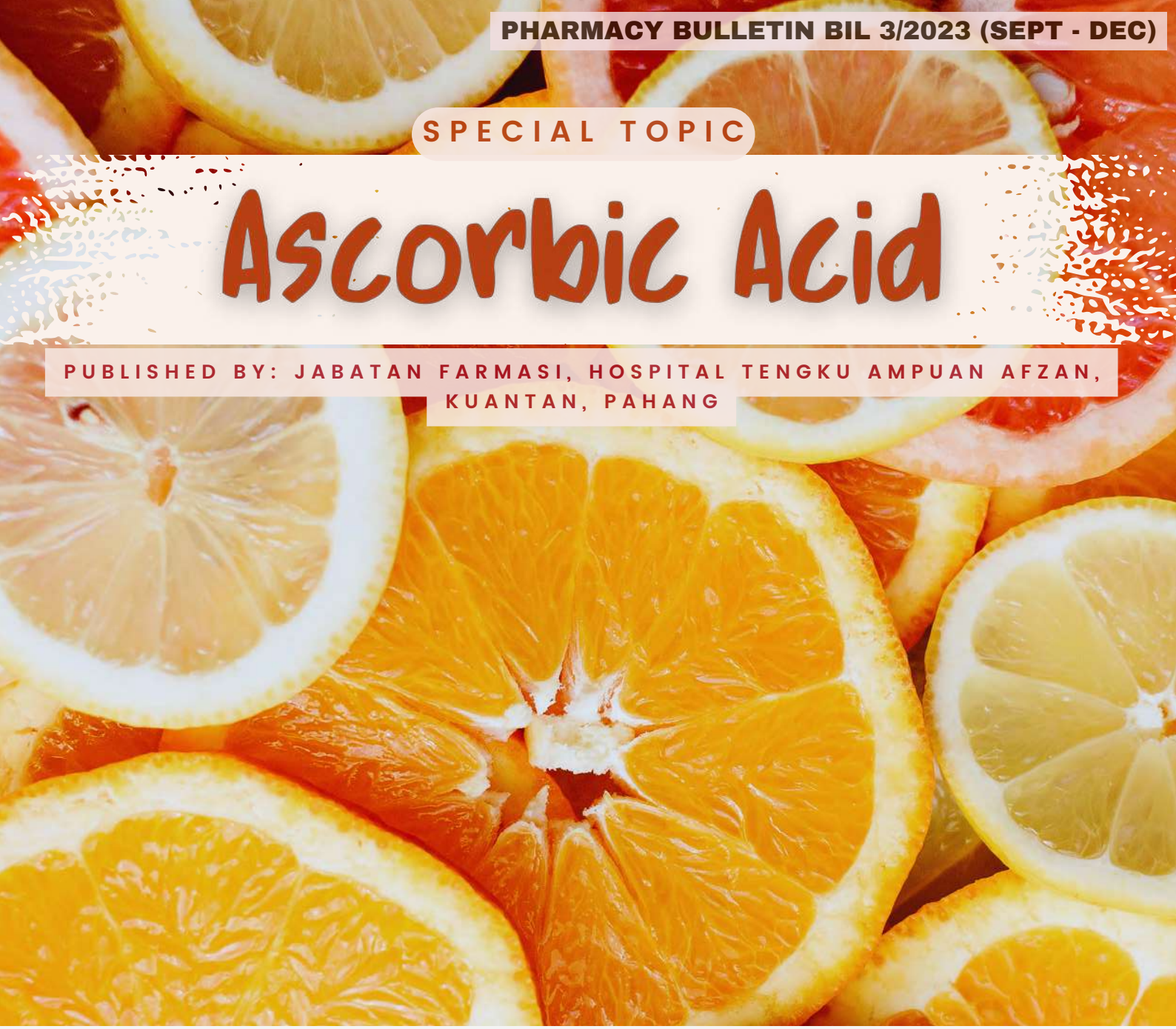
PHARMACY BULLETIN BIL 3/2023 (SEPT - DEC)



SPECIAL TOPIC

Ascorbic Acid

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IN THIS ISSUE

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Date Retired: 6/12/2023

Bong Kuek Siong
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Date Retired: 24/12/2023

COVID-19

SEGERA LAKUKAN UJIAN PENGESANAN

COVID-19

SEKIRANYA BERGEJALA

Demam

Batuk

Selesema

Sakit Tekak

Tarikh kemaskini : 22 Disember 2023

TERUS WASPADA, CEGAH COVID-19

COVID-19

Rasa tak Sihat?

PAKAI PELITUP MUKA

Tarikh kemaskini : 22 Disember 2023

TERUS WASPADA, CEGAH COVID-19

Kementerian Kesihatan Malaysia

Agenda Nasional Malaysia Sihat

MyHEALTH

myhealthkkm

sihatmilikku

SCAN ME

Taking ASCORBIC ACID in A Safe Way

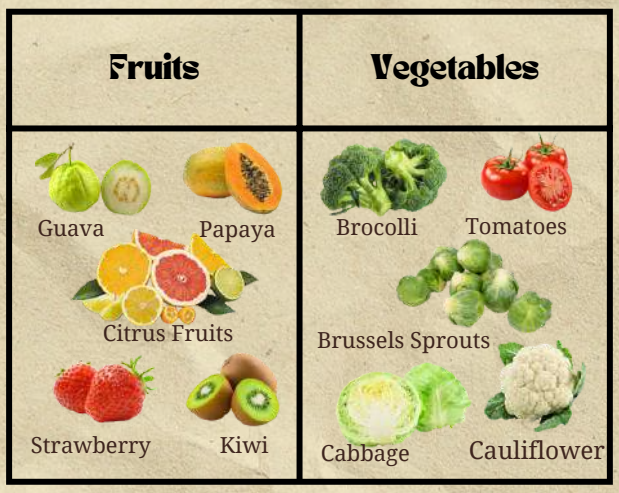
By: Muhammad Siddiq Faqaruddin Bin Rosdi

INTRODUCTION

Ascorbic Acid commonly known as Vitamin C is a water-soluble vitamin. It is not stored in large amounts in the body where the extra amount will be excreted out through urine. Ascorbic Acid is a hydrophillic molecule, which composes of six carbons. usually found in its reduced form (Ascorbic acid or Ascorbate) or in an oxidized form called dehydroascorbic acid (DHA). The benefits of Vitamin C include maintaining healthy cells, the immune system, essential in physiological function, and acting as an antioxidant. It has essential physiological and metabolic activities in humans, but can only obtained through diet due to the absence of L-gulono-1,4 lactone oxidase enzyme in human.[1]

CONTROLLED RELEASE VITAMIN C

Vitamin C from the sustained-release tablet was well absorbed, and these levels were sustained above baseline values for the entire 24-hour study duration. The average time to achieve maximum levels in plasma following supplementation with the sustained-release tablet was about 4.5 hours compared to the two to three hours seen in immediate-release formulations. With the slow, steady nutrient release of sustained-release tablets, the body is able to absorb and use more of the consumed nutrients. Sustained-release tablets help eliminate digestive upset and other side effects that can occur in sensitive people when they take dietary supplements.



Sources of Ascorbic Acid in Daily Diet.

RECOMMENDED DOSE & ADVERSE EFFECTS OF ASCORBIC ACID

Groups	Age	Recommended Nutrient Intake (RNI) (mg/day)
Infants	0-5 months	25 mg
	6-11 months	30 mg
Children	1-6 years old	30 mg
	7-9 years old	35 mg
Adolescent	10-18 years old	65 mg
Adults	–	70 mg
Pregnancy	–	80 mg
Lactation	–	85 mg

(Adopted from "MyPortal Health, Importance and toxicity of vitamin C, 2018)

The maximum daily intake for Ascorbic Acid is also known as The Tolerable Upper Intake Level (UL). This level is unlikely to cause harmful effects on health. The UL for vitamin C is 2000 mg daily; exceeding this amount may promote gastrointestinal distress and diarrhea. The amount higher than the UL is sometimes used in specific conditions, such as under medical supervision or in controlled clinical trials.[2]

Ascorbic Acid is generally safe when taken in recommended doses. The intake of high-dose vitamin C (>2000mg) for the long term is not recommended as it may cause severe side effects.


Nausea


Diarrhea


Heartburn

DRUG INTERACTION[3]

Ascorbic acid increases toxicity of deferoxamine, an iron chelators commonly taken by Thalasemic patients. Thus, the interaction between these medications may be life-threatening or may cause permanent damage. These medications are not usually used concurrently. Ascorbic acid reduces effect of warfarin, an anticoagulant, commanly used in Atrial Fibrilation. These medications may interact resulting in the potential deterioration of the patient's condition.

Ascorbic acid also helps increasing iron's absorption. For patients that requires iron supplement (eg: pregnant lady), it is recommended that the iron supplement be taken together with vitamin C.

ASCORBIC ACID IN G6PD DEFICIENT PATIENT[4]

Studies have shown that high doses of Ascorbic Acid decrease the function and survival of Glucose-6-Phosphate Dehydrogenase(G6PD)-deficient patients. High doses of vitamin C may precipitate hemolysis (red blood cell is destructed by promoting the production of hydrogen peroxide. Hydrogen peroxide is a potent oxidizer, and increased number of production results in damage of G6PD-deficient RBCs and ultimately hemolysis in these patients.

ASCORBIC ACID IN RENAL PROBLEM PATIENT[5]

- When the body breaks Ascorbic Acid down, it can convert into a compound known as Oxalate.
- Typically, the kidneys filter Oxalate, and the body excretes it through urine.
- However, if a person with a kidney disorder consumes high levels of Ascorbic Acid, Oxalate may start to build up inside their kidneys.
- This can lead to certain health issues, such as the formation of kidney stones.

USE OF VITAMIN C INJECTION AS COSMETIC[6]

- There was no USFDA approval of vitamin C injection for cosmetics, especially as anti-ageing, whitening agent, and anti-wrinkle.
- In Malaysia, the National Pharmaceutical Regulatory Agency (NPRA) did not approve any Vitamin C injection for cosmetic use (to date there is no Vitamin C product in injection form registered by the authority).
- There was no significant clinical evidence to prove that vitamin C injection either single or in combination with glutathione and collagen can improve skin elasticity (anti-ageing and anti-wrinkle) and whiten the skin.

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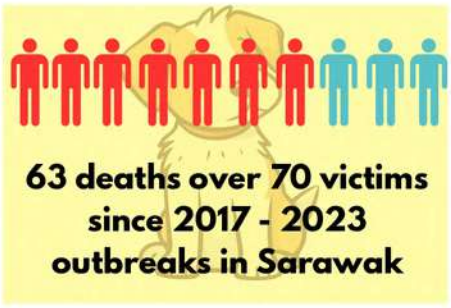
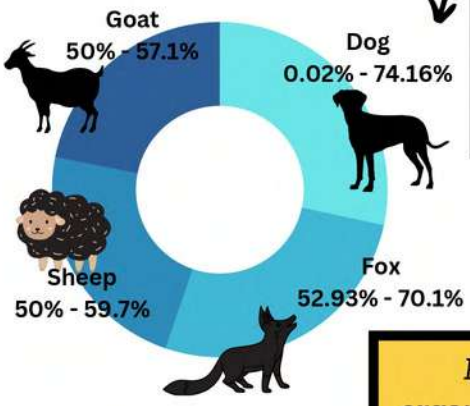
By Muhammad Syafiq & Nik Raihana Afifah

RABIES



Prevalence of rabies infection among animals in Malaysia (6)



BACKGROUND OF RABIES (3)

Rabies is a fatal viral zoonotic disease which has been recognized as one of the highest lethality rate amongst infectious diseases.

In Malaysia, Sarawak war against rabies was started since April 2017. A total of 11 rabies cases among humans, including nine deaths, were reported in Malaysia's eastern state of Sarawak from Jan 1 to May 15 2023.

AETIOLOGY (8)

Rhabdoviridae is RNA viruses with members infecting a wide range of organisms including placental mammals, marsupials, birds, reptiles, fish, insects and plants

Lyssavirus is the genus family of *Rhabdoviridae*. It naturally infect mammals and almost all have been isolated from bats which appear to be the primary natural reservoir, The word 'Lyssa' is derived from Greek with the meaning of rage, furry, frenzy or madness.

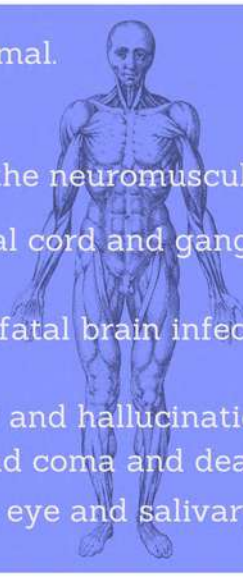
Lyssavirus is characterized as an enveloped bullet-like shape with ssRNA type of virus. It is covered with spike like projections corresponding to G-Protein trimers, which recognise and bind cell receptors. The G-Protein is essential for lyssavirus pathogenicity and for the induction of the immune response. (4)

Transmission? (5)

People usually get rabies from the bite of a rabid animal. It is also possible, but rare, for people to get rabies from non-bite exposures, which can include scratches, abrasions, or open wounds that are exposed to saliva or other potentially infectious material from a rabid animal

Incubation can range from days to years. Once a person become symptomatic, rabies is virtually 100% fatal (5)

PATHOGENESIS [4]



1. Viral inoculation from rabid dog bite or a rabid animal.
2. Virus replicates in the muscle cell.
3. Virus binds to nicotinic acetylcholine receptors at the neuromuscular junction.
4. Replication take place in the motor neuron of spinal cord and ganglia travels to brain.
5. Infection of brain neurons leading to encephalitis (fatal brain infection). 2 forms of rabies
   - Furious rabies – characterized by hyperactivity and hallucinations.
   - Paralytic rabies – characterized by paralysis and coma and death
6. Virus can spread outwards along the nerves to the eye and salivary gland.

SYMPTOMS OF RABIES [7]

STAGE 1

STAGE 2

STAGE 3

CATEGORY OF EXPOSURE [11]

PATIENT WITH ANIMAL EXPOSURE			
Category of exposure 	Category 1	Category 2	Category 3
	No direct contact with animal (for example, being in the presence of a rabid animal). No direct contact with the saliva of an animal, i.e., petting an animal also not considered an exposure since a breach of the skin or contact with mucosa is required for exposure.	Direct contact with saliva of animal but **NOT BREACH OF SKIN, NO BLEEDING.** 	Direct contact with saliva of animal with **BREACH OF SKIN, ANY AMOUNT OF BLEEDING, CONTACT WITH MUCOSAL MEMBRANES** (for example lick on/in eyes or nose), **CONTACT WITH BROKEN SKIN** (for example licks on existing scratches), **ANY CONTACT WITH A BAT**

Table 1. Category of exposure

RABIES MANAGEMENT

POST-EXPOSURE PROPHYLAXIS (PEP) & REGIME [9]

Post-exposure prophylaxis (PEP) consists of a dose of human rabies immune globulin (HRIG) and rabies vaccine given on the day of the rabies exposure, and then a dose of vaccine given again on days 3, 7, and 14. For people who have never been vaccinated against rabies previously, post-exposure prophylaxis (PEP) should always include administration of both HRIG and rabies vaccine. People who have been previously vaccinated or are receiving pre-exposure vaccination for rabies should receive only vaccine [1]

Table 2. Post-esposure Prophylaxis (PEP) based on category of exposure and regime [11]

	Category I exposure	Category II exposure	Category III exposure
Immunologically naive	• Wash exposed skin surfaces • No PEP required	• Wound management • 4-doses IM at day 0, 3, 7 and 14-28 OR 3 visits 2 sites ID at day 0, 3 and 7 • RIG is not indicated	• Wound management • 4-doses IM at day 0, 3, 7 and 14-28 OR 3 visits 2 sites ID at day 0. 3 and 7 • RIG not later than day 7 after D0 (even patient has received until D3 dose)
Previously immunised individuals (<3 months from last date of completed vaccination series PEP or PrEP)	• Wash exposed skin surfaces • No PEP required	• Wash exposed skin surfaces • No PEP required	• Wash exposed skin surfaces • No PEP required
Previously immunised individuals (>3 months from last date of completed vaccination series PEP or PrEP)	• Wash exposed skin surfaces • No PEP required	• Wound management • 4 site ID on days 0 or, • 1 site IM or ID at days 0, 3 • RIG not indicated	• Wound management • 4 site ID on days 0 or, • 1 site IM or ID at days 0, 3 • RIG not indicated

Rabies Vaccine

Vaccine is used for Pre-Exposure Prophylaxis (PrEP) and for Post-Exposure Prophylaxis (PEP). It aims to prime the immune system before an exposure to RABV so that a strong anamnestic immune response could be elicited effectively.
PrEP is recommended for individuals at high risk of RABV exposure: veterinarian, travelers, biologist, bat handling, caving. [1]

Rabies Immune Globulin (RIG)

Human rabies immune globulin (HRIG) is administered only once, at the beginning of anti-rabies prophylaxis, to previously unvaccinated persons. This will provide immediate antibodies until the body can respond to the vaccine by actively producing antibodies of its own. [1]

Mode of administration; [11]
ID route: Use insulin syringe (30G X 5/16", 0.3mm X 8mm) and needle for ID administration. ID dose is 0.1 mL of vaccine
Injection site: deltoid, anterolateral thigh or suprascapular regions
IM route: An IM dose is the entire content of the vial i.e. either 0.5 or 1.0 mL depending on the vaccine brand.
Injection site: deltoid region for adults and children aged >2 years. Rabies vaccine should not be administered IM in the gluteal area.

Vaccines Available in Malaysia [2]
1. Verorab® (inactivated purified vero cell, PVRV)
2. Rabipur® (inactivated, purified chick embryo cell, PCEC)

SAFETY OF RABIES VACCINE AND RIG IN SPECIAL POPULATION

PREGNANCY AND LACTATION[10]

Rabies vaccination and RIG can be safely given to pregnant and lactating women. Pregnant or lactating women should never be denied PEP, and any of the WHO-recommended PEP regimens can be used.

IMMUNOCOMPROMISED PATIENT[11]

HIV-infected individuals receiving ART, who are clinically well and immunologically stable (normal CD4 percent >25% for children aged <5 years or CD4 cell count 200 cells/mm3 if aged 5 years) leukaemia, lymphoma, generalised malignancy, poorly controlled diabetes can receive rabies vaccination

According to guideline, those patient should receive repeat administration of PEP and RIG irrespective of previous history of anti-rabies vaccination

- 5 doses at day 0, 3, 7, 14 and 28 (1-1-1-1-1) OR
- 4 doses at day 0, 3, 7 and 28 (1-1-1-0-1);
- RIG if indicated not later than Day 7 after the first dose [D0] of rabies vaccination irrespective if the patient has received the Day 3 dose to provide rapid protection before induction of rabies neutralising antibodies by active immunisation.

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DRUG UPDATES

Tablet Abiraterone Acetate 250 mg

A. DESCRIPTION

Abiraterone is an antineoplastic and immunodulating agent. It is in the class of cancer hormonal therapy and used to treat prostate cancer that has spread to other parts of the body.

B. REGISTRATION NUMBER

MAL19056010AZ.

C. PRICE

RM 747.60 / bottle of 120's.

D. DEPARTMENT

Urology.

E. PRESCRIBER CATEGORY

A* - (Consultant/ Specialist for specific indications only).

F. MECHANISM OF ACTION

17α-hydroxylase/C17,20-lyase (CYP17) is a key enzyme in androgen biosynthesis. It is primarily expressed in testicular, adrenal, and prostatic tumours. CYP17 catalyses the 17α-hydroxylation of pregnenolone and progesterone to their 17α-hydroxy derivative, followed by subsequent cleavage of the C 20,21-acetyl group to yield dehydroepiandrosterone (DHEA) and androstenedione. DHEA and androstenedione are precursors of testosterone. Aberrant androgen levels and unregulated androgen receptor signalling have been implicated in the development and progression of various prostate cancers. Androgen-sensitive prostatic carcinoma responds to treatment that decreases androgen levels. Androgen deprivation therapies, such as treatment with GnRH agonists or orchiectomy, decrease androgen production in the testes but do not affect androgen production by the adrenals or in the tumour.

G. INDICATION IN FUKKM

In combination with prednisone or prednisolone, for the treatment of metastatic castration-resistant prostate cancer (mCRPC) in adult men.

H. DOSE AND ADMINISTRATION

1,000mg once daily.

I. ADVERSE REACTIONS

Common

- **Dermatologic**: Contusion (13.3%), Flushing (15% to 22.3%).
- **Endocrine metabolic:** Hypercholesterolemia (Greater than 20%), Hyperglycaemia (56.6%), Hypertriglyceridemia (62.5%), Hypophosphatemia (23.8%).
- **Gastrointestinal**: Diarrhoea (17.6% to 21.6%), Vomiting (10% or higher).
- **Musculoskeletal**: Joint swelling (29.5% to 30.3%).
- **Renal**: Urinary tract infectious disease (7% to 11.5%).
- **Respiratory**: Cough (6.5% to 17.3%),
- Dyspnoea (11.8%).
- **Other:** Fatigue (39.1%).

Serious

- **Cardiovascular:** Cardiac dysrhythmia (7.2%), Cardiorespiratory arrest (0.5%), Chest discomfort, Chest pain, Oedema (25.1% to 26.7%), Heart failure (2.3% to 2.6%), Hypertension (8.5% to 37%).
- **Endocrine metabolic:** Hypokalaemia (17.2% to 28.3%).
- **Hematologic**: Lymphocytopenia Grade 3 or 4 (8.7%).
- **Hepatic:** ALT/SGPT level raised (11.1% to 41.9%).

J. USE IN SPECIFIC POPULATION

- **Paediatric:** Safety and efficacy not established in paediatrics patients.
- **Renal impairment:** Adjustment not necessary.
- **Hepatic impairment, mild (Child-Pugh Class A) preexisting:** Adjustment not necessary.
- **Hepatic impairment, moderate (Child-Pugh Class B) preexisting:** Reduce the dose to 250mg orally once daily; if elevations in ALT or AST greater than 5 times ULN or total bilirubin greater than 3 times ULN occur, discontinue treatment, and do not reinitiate therapy.
- **Hepatic impairment, severe (Child-Pugh Class C) preexisting:** Do not use.
- **Geriatric:** No overall differences in safety were observed, but greater sensitivity of some older individuals cannot be ruled out.
- **Pregnancy:** Not for use in women and is contraindicated in women who are or may potentially be pregnant.
- **Breastfeeding:** Not for use in women.

K. PRECAUTIONS

- **Cardiovascular:** May cause hypertension, hypokalaemia, and fluid retention as a consequence of increased mineralocorticoid levels resulting from CYP17 inhibition.
- **Endocrine & metabolic:** Adrenocortical insufficiency has been reported. Severe hypoglycaemia has been reported in patients with pre-existing diabetes receiving medications containing thiazolidinediones or repaglinide. Monitoring is required, increased dosage of corticosteroid or adjustment of anti-diabetic medications may be necessary.
- **Hepatic:** Marked increases in liver enzymes leading to treatment discontinuation or dose modification. Serum transaminase levels should be measured prior to starting treatment, every two weeks for the first three months of treatment, and monthly thereafter.
- **Combined with Radium Ra 223 dichloride:** Contraindicated due to an increased risk of fractures and a trend for increased mortality. Recommended that subsequent treatment with Ra-223 is not initiated for at least 5 days after the last administration of abiraterone with steroid.

L. CONTRAINDICATIONS

- Hypersensitivity to the active substance or to any of the excipients.
- Women who are or may potentially be pregnant.
- Severe hepatic impairment [Child-Pugh Class C].
- Concomitant use with Ra-223.

M. STORAGE

- Store below 30°C.
- Protect from light and moisture. Keep out of reach of children.

N. PHARMACIST ROLE

- Warn male patient with female partner of reproductive potential to use effective contraception during therapy and for at least 3 weeks after the final dose.
- Counsel patients on the side effects that may include fatigue, arthralgia, nausea, hot flush, diarrhoea, vomiting, upper respiratory infection, cough, and headache.
- Counsel diabetic patient to monitor for symptoms of hyperglycaemia and report difficulties with glycaemic control during and after treatment.
- Instruct patient to take drug on an empty stomach and to not eat food 2 hours before and 1 hour after taking drug, and to swallow tablet whole with water.
- Counsel patient to skip a missed dose and to take the regularly scheduled dose the following day.
- Provide medication administration schedule & suggest adherence tools to increase adherence.

O. REFERENCE

Product information leaflet, FUKKM, QUEST3+, MIMS, UpToDate, IBM Micromedex.

By: Nurul Iffah Binti Husnan

DRUG UPDATES

TRASTUZUMAB 440MG INJECTION

A. DESCRIPTION

Trastuzumab is an antineoplastic agent. It is a monoclonal antibody that is used in the treatment of HER2-positive metastatic breast cancer, early breast cancer and metastatic gastric cancer.

B. REGISTRATION NUMBER

MAL20014475ARZ

C. PRICE

RM 1,398.75 / vial

D. DEPARTMENT

Surgical

E. PRESCRIBER CATEGORY

A* - (Consultant/ Specialist for specific indications only)

F. MECHANISM OF ACTION

Trastuzumab is a monoclonal antibody that selectively targets the extracellular domain of the human epidermal growth factor receptor 2 protein (HER2). The HER2 proto-oncogene encodes for a single transmembrane spanning, receptor-like protein, which is structurally related to the epidermal growth factor receptor. A consequence of HER2 gene amplification is an increase in HER2 protein expression on the surface of these tumour cells, which results in a constitutively activated HER2 protein. Trastuzumab has been shown to inhibit the proliferation of human tumour cells that overexpress HER2. In vitro, trastuzumab-mediated antibody-dependent cell-mediated cytotoxicity (ADCC) has been shown to be preferentially exerted on HER2 overexpressing cancer cells compared with cancer cells that do not overexpress HER2.

G. INDICATION IN FUKKM

i) Used only in adjuvant setting for patients with HER2 over-expressed breast cancer, that is HER2 3+ by immunohistochemistry and over-expressed by FISH (Fluorescence in situ hybridization) and high risk group

ii) Treatment of HER2-positive non-metastatic breast cancer in combination with neoadjuvant chemotherapy followed by adjuvant trastuzumab, for locally advanced (including inflammatory) breast cancer or tumours >2cm in diameter.

H. DOSE AND ADMINISTRATION

i) Initial loading dose is 4 mg/kg administered as a 90 minutes IV infusion. Subsequent doses is 2 mg/kg administered as 30 minutes IV infusion weekly for 51 weeks

ii) Initial loading dose of 8 mg/kg body weight, followed by 6 mg/kg body weight 3 weeks later and then 6 mg/kg repeated at 3-weekly intervals administered as infusions over approximately 90 minutes. If the prior dose was well tolerated, the dose can be administered as a 30-minute infusion.

I. CONTRAINDICATIONS

Hypersensitivity to trastuzumab or foreign proteins (Chinese Hamster Ovary cell proteins or murine proteins) or any other product component. Concomitant treatment with anthracyclines (if possible, avoid for 24 weeks after trastuzumab is stopped), patients who suffer from dyspnoea at rest due to advanced malignancy or comorbidities.

J. ADVERSE REACTIONS

Common

- **Cardiovascular**: Decreased left ventricular ejection fraction (4% to 22%).
- **Dermatologic**: Skin rash (4% to 18%).
- **Gastrointestinal**: Abdominal pain (22%), Anorexia (14%), Diarrhoea (7% to 25%), Nausea (6% to 33%), Vomiting (4% to 23%).
- **Nervous system**: Chills (5% to 32%), Dizziness (4% to 13%), Headache (10% to 26%), Insomnia (14%), Pain (47%).
- **Respiratory**: Cough (5% to 26%), Dyspnoea (3% to 22%), Pharyngitis (12%), Rhinitis (2% to 14%).

Serious

- **Dermatologic**: Madarosis of eyebrow.
- **Hematologic & oncologic**: Immune thrombocytopenia, Tumour lysis syndrome.
- **Hypersensitivity**: Anaphylaxis, Angioedema.
- **Ophthalmic**: Blurred vision, Conjunctivitis.
- **Renal**: Focal segmental glomerulosclerosis, Glomerulonephritis.
- **Respiratory**: Acute respiratory distress syndrome.

K. USE IN SPECIFIC POPULATION

- **Paediatric:**

The safety and efficacy in paediatric patients < 18 years of age have not been established.

- **Geriatric:**

Age has been shown to have no effect on the disposition of trastuzumab.

- **Patients with renal impairment:**

Renal impairment was shown not to affect trastuzumab disposition.

- **Patients with hepatic impairment:**

No studies have been conducted for this population.

- **Pregnancy:**

It should be avoided during pregnancy unless the potential benefit for the mother outweighs the potential risk to the foetus.

- **Breastfeeding:**

It is not known whether trastuzumab is secreted in human milk. As human immunoglobulin G (IgG) is secreted into human milk, and the potential for harm to the infant is unknown, breast-feeding should be avoided during trastuzumab therapy.

L. PRECAUTIONS

Cardiotoxicity, infusion reactions, hematotoxicity (anaemia, neutropenia, thrombocytopenia, leukopenia), pulmonary adverse events, chills, fever, rash, nausea and vomiting, dyspnoea and headache, tremor, serious anaphylactic reactions, gastrointestinal disturbances, erythema, rash, musculoskeletal pain.

M. STORAGE

- Store between 2°C - 8°C.

N. PHARMACIST ROLE

- Counsel patient regarding the importance of drugs compliance in order to achieve the desired results.
- Counsel patients on common side effects such as skin rash, diarrhoea or abdominal pain, headaches, chills, cough, and dyspnoea.
- Advise patient to seek immediate treatment if having symptoms of infection such as high temperature or being shivery.
- Advise patient to go to A&E if having chest pain or difficulty in breathing.
- Counsel caregiver to monitor patient not to do heavy exercises and have sufficient rest as tiredness and fatigue can happen.

O. REFERENCE

Product information leaflet, FUKKM, QUEST3+, MIMS, UpToDate, IBM Micromedex

By: Noor Syafiqah binti Mohamed

COST OUTCOMES OF CONVERSION FROM SIMPLE SYRUP TO X-TEMP® SUSPENSION IN PRODUCTION OF EXTEMPORANEOUS ORAL MORPHINE SOLUTION IN HOSPITAL TENGKU AMPUAN AFZAN

Khairul Naim Zainal Abidin, Nurul Amira Haji Zunaidi, Hospital Tengku Ampuan Afzan Kuantan

INTRODUCTION

Oral morphine solution is produced extemporaneously in Hospital Tengku Ampuan Afzan (HTAA). Currently, X-Temp® oral suspension system (OSS), a commercially produced drug vehicle, is used to substitute Simple Syrup in the production of oral morphine solution. Within general hospitals, particularly in HTAA, there are no published documents or official studies on the cost comparison of using Simple Syrup and X-Temp® OSS in the production of extemporaneous oral morphine solution.

METHODOLOGY

This is a retrospective study on the batches of oral morphine solution produced using Simple Syrup and X-Temp® OSS. Data were obtained from Psychotropics and Dangerous Drug Registers, Excel data and other relevant databases. All data were further analysed and presented in tables, graphs, and charts whenever applicable and necessary.

RESULTS

The median cost per batch of oral morphine with Simple Syrup is RM71.73 (IQR: RM 0.986), which is cheaper than oral morphine with X-Temp® OSS (RM547.68, IQR: RM273.84). There is a significant difference in terms of cost per batch of production between both groups (p=0.0001), where oral morphine with X-Temp® OSS has a higher median score compared to oral morphine with Simple Syrup. Oral morphine with X-Temp® OSS was produced less frequently than oral morphine with Simple Syrup. Thus, the total time spent for production per year is lesser with the use of X-Temp® OSS. The odds of disposing of oral morphine solution were significantly lower in oral morphine with X-Temp® OSS, compared to oral morphine with Simple Syrup. (OR = 43.52; 95% CI = 20.33 – 93.13; p=0.0001).

CONCLUSION

The direct cost of X-Temp® OSS in the production of oral morphine solution is higher, but the indirect costs are lower, hence making it more beneficial in terms of reducing the use of human resources, saving time & minimizing wastage.

CITATION

Zainal Abidin, K.N. et al. Cost Outcomes of Conversion from Simple Syrup to X-Temp® Suspension in Production of Extemporaneous Oral Morphine Solution in Hospital Tengku Ampuan Afzan, Mal J Pharm 9 (1) 2023, 29-34

IMPLEMENTATION OF IN-PATIENT ANTICOAGULATION SERVICE IN MALAYSIA

Dr. Sahimi binti Mohamed, Hospital Tengku Ampuan Afzan

INTRODUCTION

Anticoagulants are extensively used in the in-patient setting for the prevention and treatment of Venous Thromboembolism (VTE) and stroke prevention for Atrial Fibrillation. They are high-risk medications associated with a significant rate of medication errors among hospitalized patients. The Pharmacy Department in collaboration with Medical Department in Hospital Tengku Ampuan Afzan (HTAA) is seeking to expand anticoagulation services and standardize care by implementing an In-Patient Anticoagulation Service (IPACs) providing daily surveillance and dosing consultation for patients receiving Anticoagulant Therapy (ACT). The team comprises of consultant hematologist, pharmacists, general physician and medical officers. The objectives of this study are to describe the implementation and outcomes of an IPACs and identifying the issues in the management of ACT. The use of anticoagulant was retrospectively collected from IPACs data during the period February 2017 to December 2018.

RESULTS

320 patients were referred to IPAC, with 59% of them were female. Of 303 patients seen by IPACs team, 52.5% patients used for acute VTE, 19.5% were referred for anticoagulant reversal and 3.3% for recurrent VTE. Almost two-third (72.3%) of patients used warfarin followed by 20.5% used direct oral anticoagulant and 7.2% used either low molecular weight or heparin. Of 159 patients referred for acute VTE, only 33% of them received VTE prophylaxis. Issues that were identified were the inappropriate dose of Vitamin K for over-warfarinization and underutilisation of prothrombin complex concentrate in the setting of prolonged International Normalized Ratio (INR) with severe bleeding as well as doing daily INR leading to improper titration of warfarin. Unsupervised and improper dose of heparin infusion and patients discharged with longer appointment for INR monitoring are the main issues encountered in IPACs.

CONCLUSION

With the IPACs, the awareness of VTE prophylaxis and the issues that related to ACT were resolved. This service appears to enhance quality of patient care in ACT.

CITATION

Sahimi M (2020) Implementation of In-Patient Anticoagulation Service in Malaysia. J Pharma Prac Edu Vol.3 No.3:31

PHARMSMASH 2023

23 SEPTEMBER 2023

PLAYGROUND 6, SEMAMBU

WOMEN DOUBLE

MIXED DOUBLE

CONGRATULATIONS

MIXED DOUBLE

1

Mohd Ridhuan & Soh Shen-ni

2

Muhamad Shahiran & Suhada

3

Muhammad Muhaimin &
Ng Ghia Chee

WOMEN DOUBLE

1

Syakirah & Nurul Iffah

2

Tou Pui Yee & Hawa

3

Nor Aniza & Nur Afiqah

MAJLIS PERASMIAN
WORLD PHARMACIST DAY PERINGKAT HTAA

25 SEPTEMBER 2023 | AUDITORIUM BANGUNAN KOMPLEKS RAWATAN HARIAN, HTAA

Sesi Memotong Kek

Penyampaian Cenderahati kepada Dr. Mariam binti Nawawi

Sesi Gambar Beramai-ramai

KURSUS 'MEDICATION SAFETY' PERINGKAT NEGERI PAHANG

Anjuran Jabatan Farmasi HTAA bersama JKN Pahang
25 September 2023 bertempat di Auditorium Kompleks Rawatan Harian, HTAA

Sesi menjamu selera tetamu jemputan kehormat

Pameran 'Medication Safety'

Ceramah '*Optimizing Patient's Care: Physician's Role in Patient Safety*' oleh Dr. Nur Azeanny

MAJLIS PERPISAHAN Puan Zuhaini

27 SEPTEMBER 2023 | FARMASI LOGISTIK, HTAA

Penyampaian cenderahati dari PharmCare oleh En. Bong kepada Pn. Zuhaini diiringi Dr. Mastura

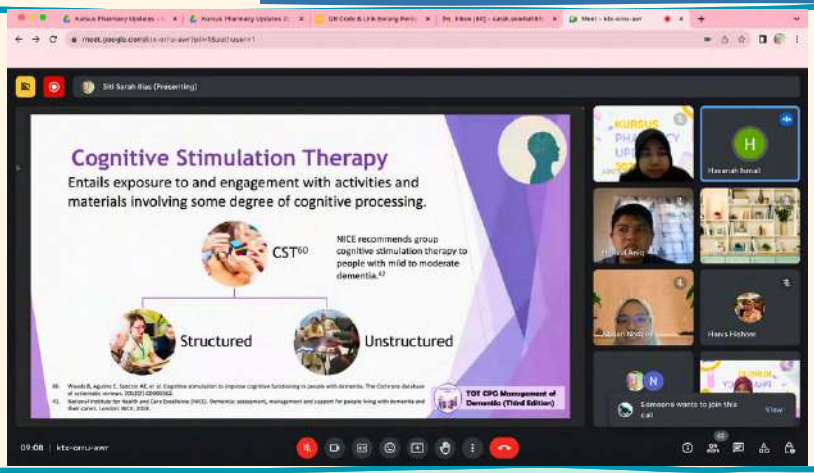
PHARMACY ACTIVITY

Gambar Pn. Zuhaini bersama dengan Pengarah Hospital, Dr. Rahimah, Pihak Pengurusan HTAA serta semua ketua seksyen & ketua unit Jabatan Farmasi

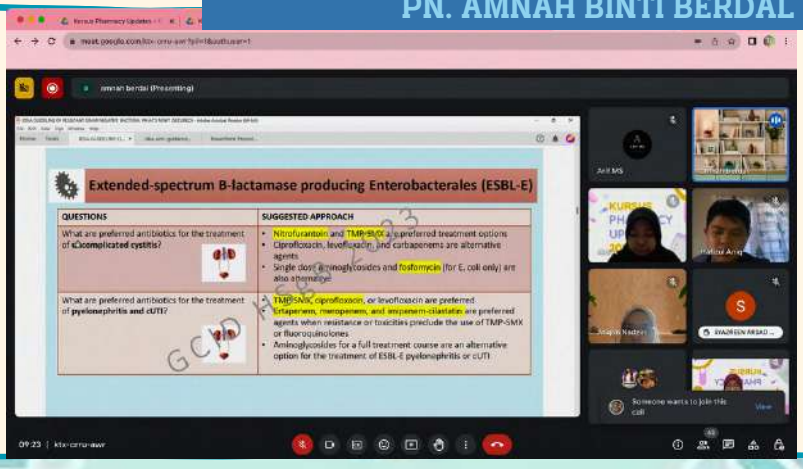
KURSUS 'PHARMACY UPDATES' 2023
JABATAN FARMASI

4 November 2023
8.30 am – 12.15 pm
Virtual via Google Meet

UPDATES IN CPG OF DEMENTIA (3RD EDITION)
PN. NUR HASANAH BINTI ISMAIL



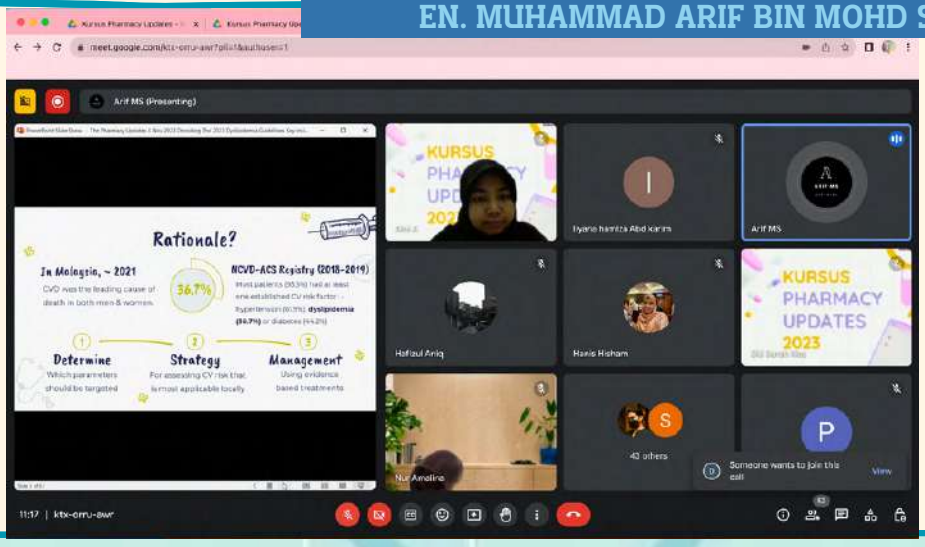
IDSA GUIDELINE OF RESISTANT GRAM NEGATIVE BACTERIA: WHAT'S NEW
PN. AMNAH BINTI BERDAL



BARRIERS AND CHALLENGES IN OPAT SERVICES
PN. LIYANA HAMIZA BINTI ABDUL KARIM

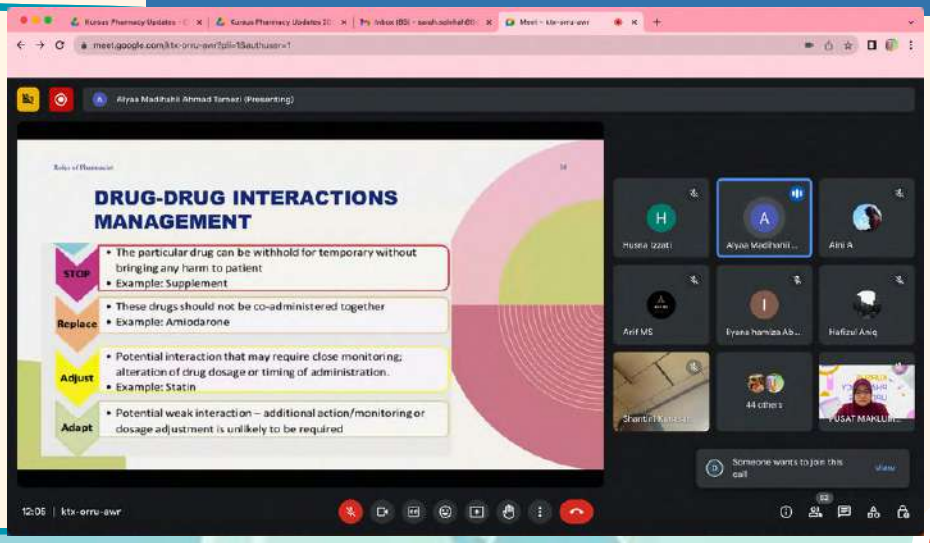
DECODING THE 2023 DYSLIPIDEMIA GUIDELINES: KEY INSIGHTS & LATEST UPDATES

EN. MUHAMMAD ARIF BIN MOHD SOPIAN



DIRECT ACTING ANTIVIRAL FOR HEPATITIS C: WHAT TO COUNSEL

PN. ALYAA MADIHAH BINTI AHMAD TAMEZI



Say Cheese




Pharm Night 2023

D'BANQUET HALL
16 DECEMBER 2023





PHARMACY ACTIVITY












Best Dressed

EN. HARIZUL AMRI

PN. JURAINI

IT IS A

Wonderful Night

PENCAPAIAN JABATAN FARMASI 2023

Pahang Research Day 2023 (Johan Pembentangan Poster)

Konvensyen Inovasi JKN Pahang 2023 (Naib Johan Kategori Perkhidmatan & Proses Kumpulan Hentam- Projek EVARS)

Konvensyen Inovasi & Kreativiti Farmasi 2023 (Naib Johan Kategori Inovasi Produk: Team 5K - Projek Quick M)

SEMAK SEBELUM SEBAR

Jadilah netizen yang bertanggungjawab dengan menyemak kesahihan sesuatu maklumat sebelum membuat perkongsian di media sosial

Tak pasti, jangan kongsi.

AZAM TAHUN 2024 MALAYSIA BEBAS ASAP ROKOK

*Dapatkan bantuan **Berhenti Merokok di Quitline 03-88834400***
atau kunjungi Perkhidmatan Berhenti Merokok di fasiliti kesihatan berhampiran

Kementerian Kesihatan Malaysia

Agenda Nasional Malaysia Sihat

MyHEALTH

myhealthkkm

sihatmilikku

SCAN ME

PHARMACY BULETIN BIL 3/2023