## Anti-hyperammonemic Drugs Cocktail (IV Sodium Benzoate 2g in 10mL, IV Sodium Phenylbutyrate 2g in 10mL, IV L-Arginine 5g in 10mL)

**Indication:**
Hyperammonemia due to cycle defects

**Dosage:**
Loading dose
IV Sodium Benzoate 50 mg/kg
IV Sodium Phenylbutyrate 250 mg/kg
IV L-Arginine 50 mg/kg
(mix together in D10% to a total volume of 50 ml, infuse over 90 min)

**KPK**

**Maintenance dose:**
Same dilution as above but infuse over 24 hours

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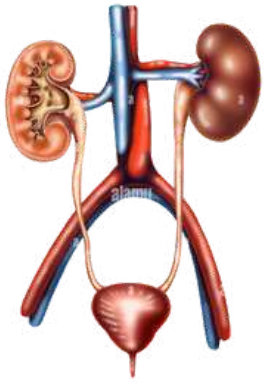
# Urinary Incontinence in Elderly

SEPTEMBER
3RD ED, 2022

BY: NOR FAZLINDA BINTI AZMI



## PATHOPHYSIOLOGY

Urine is a waste product made as kidneys filter the blood and will be stored in the bladder until a person decides to urinate. Urinary incontinence means a person leaks urine by accident. While it can happen to anyone, urinary incontinence, also known as overactive bladder, is more common in older people, especially women.

During urination, sphincter muscles in the bladder will relax, while detrusor muscles of the bladder wall will contract, allowing urine to move into the tube-shaped urethra. At the same time, muscles around the urethra will relax and let the urine pass out of the body. Involuntary bladder control and inability of the bladder muscles to work in an appropriate way will lead to urinary incontinence.

## CAUSES OF INCONTINENCE

Urinary incontinence in the elderly is often due to a combination of factors arising from **abnormalities of the urinary system, which are associated with age-related changes** causing weak bladder and pelvic floor muscles, enlarged prostate gland, and overactive bladder muscles, and factors not related to the urinary tract, such as medications and some diseases.

One of the contributing factors causing urinary incontinence in elderly women is **pelvic organ prolapse**, in which the pelvic organs (such as the bladder, rectum, or uterus) shift out of their normal place into the vagina or anus. When pelvic organs are out of place, the bladder and urethra are not able to work normally, which may cause urine to leak. Meanwhile, in the elderly male, it is often due to an **enlarged prostate gland**, which can lead to benign prostate hyperplasia, a condition in which the prostate grows as men age.

Urinary incontinence in the elderly can also be due to some **diseases** such as multiple sclerosis, diabetes, or Parkinson's disease, which cause damage to the nerves that control the bladder, subsequently precipitating urinary incontinence. Diseases such as arthritis may also lead to incontinence as it may cause patients to have difficulties getting to the bathroom on time. Diseases or conditions related to **cognitive losses** such as dementia and Alzheimer's might be one of the contributing factors that make elderly patients lose or have difficulties recognizing the sensation of bladder fullness and appropriate voiding time. **Recurrent urinary tract infections and constipation** can also cause irritation to the bladder, further contributing to urinary incontinence.

Apart from that, elderly patients might deal with urinary incontinence due to medications such as diuretics, angiotensin-converting enzyme (ACE) inhibitors, anticholinergics, angiotensin receptor blockers (ARB) calcium channel blockers, benzodiazepines, antidepressants, antipsychotics, estrogens, and hydroxychloroquine.

## TYPES OF INCONTINENCE

There are several types of urinary incontinence that differs in its symptoms, which include:

***Stress incontinence***

Stress incontinence is the involuntary loss of urine with increased intraabdominal pressure or physical exertion (coughing, sneezing, jumping, lifting, exercise).

***Urge incontinence***

Urge incontinence is the involuntary loss of urine preceded by a sudden and severe desire to pass urine. It may be caused by a condition called overactive bladder due to weak pelvic muscles, nerve damage, an infection, low levels of estrogen after menopause or a heavier body weight. Some medications and beverages like alcohol and caffeine can also cause overactive bladder.

***Overflow incontinence***

Overflow incontinence happens when small amounts of urine leak from a bladder that is always full, due to bladder is unable to empty completely. It is common in patients with chronic diseases such as diabetes, multiple sclerosis or stroke. This may also occur in old male patients with benign prostate hyperplasia.

***Functional incontinence***

Functional incontinence occurs when a person is unable to reach the toilet in time due to physical or mental impairment. For example, arthritis, Alzheimer's disease, or Parkinson's disease.

***Mixed incontinence***

This type of incontinence is a combination of several problems that all lead to leakage issues.

# Urinary Incontinence in Elderly



BY: NOR FAZLINDA BINTI AZMI

## PHARMACOLOGICAL TREATMENT

Urinary incontinence in the elderly can be treated or controlled using medications such as:

**Solifenacin Succinate tablet**
- Dose: 5mg OD up to 10mg if necessary

**Tolterodiene Tartrate ER capsule**
- Dose: 4mg OD, may decrease to 2mg OD

**Propiverine HCl tablet**
- Dose: Adult : 15mg BD-TDS, up to QID if required (Maximum dose: 60mg daily)

**Conjugated estrogen**
- Oral: 0.3-1.25 mg taken daily in a cyclic regimen.
- Topical: 2-4 g (0.5-1 applicator)of the cream may be administered intravaginally daily in the usual cyclic regimen


## NON-PHARMACOLOGICAL TREATMENT

Urinary incontinence in the elderly can aslo be managed using non-pharmacological approaches such as:
- **Catheterisation** , for example the use of intermittent catheterisation or also known as straight cathing to help drain the urine from bladder when the patient needs to. It was mostly used in older men with bladder obstruction.
- **Lifestyle and behavioural modification** such as losing weight, avoid alcohol and caffeinated drinks that can increase urination, and limiting fluids intake before bed time.
- **Bladder retraining**, to help reduce frequency of urination and improve bladder capacity.
- Practicing **pelvic floor muscles exercise (Kegel exercise)** to strengthen the muscles that support the bladder, which can help patient hold urine in bladder and avoid leaks.
- **Timed toileting**, or also known as prompted voiding which involves cueing or assisting someone to use the toilet at regular intervals. It can be helpful for older people with dementia.
- **Use of continence products** such as disposal pads, bedside under pads and diapers for protection and to reduce pressure sore risks especially in bed bound elderly.

## COUNSELLING POINTS

There are several helpful counselling tips that pharmacists can provide to someone dealing with urinary incontinence, or taking care of the elderly with urinary incontinence to better manage their disease and improve their quality of life (QoL), such as:

1. Practice emptying the bladder on a regular schedule.
2. If planning for exercise or physical activity, empty the bladder ahead of time to avoid leakage.
3. Avoid lifting heavy objects. If there is a need to move something large, ask for additional assistance.
4. Avoid drinking caffeine or a lot of fluids before starting an activity or before bed time.
5. Make the way to the toilet more convenient by using extra night light, moving any rugs or furniture that may block the way to the toilet. This is helpful for people with urge incontinence especially at night.
6. For the elderly with functional incontinence, keep a bedside commode in their bedroom, and installing an elevated toilet seat can be helpful.
7. Maintain a healthy body weight. Having excess body weight can be one of the causes of incontinence. By eating a healthy diet and exercising, you can reduce the risk of incontinence.
8. Take extra care to prevent skin irritation by avoiding frequent washing and douching, allow the skin to air-dry and consider applying a barrier cream such as petroleum jelly or cocoa butter.

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# THYROID STORM



BY: NUR ADIILAH BINTI RAMLI

## THYROID STORM = THYROTOXICOSIS ?

**Thyroid storm, also known as** thyrotoxic crisis, represents the severe end of the spectrum of thyrotoxicosis and is characterized by compromised organ function. It is an acute, life-threatening syndrome due to an exacerbation of thyrotoxicosis which is a common endocrine condition that may be secondary to a number of underlying diseases.

## DIAGNOSIS OF THYROID STORM

The diagnosis of thyroid storm is clinical. Both the Burch-Wartofsky Point Scale (BWPS) and Japan Thyroid Association (JTA) diagnostic tools can be used to aid diagnosis, however the usage of BWPS is recommended, as this scoring tool is more sensitive :

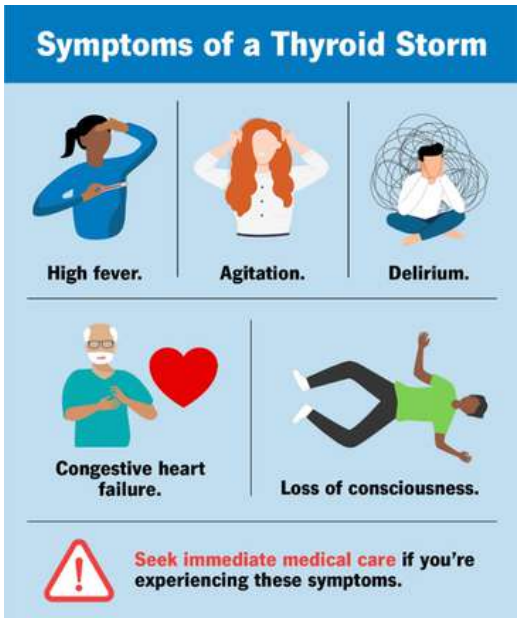
BWPS score ≥45 or TS1 is definitive of thyroid storm

BWPS score of 25–44 or TS2, clinical judgement to look for decompensation should be used to diagnose thyroid storm.

## SYMPTOMS OF THYROID STORM

**Classic features** of thyroid storm include fever, marked tachycardia, heart failure, tremor, nausea and vomiting, diarrhea, dehydration, restlessness, extreme agitation, delirium or coma. Fever is typical and may be higher than 105.8 F (41 C). Patients may present with a true psychosis or a marked deterioration of previously abnormal behavior. Rarely thyroid storm takes a strikingly different form, called apathetic storm, with extreme weakness, emotional apathy, confusion, and absent or low fever.

**Signs and symptoms** of decompensation in organ systems may be present. Delirium is one example. Congestive heart failure may also occur, with peripheral edema, congestive hepatomegaly, and respiratory distress. Marked sinus tachycardia or tachyarrhythmia, such as atrial fibrillation, are common. Liver damage and jaundice may result from congestive heart failure or the direct action of thyroid hormone on the liver. Fever and vomiting may produce dehydration and prerenal azotemia. Abdominal pain may also be a prominent feature.




## RISK FACTOR FOR THYROID STORM

Thyroid storm appears most commonly following infection, which seems to induce an escape from control of thyrotoxicosis. Pneumonia, upper respiratory tract infections, enteric infections, or any other infection can cause this condition. During infection it is noted that an increase in trend of serum free T4 level is responsible for storm occurrence due to the decreased serum binding of T4. Another common cause of thyroid storm is a hyperthyroid patient suddenly stopping their anti-thyroid drugs. Here are the list of other conditions which might predispose them to have a higher risk to develop thyroid storm:

- Acute illnesses such as acute myocardial infarction, stroke, congestive heart failure, trauma
- Non-thyroid surgery in hyperthyroid patients.
- Thyroid surgery in a patients poorly prepared for surgery.
- Radio-iodine therapy.
- Pregnancy particularly during labour and delivery.
- Longstanding untreated hyperthyroidism
  (Graves' disease, toxic multi-nodular goiter, solitary toxic adenoma).

# THYROID STORM



BY: NUR ADIILAH BINTI RAMLI

## PHARMACOLOGICAL TREATMENT

The treatment strategies of thyroid storm are aimed at inhibiting synthesis and release of the thyroid hormone , Inhibiting the peripheral action of the thyroid hormone, reversing systemic decompensation, treating the precipitating event and essentially addressing the definitive therapy.

Medication used in Thyroid Storm are as below:

| Drug Name | Dose |
|---|---|
| Tablet Propylthiouracil (PTU) | LD : 500mg-1000mg, Followed by 250mg, 4-6 hourly |
| Tablet Methimazole (MMI) | 60-80 mg/day |
| Tablet Propanolol (B-Adrenergic Receptor Antagonist) | 60-80 mg/4 hourly |
| Short Acting IV Esmolol | LD : 250-500 mcg/kg , followed by 50-100 mcg/kg/min |
| Short Acting IV Diltiazem | 0.25mg/kg bolus over 2 min, then 10mg/h |
| IV hydrocortisone (Glucocorticoids) | 100mg 6 hourly |
| IV Dexamethasone (Glucocorticoids) | 2mg 6 hourly |
| Lugols Iodine Solution | 5-10 drops 6-8 hourly for the first 10 days |
| Tablet Lithium | 300 mg OD, up to TDS |
| Cholestyramine Powder for Oral Suspension | 1-4g/every 6-hourly |

## COUNSELLING POINTS

Other aspects of thyroid storm management include patient counselling with the aim to improve the patient's compliance and to educate the patient about lifestyle modification. Pharmacists can provide useful counselling points such as :

1. Taking the medicine exactly as prescribed regularly at the exact time each day. Consult doctors, pharmacists or nurses if they are having trouble with their medicines.
2. Making sure to consume enough calcium that can be obtained from foods rich in calcium such as milk, yogurt, cheese and dark green vegetables.
3. Asking their doctor for special diets.
4. Not using caffeine as it can increase the heartbeat and cause nervousness

## Medication available in HSM for Thyroid Storm

Propylthiouracil 50mg Tablet

Propranolol 40mg Tablet


Hydrocortisone 100mg Injection


Iodine and Potassium Iodide Solution (Lugol's Solution)

Potassium Iodide Mixture 200 mg in 15 ml

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# NPRA SAFETY ALERT



BY: TAN SU PENG

## NPRA

The National Pharmaceutical Regulatory Agency (NPRA) was set up in October 1978 under the quality control activity of Pharmacy and Supply Programme, Ministry of Health (MOH) Malaysia. This institution was established to implement quality control on pharmaceutical products.

## SAFETY ALERT

Safety alert is relating to the "collection, detection, assessment, monitoring, and prevention" of adverse effects with pharmaceutical products as well as advise healthcare professionals to be aware of the potential adverse drug reactions since 2014. This is to ensure that therapeutic substances approved for the local market are safe, effective and of quality and also to ensure that cosmetic products approved are safe and of quality.

This section presents the summary of NPRA safety alerts published by MOH Malaysia, from January 2022 to July 2022.

| Medication | Risk associated | Adverse drug reaction reported | Advice for healthcare professional |
|---|---|---|---|
| Corticosteroid (Systemic) | Pheochromocytoma Crisis<br><br>Clinical presentation: Hypertension, palpitations, sweating, and headache.<br>Severe: pheochromocytoma crisis.<br><br>Mechanism: Enhance the action of catecholamines on peripheral vessels and the heart, eventually causing vasculopathy, tissue necrosis, and hemorrhage. | No local cases of pheochromocytoma crisis following the use of systemic corticosteroids have been reported. | 1. Administer after an appropriate risk/benefit evaluation.<br>2. Consider pheochromocytoma crisis in any patient developing HTN crisis, cardiac failure, tachycardia, headache, and abdominal or chest pain after systemic corticosteroids administration. |
| Warfarin | Anticoagulant-Related Nephropathy (ARN)<br><br>Mechanism: Disruption of the glomerular filtration barrier causes glomerular hemorrhage, followed by the presence of red blood cell (RBC) casts within the renal tubules, causing tubular obstruction. | One published local case report of ARN following the use of warfarin confirmed through renal biopsy. | 1. ARN may occur within the first few months of warfarin use.<br>2. Closely monitor renal function in patients especially supratherapeutic INR and hematuria<br>3. Initiate prompt supportive treatment with temporary complete discontinuation of warfarin, when possible. |
| Hydrochlorothiazide, Chlorthalidone, Indapamide and Acetazolamide | Choroidal Effusion, Acute Myopia & Acute Angle-Closure Glaucoma<br><br>Idiosyncratic reactions | No local cases of choroidal effusion, acute myopia or acute angle-closure glaucoma | 1. Avoid using acetazolamide in cases of sulfonamide-induced angle closure glaucoma.<br>2. Consider prompt medical or surgical treatments if the intraocular pressure remains uncontrolled. |
| Chloroquine and Hydroxychloroquine | Psychiatric Disorders, Aggression, delusion, paranoia, mania, attention deficit, sleep disorders, agitation and confusion<br><br>Onset:<br>first month after initiation | One local report of psychotic disorder following the use of chloroquine. | 1. Be vigilant with the risk of psychiatric reactions.<br>2. Advise patients and caregivers on the possible psychiatric symptoms. |

# NPRA SAFETY ALERT



BY: TAN SU PENG

| Medication | Risk associated | Adverse drug reaction reported | Advice for healthcare professional |
|---|---|---|---|
| COVID-19 Vaccines | Vaccine-Induced Immune Thrombotic Thrombocytopenia (VITT) / Thrombosis with Thrombocytopenia Syndrome (TTS)<br><br>Mechanism: Bindings of anti-PF4 to platelets cause platelet activation and aggregation, thrombosis, platelet consumption, and thrombocytopenia. | NPRA has received 4 cases (AstraZeneca) and 1 case (Pfizer) | 1. Be alert to the signs and symptoms of VITT/TTS<br>2. Continue to assess patients who present with thrombosis.<br>3. Patients who had VITT/TTS should not receive the second dose of this vaccine |
| Tenofovir alafenamide (TAF) | Renal Adverse Effects<br>Acute renal failure, proximal renal tubulopathy, and Fanconi syndrome | No report of renal adverse effects related to TAF has been received thus far. | 1. Assess the patient's renal function before initiating treatment and close monitoring.<br>2. Consider stopping TAF in patients who develop clinically significant decreases in renal function or evidence of nephrotoxicity. |
| Azathioprine | Erythema Nodosum<br>(Inflammation of subcutaneous fat)<br><br>Mechanism (postulated): Imidazole component of azathioprine might bind with certain proteins and cause hypersensitivity reactions. | Thus far, no local cases of erythema nodosum | 1. Be aware of the risk of hypersensitivity (erythema nodosum, myalgia, arthralgia, fever, dizziness, nausea, vomiting, and hypertension).<br>2. Educate patients about the risk of hypersensitivity. |
| Loperamide | Acute Pancreatitis<br><br>Mechanism: Opioid receptor affinity may trigger the Oddi's sphincter to produce a reflux of secretions into the pancreas, elevating pancreatic duct pressure and eventually inducing pancreatitis. | The NPRA has received no local reports of acute pancreatitis thus far | 1. Advise patients taking loperamide to seek medical attention if they experience characteristic symptoms of acute pancreatitis.<br>2. Consider the diagnosis of acute pancreatitis in patients presenting with clinical symptoms. |
| Empagliflozin | Tubulointerstitial Nephritis.<br><br>Mechanism: It is thought to be immune related<br><br>Clinical manifestation:<br>headache, flank pain, fatigue and weight loss, ever, rash, eosinophilia, elevated creatinine, and Fanconi's syndrome. | No cases of tubulointerstitial nephritis following the use of empagliflozin have been reported to the NPRA to date. | 1. Advise patients to seek medical attention if they experience new or worsening of signs and symptoms suggestive of tubulointerstitial nephritis.<br>2. Obtain patients' baseline renal function during SGLT2 inhibitors initiation and continue to monitor |

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4. Medicines & Healthcare Products Regulatory Agency (MHRA). Hydroxychloroquine, chloroquine: increased risk of cardiovascular events when used with macrolide antibiotics; reminder of psychiatric reactions. Drug Safety Update. 2022 Feb 15
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# HIGH ALERT MEDICATION



BY: CIK PUTERI HUZAINA BT HUSHAIRI,
PN NURQATRUNNADA BT MOHD SUKHAIRI
PN CHUAH BEE LENG


## HIGH ALERT MEDICATIONS ( HAMs)

High alert medications (HAMs) are defined as medications that bear a heightened risk of causing significant patient harm when these medications are used in error. HAMs or high-risk medications, in the context of safe use relating to certain situations, are associated with a significant risk of harm. Though medication mishaps with high alert medications may or may not be more common than other medications, the consequences following an error with these medications can be serious to the patient.

## PRINCIPLES TO SAFEGUARD THE USE OF HIGH ALERT MEDICATIONS

There are several principles to safeguard the use of high alert medications. Firstly, it is essential to reduce or eliminate the possibility of error. One of the strategy is to limit the number of high alert medications on one of the hospital or health clinic's drug formulary. However, that is quite impossible as most important drugs is classified as high alert medications. Therefore, we may limit the concentration or strength of the available medications.

Next, while handling high alert medications it is important in having two individuals to counter-check on the medications, calculations, preparations, administration of the medications. This way it will reduce the possible errors associated with High Alert Medications.

In general, one should practice "5 Rights - Know Your Medicines" whenever handling medications. Right patient, right medication, right dose, right route and right time has always been the standard practice whenever we are dealing with medications. Moreover, one should also practice "Know, Check, Ask" before giving medication to the patient. Lastly, to ensure safety while handling high alert medication we need to minimize the consequences of error by stocking high alert medications in smaller volume/unit.

## CATEGORY OF HIGH ALERT MEDICATIONS ( HAMs)

| Category | Example |
|---|---|
| Adrenergic Agonist, IV | Adrenaline, Phenylephrine |
| Adrenergic Antagonist, IV | Propranolol, Labetalol |
| Anaesthetic Agents, general inhaled and IV | Propofol, Ketamine |
| Antiarrhythmics, IV | Lignocaine (lidocaine), Amiodarone |
| Antithrombotic agents | Warfarin, heparin, enoxaparin |
| Antivenom | Sea snake, cobra, pit viper |
| Immunosuppressants agents | Azathioprine, Cyclosporine |
| Inotropic medications, IV | Digoxin, Dobutamine |
| Moderate and Minimal sedation agents | Chloral hydrate, Midazolam |
| Moderate Sedations, IV | Midazolam, Lorazepam |
| Neuromuscular sedation agents, IV | Pancuronium, Atracurium |
| Opioids, oral, IV and Transdermal | Morphine, Fentanyl |

PHARMACY DEPT
H S M

# HIGH ALERT MEDICATION

SEPTEMBER
3RD ED, 2022

BY: CIK PUTERI HUZAINA BT HUSHAIRI,
PN NURQATRUNNADA BT MOHD SUKHAIRI
PN CHUAH BEE LENG

## RISK FACTORS THAT MAY LEAD TO MEDICATION ERROR WITH HIGH ALERT MEDICATIONS

1. Different Route of Administration
The confusion between IM, IV, intrathecal, epidural preparations.

2. Wrong Infusion Rate
Wrongly prescribed or miscalculation of infusion rate and incorrect infusion rate may be programmed on the infusion pump

3. Incorrect preparation of drug
This include incorrect dilution, Incorrect diluent, Incorrect dose and strength of the drug and Incorrect calculations

4. Look Alike Sound Alike (LASA) medications
Look alike and sound alike product and similar packaging

5. Ambiguous labelling
Unclear concentration and total volume information on container/syringe label

6. Availability of products variation
Confusions of different strength, multiples formulations, brands, colors of the same drugs

7. Misinterpretation of medications order
Use of the abbreviation "U" for unit "O" and result in 10-fold overdose or Use trailing zeros result in 10-fold overdose.

## SAFE HANDLING AND MANAGEMENT OF HIGH ALERT MEDICATIONS

There are a lot of methods or practices to ensure that each healthcare facilities manage the **HIGH ALERT MEDICATIONS** to minimize the risk of Medication Error. First of all, it is important to identify and list all of high alert medications that used within the facility. Once the list has been established it shall be disseminated to all healthcare personnel in the facility. Besides that, high alert medications should have HIGH ALERT MEDICATIONS labels on storage shelves, containers, product packages or on loose vials and ampoules.

In cases where there are any changes of the brand, colour or preparation of the high alert medications, it must be informed to the others healthcare team and also the users. It is important to be identified HAM medications as they shall be targeted for specific error prevention strategies. High alert medications will be review and evaluate based on the checklist of "Medication Safety Self Assessment Form.

High alert medications will be prescribed, dispensed and administered using practices that are proven safe. A system shall be established whereby one healthcare professional prepares the medication and another person counter checks it for the purpose of medication safety and accuracy. Besides that, it is essential to identify and keep apart look alike sound alike (LASA) of the high alert medications.

## HIGH ALERT MEDICATION (HAM) LABELS



REFERENCES:
1. Guidelines On Safe Use of High Alert Medications (HAMs) 2nd Edition, Ministry of Health, 2020

# HAPPENINGS IN PHARMACY DERPARTMENT



BY: NUR SAFFIA BINTI MOHD NASIR


Jabatan Farmasi HSM sebagai
Johan (Kategori Hospital)
dalam
Pertandingan Video Kreatif
sempena
Kempen Keselamatan Pengubatan
Negeri Perak 2022



Kempen Keselamatan Pengubatan
anjuran Bahagian Perkhidmatan Farmasi,
Peringkat Negeri Perak
di
bangunan Jabatan Kesenian dan Kebudayaan Negara, Ipoh Perak.
18hb Ogos 2022

# HAPPENINGS IN PHARMACY DERPARTMENT



BY: NUR SAFFIA BINTI MOHD NASIR

Sambutan "World Pharmacist Day 2022"
oleh Jabatan Farmasi HSM
pada 23hb September 2022


Pameran Kenali Ubat Anda (KUA)
di AEON Shopping Mall
sempena Sambutan "World Blood Donors Day 2022"
pada 17hb - 18hb September 2022

# JULY 2022 -SEPTEMBER 2022

## Transferred in:

| | | |
|---|---|---|
| 1 | Puan Choong Yong Ying | PF UF44 |
| 2 | En Zahier Asyraff Bin Omar | PPF U29 |

## New FRP:

| | | |
|---|---|---|
| 1 | Cik Adilah Nur Bt Ariffin | PF UF41 |
| 2 | Cik Tan Ein Qian | PF UF41 |
| 3 | En Mohamad Irshad B Sathiq Noor | PF UF41 |
| 4 | Cik Dina Novella A/P Laser | PF UF41 |
| 5 | Cik Michelle Foo Chia Yee | PF UF41 |

## Further Study:

| | | |
|---|---|---|
| 1 | Puan Chiam Zye Wei | PF UF54 |
| 2 | En Tan Yi Jing | PF UF48 |
| 3 | Cik Klara Anthony A/P Anthonysamy | PPF U32 |