PHARMACY BULLETIN

BIL 1/2019 JANUARY - APRIL

Staff Updates

Medication Safety

STOPP and START Criteria in Urogenital and Endocrine System (In Elderly)

Disease Management/ Updates

Crohn's Disease

Drug Updates

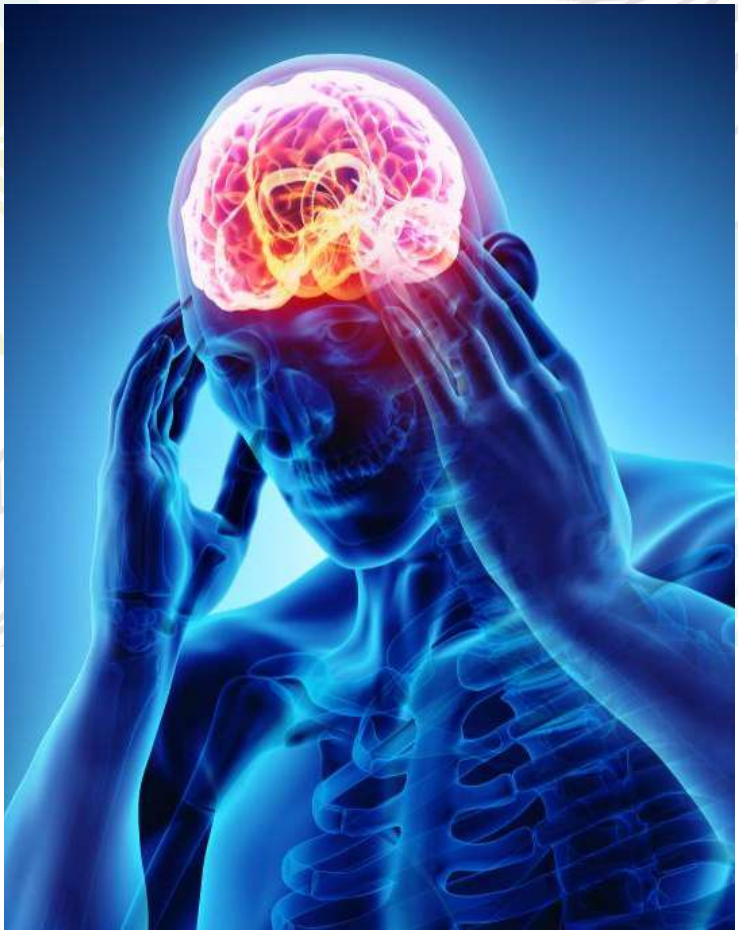
Febuxostat

Ranibizumab

Pharmacy Activities

Special Topic:

Migraine



PUBLISHED BY:

JABATAN FARMASI,

HOSPITAL TENGKU AMPUAN AFZAN,

KUANTAN, PAHANG

HTAA

New Pharmacy Staff 2019

Transferred In

- Pn. Nik Nur Naseela Fathin Bt. Nik Mohd Sabri
- Pegawai Farmasi UF48
- Date reported duty: 2 Jan 2019
- Transferred from Hosp. Pekan
- Farmasi Logistik

- Pn. Liyana Hamiza Bt. Abdul Karim
- Pegawai Farmasi UF44
- Date reported duty: 7 Jan 2019
- Transferred from Hosp. Kuala Lumpur
- Farmasi Wad

- Pn. Nasreen Bt. Nazmi
- Pegawai Farmasi UF44
- Date reported duty: 7 Jan 2019
- Transferred from Hosp. Ampang
- Farmasi Klinik Pakar

- Pn. Michella Tan Sheau Yee
- Pegawai Farmasi UF44
- Date reported duty: 14 Jan 2019
- Transferred from Hosp. Kuala Lipis
- Farmasi Klinik Pakar

- En. Harizul Amri B. Ahmad Roslan
- Pegawai Farmasi UF48
- Date reported duty: 20 Jan 2019
- Transferred from KK Pekan
- Farmasi Aseptik

- Pn. Nursalihah Bt. Muhammad
- Pegawai Farmasi UF44
- Date reported duty: 20 Jan 2019
- Transferred from Hosp. Sultan Haji Ahmad Shah, Temerloh
- Farmasi Wad

- En. Tan Yaw Shen
- Pegawai Farmasi UF44
- Date reported duty: 20 Jan 2019
- Transferred from KK Maran
- Farmasi Bekalan Wad

- Pn. Harfaniza Bt. Sharudin
- Penolong Pegawai Farmasi U32
- Date reported duty: 3 April 2019
- Transferred from KK Permatang Badak
- Farmasi Satelit

- En. Asmarul Akram B. Abdullah
- Pegawai Farmasi UF52
- Date reported duty: 15 April 2019
- Transferred from PKD Petaling, Selangor
- Farmasi Pengeluaran

- Pn. Zaidah Bt. Abd Karim
- Pegawai Farmasi UF54
- Date reported duty: 17 April 2019
- Transferred from Jabatan Kesihatan Negeri Pahang
- Farmasi Klinik Pakar

- Pn. Rosma Aimi Bt. Abdul Kadir
- Pegawai Farmasi UF48
- Date reported duty: 25 April 2019
- Transferred from Hospital Pekan
- Farmasi Klinik Pakar

- Pn. Nur Izzati Dhamirah Bt. Mohd Yusof
- Pegawai Farmasi UF44
- Date reported duty: 25 April 2019
- Transferred from KK Rompin
- Farmasi Wad

- Pn. Nor Adiba Bt. Mustafar
- Pegawai Farmasi UF41
- Date reported duty: 25 April 2019
- Transferred from KK Maran
- Farmasi Aseptik

Transferred Out

- En. Mohd Azizi Bin Aziz
- Pegawai Farmasi UF44
- Date transferred out: 20 Jan 2019
- Transferred to Pharmacy Enforcement Division, JKNP

- En. Moganraj A/L Rajoo
- Pegawai Farmasi UF44
- Date Transferred Out: 26 Feb 2019
- Transferred to Hosp. Sultan Haji Ahmad Shah, Temerloh

- Pn. Che Atiya Farahida Bt. Che Alias
- Penolong Pegawai Farmasi U29
- Date transferred out: 3 April 2019
- Transferred to KK Permatang Badak

- Pn. Rekarani A/P Rajantharan
- Pegawai Farmasi UF44
- Date transferred out: 15 April 2019
- Transferred to Hospital Tuanku Ja'afar, Seremban

- Pn. Madihah Bt. Rosli
- Pegawai Farmasi UF44
- Date transferred out: 15 April 2019
- Transferred to Hospital Sultanah Bahiyah, Alor Setar

- **Pn. Lok Jin Lyn**
- **Pegawai Farmasi UF44**
- **Date transferred out: 15 April 2019**
- **Transferred to Hospital Pulau Pinang**

Newly Appointed

- Cik Nurul Ili Izyan Bt. Omar
- Pegawai Farmasi UF41
- Date reported duty: 17 April 2019
- Former FRP in Hospital Raub
- Farmasi Logistik

- Cik Anis Zulaikha Bt. Ismail
- Pegawai Farmasi UF41
- Date reported duty: 17 April 2019
- Former FRP in Hospital Tengku Ampuan Afzan
- Farmasi Klinik Pakar

New Placement

- Cik Low Hui Wern
- Pegawai Farmasi UF41
- Date reported duty: 7 Jan 2019
- Transferred to KK Sg. Lembing

- Cik Heng Li Chin
- Pegawai Farmasi UF41
- Date reported duty: 7 Jan 2019
- Transferred to KK Maran

HTAA Internal Reshuffle

- En. Muhamad B. Hussin
- Pembantu Tadbir N22
- Reshuffled to Stor Alat Tulis
- Date of reshuffle: 4 March 2019

- Pn. Fadzilah Bt. Abd Rahman
- Pembantu Tadbir N22
- Reshuffled to Unit Sumber Manusia
- Date of reshuffle: 11 March 2019

- Pn. Hazwani Bt. Abdul Hamid
- Pembantu Tadbir N19
- Reshuffled from Unit Sumber Manusia
- Date of reshuffle: 4 March 2019

- Pn. Rohayu Bt. Puteh
- Pembantu Tadbir N22
- Reshuffled from Unit Sumber Manusia
- Date of reshuffle: 11 March 2019

Resigned

- **En. Cho Chun Yik**
- **Pegawai Farmasi UF41 (Kontrak)**
- **Date resigned: 13 March 2019**

MEDICATION SAFETY FOR ELDERLY

Get to know criteria for STOPP /START criteria for potentially inappropriate prescribing in elderly

Adverse drug reactions (ADRs) in older people currently represent a serious and growing public health problem. Polypharmacy and inappropriate prescribing (IP) are well-known risk factors for ADRs, which commonly cause adverse clinical outcomes in older people

Two screening tools called STOPP (Screening Tool of Older Persons' Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment) criteria were designed and validated as explicit criteria to help clinicians detect common instances of potentially inappropriate medicines (PIMs) and potential prescribing omissions (PPOs).

Aging process could affect the endocrine systems by altering the production, secretion, and catabolism of hormones. As example, the amount of human growth hormone produces is less resulting in reduced muscle mass in elderly. The thyroid hormones produce also reduced causing a gradual decrease in basal metabolic rate and the parathyroid hormones is increase leading to osteoporosis. Andropause (or viropause), menopause also can be seen in elderly. Besides, blood glucose levels in elderly would spike more rapidly and take longer to return to normal.

Changes in the urogenital system can make an older adult vulnerable to lower urinary tract symptoms (LUTS) such as urinary incontinence (UI) or overactive bladder. The smooth muscle walls of the bladder and urethra are weakening and less elastic that made the bladder less able to expand and contract in older people. As a result, the bladders of elderly people have a capacity of approximately one-half of young adults and unable to fully evacuate during urination.

Aging also affect the organization and central neurological integration of sensory and motor functions. This may impair the speed, effectiveness, and reliability of postural reflexes, leading to falls. Postural reflexes may increase the muscular force required for an effective response to postural disturbances, but the strength of skeletal muscles involved in postural control and walking declines with increasing age

Older people are known to have increased risk of adverse effects with medication due to age related alteration in pharmacokinetics and pharmacodynamics. This can sometimes lead to harm rather than benefit from a particular treatment.

STOPP – Screening Tool of Older Persons' Prescriptions

STOPP medications (age ≥ 65 years)	Circumstances to review	Reason to review
Urogenital system		
Antimuscarinic drugs	With dementia	Risk of increased confusion, agitation.
	With chronic glaucoma	Risk of acute exacerbation of glaucoma.
	With chronic constipation	Risk of exacerbation of constipation.
	With chronic prostatism	Risk of urinary retention.
Alpha blocker	In males' patients with frequent incontinence (≥1 episodes/day)	Risk of urinary frequency and worsening of incontinence.
	With long-term urinary catheter in situ (> 2months)	drug not indicated.
Endocrine system		
Glibenclamide or chlorpropamide	With type 2 diabetes mellitus	Risk of prolonged hypoglycaemia
Beta-blockers	With diabetes mellitus and frequent hypoglycaemic episodes >1 episode/month	Risk of masking hypoglycaemic symptoms
Oestrogens	With history of breast cancer or venous thromboembolism Without progestogen in patients with intact uterus	Increased risk of recurrence Risk of endometrial cancer
Drugs that adversely affect the faller		
Benzodiazepines	>1 fall in past 3 months.	Sedative, may cause reduced sensorium, impair balance.
Neuroleptic drugs		May cause fait dyspraxia, parkinsonism
First generation antihistamines		Sedative, may impair sensorium
Vasodilator drugs		Risk of syncope, falls.
Long term opiates		Risk of drowsiness, postural hypotension, vertigo.
Analgesic drugs		
Use of long term powerful opiates	As a first line therapy for mild moderate pain	WHO analgesic ladder not observed.
Regular opiates for more than 2 weeks	In patient with chronic constipation without concurrent use of laxatives	Risk of severe constipation.
Long term opiates	With dementia unless indicated for palliative care or management of moderate/ severe chronic pain syndromes	Risk of exacerbation of cognitive impairment.
Duplicate drug classes		
Any regular duplicate drug class prescription i.e.: two concurrent opiates, NSAIDS SSRI's, loop diuretics, ACE inhibitor. This excludes duplicate prescribing of drugs that may be required on a PRN basis i.e.: inhaled beta 2 agonists (long and short acting) for asthma or COPD, and opiates for management of breakthrough pain.		Optimisation of monotherapy within a single drug class should be observed prior to considering a new class of drug.

START – Screening Tool to Alert doctors to Right Treatments

START medications (age ≥ 65 years)	Circumstances
Endocrine	
Metformin	In the presence with type 2 diabetes +/- metabolic syndrome. (in the absence of renal impairment—estimated GFR <50ml/ min).
ACE Inhibitor or Angiotensin Receptor Blocker	In presence diabetes with nephropathy i.e.: overt urinalysis proteinuria or micro albuminuria (>30mg/24hours) serum biochemical renal impairment (estimated GFR <50ml/minute).
Antiplatelet therapy	In diabetes mellitus with co-existing major cardiovascular risk factors (hypertension, hypercholesterolemia, smoking history).
Statin	In diabetes mellitus with if co-existing major cardiovascular risk factors present

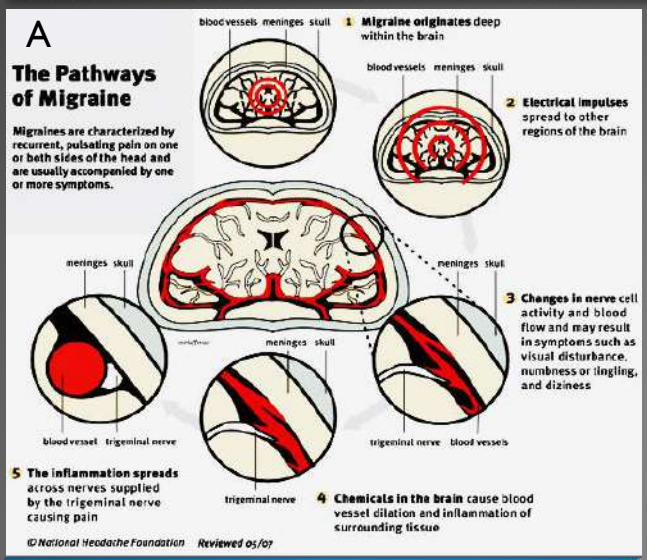
REFERENCES

1) O'Connor D., Gallaher P., Ryan C., Byrne S., Hamilton H., Barry P., O'Connor M. & Kennedy J. 2010. STOPP & START criteria: a new approach to detecting potential inappropriate prescribing in old age. European Geriatric Medicine 1: 45-51.
2) O'Connor M., O'Sullivan D., Byrne S., O'Connor M. N., Ryan C. & Gallagher P. 2014. STOPP/START criteria for potentially inappropriate prescribing in older people: version 2. Age and Ageing 44(2): 213-218.
3) Ryan C. 2011. The basics of the STOPP/START criteria. PCNE Medication Review Working Symposium 9-17.
4) Ages related changes in endocrine system. Biology of Aging. Retrieved form: https://courses.lumenlearning.com/ap1x2-91/chapter/development-and-aging-of-the-endocrine-system/.
5) Age changes in the kidney and bladdder. Medline plus Medical Encyclopedia. Retreived from: https://medlineplus.gov/ency/article/004010.htm

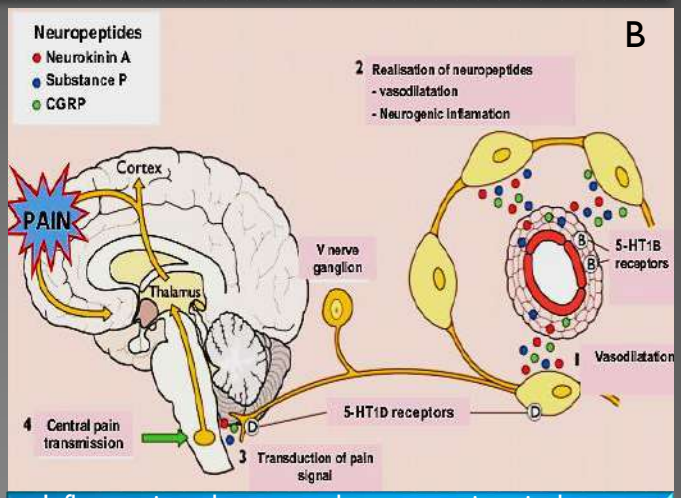
MIGRAINE

BY: NUR HIDAYAH AHMAD BASHIR

Migraine is one of the causes of recurrent, episodic headache. About 1 in 4 women, and 1 in 12 men, develop migraine at some point in their life. It usually starts in childhood or adolescence, and peaks in adolescence. Generally migraine becomes less common after 45-50 years old, though some may persist throughout life. Though migraine causes aren't understood, genetics and environmental factors appear to play a role.



Migraines may be caused by changes in the brainstem. It leads to changes in nerve cell activity, blood flow, and imbalances of chemicals in the brain which include serotonin (5HT1), a neurotransmitter regulating pain. Serotonin levels drop during migraine attacks , causing vasodilation and inflammation.



Inflammation then spreads across trigeminal nerves, activating the trigeminal nerve to release substances called neuropeptides (Neurokinin A, Substance P & calcitonin gene-related peptide (CGRP). These neuropeptides travel to the brain's outer covering (meninges), further prompting the inflammatory reaction & increase pain signal transmission through brainstem, thalamus & ultimately the cortex, resulting in migraine pain.

Treatment Of Migraine

Acute Treatment

First sign of a migraine attack:

- Mild-to-moderate attacks: oral NSAIDs (including aspirin), nonopioid analgesics, acetaminophen, or caffeinated analgesic combinations
- Moderate or severe attacks OR mild-to-moderate attacks that respond poorly to NSAIDs/caffeinated combinations : oral migraine-specific agents (triptans, dihydroergotamine)
- Non-oral medication can be given to patient with nausea or vomiting or those who have trouble swallowing

Precaution

✓ Avoid overuse of acute treatments.
✓ Ergot alkaloids like Cafergot which enhance vasoconstriction should be avoided in elderly, pregnancy or those with heart disease (risk of myocardial ischaemia) .

Preventive Treatment

Consider preventive treatment ONLY for migraine patients with any of the following situations:

- Migraine attacks are frequent (≥4 migraine headache days per month) and/or the attacks interfere with patients' daily routines even with acute treatment
- There is contradiction to, failure, or overuse of acute treatment
- Acute treatments lead to adverse events
- Cannot tolerate or are nonresponsive to acute treatment

Medications: Propranolol, Metoprolol, Valproid Acid, Topiramate, Flunarizine & Pizotifen.

✓ Start oral treatments at a low dose and titrate slowly until clinical benefits are achieved.
✓ Give oral treatments for at least 2 to 3 months to optimize therapeutic response. It should be taken everyday, with or without headache occuring.
✓ Treatment can be discontinued after 3 to 6 months once symptoms are controlled.

Acute Migraine Treatment

Drug Class	MOA	Drug & Dose
Selective serotonin receptor agonists/ Triptans	Stimulate serotonin→ reduce inflammation and constrict blood vessels	**T.Frovatriptan 2.5mg (off-label)** *PO* 2.5 mg to be taken after onset, followed by 2.5 mg after 2 hour if required (Max:5mg/day)
		T.Sumatriptan 50mg *PO* **Migraine** >18 year: 50-100 mg, repeat 2 hourly if migraine recurs. (Max: 300 mg/24 hr.) *SC* **Migraine: Cluster headache** >18 year: 6 mg as a single dose, repeat at least 1 hour after the 1st dose if needed. Max: 12 mg/24 hour.
Ergot Alkaloids	Partial agonist and/or antagonist activity against tryptaminergic/ dopaminergic and alpha adrenergic receptors → Constriction of peripheral and cranial blood vessels & produces depression of central vasomotor centers→ Decline in amplitude of pulsation in cranial arteries	**T.Ergotamine tartrate 1 mg, caffeine 100 mg (off-label)** PO Initially 2 tab at 1st symptomatic attack, may be repeated up to max daily dose at ½-hourly intervals if pain persists w/in ½ hr.

Preventive Migraine Treatment

Drug Class	MOA	Drug & Dose
Beta-Blocker	Inhibition of arterial dilatation	**T.Propranolol 40mg** Initial: 40 mg bid or tid. Usual range: 120-240 mg/day.
		T.Metoprolol 100mg (off-label) 100-200 mg/day in divided doses.
Anti-epileptics	Prolonged blockade of sodium channels in the neuronal membrane → potentiation of the activity of the inhibitory neurotransmitter GABA → Limit the spread of migraine	**T.Valproic Acid 200mg (off-label)** 800 mg/day or 1000 to 1500mg orally per day to maintain plasma concentration above 50mg/L
		T.Topiramate 25mg (off-label) Initial: 25 mg at night for 1 week, increased in increments of 25 mg at weekly interval. Usual dose: 50-100 mg/day in 2 divided doses. Max: 200 mg/day.
Calcium Channel Blocker	Inhibits smooth muscle contraction → dilation of coronary & systemic arteries.	**C.Flunarizine HCl 5mg** 5-10mg daily ON
Anti-Serotonin	Increasing permeability of cranial vessels while altering pain threshold in migraines	**T.Pizotifen 0.5mg** Initially 0.5mg OD,increase gradually as necessary. Maintenance: 1.5mg daily as a single dose at night or in 3 divided doses. Max: 4.5 mg/day (max:≤3mg/dose)

References:

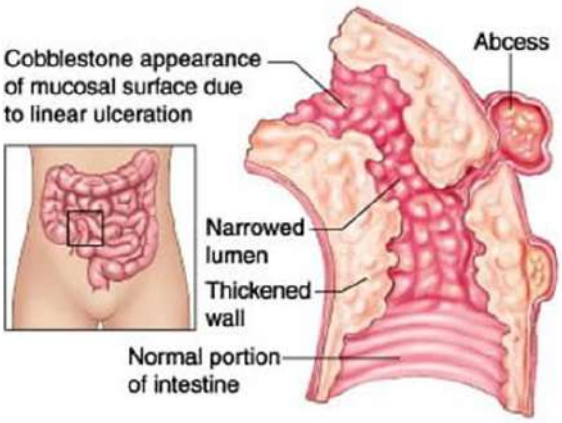
- Migraine (2011).Retrieved from http://www.myhealth.gov.my/en/migrain-sakit-kepala/
- Migraine Treatment (2019). Retrieved from https://emedicine.medscape.com/article/1142556-overview
- HTAA Formulari 2018
- Migraine Treatment (2019). American Headache Society. The American Headache Society Position Statement on Integrating New Migraine Treatments into Clinical Practice. Headache. 2019 Jan;59(1):1–18..
- MIMS Getaway 2019
- FUKKM 2019

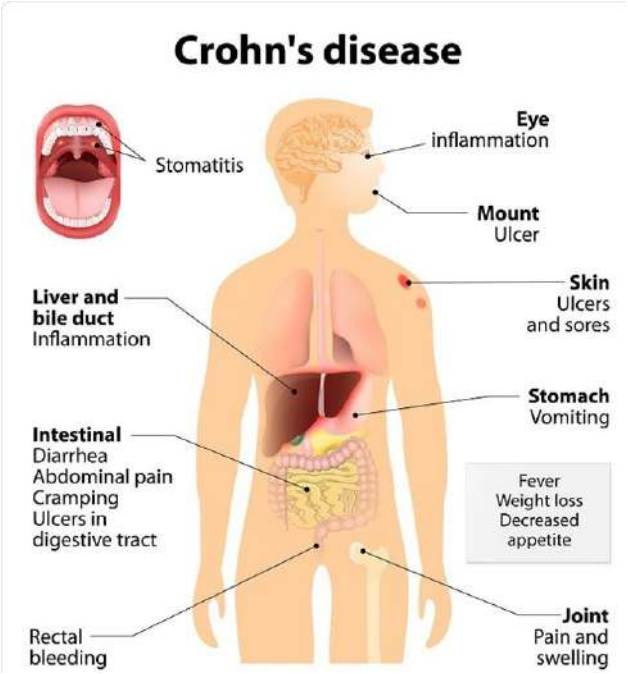
CROHN'S DISEASE

By: Chee Zhen Wei

Introduction

Crohn's disease is a chronic **inflammatory disease** that can involve the entire gastrointestinal tract, with discontinuous ulceration, fistula formation, and perianal involvement. This idiopathic inflammatory disorder have **unknown aetiology** with combination of genetic, immunologic, infectious, and environmental influences. Crohn's disease has been described as a disorder mediated by T lymphocytes that arises in **genetically susceptible individuals** as a result of a breakdown in the regulatory constraints on mucosal **immune responses** to enteric bacteria.





Treatment

The goal of treatment is for symptom relief & remission by reducing the inflammation that triggers the signs and symptoms, eliminate nutritional deficiencies and to improve long-term prognosis by limiting complications.

Anti-inflammatory drugs	Immunomodulators & Biologics	Antibiotics	Other medications
➢ **Reduce inflammation** ➢ **Usually used short term to induce remission** • **Oral 5-aminosalicylates (5-ASA)**: *Sulfasalazine* (not effective for long term treatment) * *Mesalamine* not effective in inducing remission • **Corticosteroids**: *Prednisolone, Budesonide* - used for short-term (three to four months) symptom improvement and to induce remission.	➢ **Reduce inflammation by targeting immune system, which produces the substances that cause inflammation** ➢ **May use alone OR combination of immunomodulators / biologics** **Immunomodulators:** *Azathioprine*, *6-mercaptopurine*, *Methotrexate, Tacrolimus* **Biologics (monoclonal antibodies):** • **Anti-Tumor Necrosis Factor (Anti-TNF)** *Infliximab, Adalimumab, Certolizumab Pegol* *-Adalimumab & Certolizumab* are less immunogenic than *Infliximab* • **Anti-p40 antibody:** *Ustekinumab*	➢ **To reduce the amount of drainage in perianal fistulas OR to treat infections in intestines** Frequently prescribed antibiotics: *Metronidazole* (PO 10 - 20 mg/kg/day for 4 to 8 weeks) and/or *Ciprofloxacin* (PO 500 mg BD for 4 to 8 weeks) or *Levofloxacin* (500 – 750 mg BD for 4 to 8 weeks)	• **Anti-diarrheals.** • **Pain relievers.** • **Iron supplements.** For chronic intestinal bleeding, which patient may develop iron deficiency anaemia • **Calcium & Vitamin D supplements.** Steroids use increase risk of osteoporosis.

Induction of Remission

Severity\Drug	Anti-inflammatory drugs	Immunomodulators & Biologics
Mild–moderate Ambulatory & able to tolerate oral alimentation	**Induce remission:** PO *Sulfasalazine* 3 - 4 g/day in 2-3 doses after meal	-
Moderate-to-Severe Individuals who failed to respond to treatment for mild–moderate disease	**Induce remission:** PO *Prednisolone* 40 - 60 mg/day for 1 - 2 weeks, tapered at 5 mg weekly until 20 mg, and then 2.5 - 5.0 mg weekly, not exceed 3 months	**Responds well to steroid:** Immunomodulators: PO *6-Mercaptopurine* 0.75-1.5mg/kg/day OR PO *Azathioprine* 1.5-2.5mg/kg/day helps reduce steroid use **Steroid dependent patients:** Immunomodulators: IM/SC *Methotrexate* 15 - 25 mg once weekly **Steroid resistant OR refractory to immunomodulators :** Biologics: *Infliximab*#, *Adalimumab** & *Certolizumab***** **Treatment in patients who have failed corticosteroids, immuno-modulators, or anti-TNF treatment:** Biologics: IV *Ustekinumab* ≤55 kg: 260mg; 55-85 kg: 390mg; ≥85 kg: 520mg
Severe/Fulminant Patients with persistent symptoms despite the introduction of steroids or biologic agents as outpatients.	**Induce remission:** Parenteral *Methylprednisolone* 40 - 60 mg/day	**Severe:** *Infliximab*#, *Adalimumab** & *Certolizumab***** **Fulminant:** *Infliximab*#
Fistulizing Fistula is a chronic tract of granulation tissue between two epithelial lined surfaces . Fistulizing episodes are reported to recur in one third of CD patients	-	**Perianal fistulas, entero-cutaneous & rectovaginal fistulas :** *Infliximab*# **Perianal and cutaneous fistulas treatment:** PO *Tacrolimus* 0.15-0.29mg/kg/day in 2 doses (short-term, risk of toxicity)

Minimal target trough levels: *Adalimumab* ≥5μg/ml; *Infliximab* ≥7.5μg/ml; *Certolizumab* ≥20μg/ml

**Adalimumab*: S/C 160 mg on Day 1, S/C 80 mg on Day 15, followed by a maintenance regimen of S/C 40 mg every other week starting on Day 29

#*Infliximab*: IV 5 mg/kg at 0, 2, and 6 weeks followed by a maintenance regimen of IV 5 mg/kg every 8 weeks thereafter. Higher dose up to 10mg/kg and/or shorter intervals to every 4 weeks may be required in patients losing response or when drug level is low

***Certolizumab:* S/C 400mg, repeat at week 2 & 4, followed by a maintenance regimen of S/C 400mg once every 4 weeks

Maintenance of Remission

- Once remission is induced with corticosteroids, an immunomodulator should be considered for maintenance of remission.
- Anti-TNF is effective at maintaining anti-TNF-induced remission. An immunomodulatory (at reduced dose) can be added as adjunctive for reducing immunogenicity against Anti-TNF therapy.
- Insufficient data exist to support safety & efficacy of switching patients in stable disease maintenance from one anti-TNF to another anti-TNF agent.
- SC Ustekinumab 90 mg every 8 weeks after initial IV infusion should be used for maintenance of remission of ustekinumab-induced response

Reference:

1. Lichtenstein GR, Loftus EV, Isaacs KL, Regueiro MD, Gerson LB, Sands BE. ACG Clinical Guideline: Management of Crohn's Disease in Adults. The American Journal of Gastroenterology. 2018 Mar;113:481–517
2. Mayo Clinic. (2018). *Crohn's disease - Diagnosis and treatment*. [online] Available at: https://www.mayoclinic.org/diseases-conditions/crohns-disease/diagnosis-treatment/drc-20353309 [Accessed 31 Mar. 2019].
3. Hemstreet BA, Dipiro JT. Inflammatory Bowel Disease. In: Pharmacotherapy: A Pathophysiologic Approach. 10th ed. USA: The Mc-Graw Hill Companies; 2017. p. 589-90
4. Wall GC. Lower Gastrointestinal Disorders. In: Koda-kimble And Young's Applied Therapeutics : The Clinical Use Of Drugs. 10th ed. Philadelphia: Lippincott Williams & Wilkins; 2013. p. 701

TAB FEBUXOSTAT 80MG

CLASS

- ❑ **Antigout**
- ❑ **Non-Purine Xanthine Oxidase Inhibitor**

INDICATION

- ➢ **Gouty Arthritis (2nd line treatment who have failed or contraindicated to Allopurinol.**

DOSING

GOUT:

40MG OD, may increase to **80MG OD** (if serum uric acid level still >6mg/dL after 2weeks). Max 120mg/day.

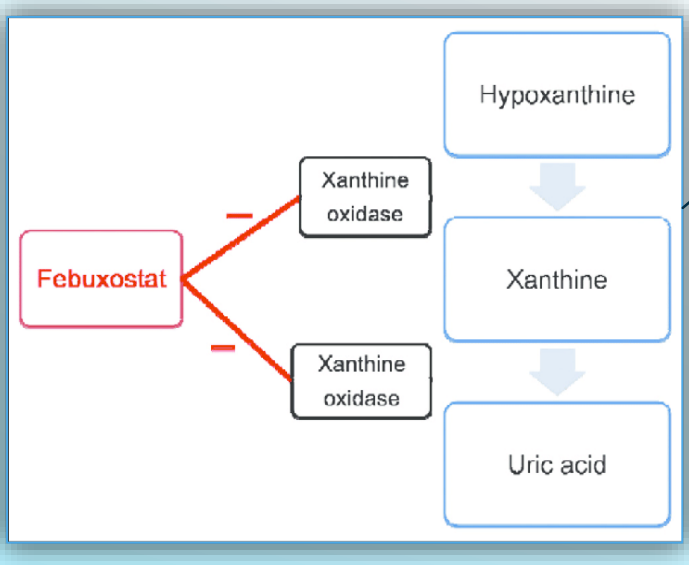
DOSAGE ADJUSTMENT

- **Renal:**
  - ❖ CrCL 30-89ml/min: No adjustment
  - ❖ CrCL 15-29ml/min: limit dose to 40mg OD
- **Hepatic**: No adjustment
- **Geriatric**: No adjustment

PREGNANCY: Cannot be ruled out

LACTATION: Cannot be ruled out

MECHANISM OF ACTION



It prevents the production of uric acid by blocking the activity of the enzyme (xanthine oxidase) that converts purines to uric acid. Uric acid levels may fall to target treatment levels within two weeks.

PHARMACOKINETICS

A : Bioavailability oral 75%- 85%
D : Protein binding, Albumin primarily: 98% - 99%
Vd : 41 – 50L
M : Hepatic
E : Renal, Fecal
T1/2 : 5 – 9.4 hrs

ADVERSE EFFECT

COMMON:
- **Rash (1.6%)**
- **Nausea (1.3%)**
- **Arthralgia (1.1%)**

DRUG INTERACTION:

CONTRAINDICATED
*AZATHIOPRINE
*MERCAPTOPURINE
MODERATE
*THEOPHYLLINE

DEPARTMENT:
Rheumatology & Nephrology
PRESCRIBER CATEGORY:
A* (Consultant / Specialist)

REFERENCES:
1. MICROMEDEX
2. KKM DRUG FORMULARY
3. MIMS MALAYSIA

BY: NUR AIMI ATHIRAH

Ranibizumab 10mg/ml Intravitreal Injection

Description

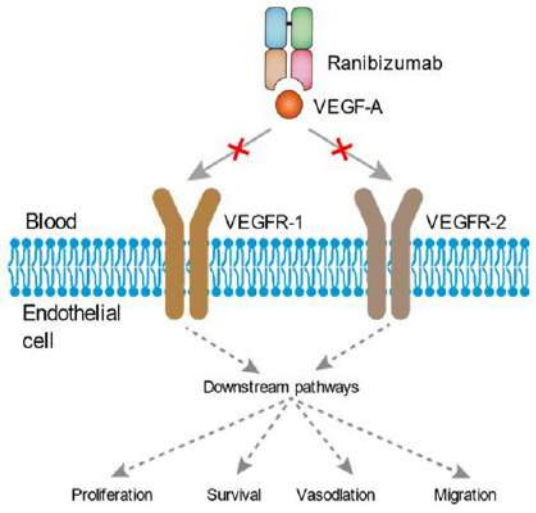
- Recombinant monoclonal antibody fragment
- Anti-neovascularization agents
- Single-use vial for intravitreal use only

Mechanism Of Action

Ranibizumab binds to the receptor binding site of active forms of vascular endothelial growth factor A (VEGF-A), including the biologically active, cleaved form of this molecule, $VEGF_{110}$.

This growth factor induces proliferation and migration of vascular endothelial cells, and is essential for both physiological and pathological angiogenesis.

The binding of ranibizumab to VEGF-A prevents the interaction of VEGF-A with its receptors (VEGFR1 and VEGFR2) on the surface of endothelial cells, reducing endothelial cell proliferation, vascular leakage, and new blood vessel formation



Indications

Treatment of Neovascular (wet) Age-Related Macular Degeneration (ARMD)

Treatment of visual impairment due to diabetic macular edema (DME)

Treatment of visual impairment due to macular edema secondary to retinal vein occlusion (RVO)

Treatment of visual impairment due to choroidal neovascularization (CNV) secondary to pathologic myopia

Dose

- 0.5mg (0.05ml) as a single intravitreal injection.
- Interval between 2 doses should not be shorter than 1 month, then monitor for visual acuity monthly.
- Treatment is given monthly & continued until max visual acuity is achieved, confirmed by stable visual acuity for 3 consecutive monthly assessments.

Dose adjustment

No renal or hepatic dose adjustment necessary

Prescriber Category

Prescriber Category

A*

Department :

Ophthalmology

Common Side Effect

Conjunctival haemorrhage
(47% - 74%)

Eye pain
(17% - 35%)

Vitreous floaters
(7% - 27%)

Counselling Points

i) Instruct patients to immediately report signs/ symptoms of endophthalmitis (eye pain or redness, sensitivity to light, or vision changes)

ii) Advise patient to immediately report signs/ symptoms of myocardial infarction or stroke

Pregnancy Category

C

Breastfeeding

There are no data available on the presence of ranibizumab in human milk and effects of ranibizumab on milk production/excretion

Pharmacokinetic

i) **Absorption**

- After ITV injection, bioavailability (F): 50% to 60%
- Peak plasma time: 1 day
- Peak plasma concentration: 1.7ng/ ml (0.5mg dose)

ii) **Distribution**

- Distributed rapidly to the retina (6-24 Hours)
- Vd and Protein binding are insignificant

iii) **Metabolism**

- Metabolism was not quantified

iv) **Excretion**

- Half-life : 9 days (vitreous)

References

1. MOH Drug Formularies
2. MIMS
3. Medscape
4. Micromedex

Prepared by Nur Amalina Abdul Rahim

PHARMACY R&D

1

Title: Can pharmacokinetic data be used to guide gentamicin dosing and reduce therapeutic drug monitoring frequency in neonates? A retrospective analysis.

Author: Janattul-Ain Jamal, Sakina Nur Najah Abdul Jabar, Wee Jia Li, Che Wan Mohd Hafidz Che Wan Ahmad, Nuratikah M. Nordin, Cheong Jia Yi.
Department of Pharmacy, Hospital Tengku Ampuan Afzan, Kuantan, Pahang.

Background: Gentamicin is widely used in suspected or proven severe neonatal sepsis, has a narrow therapeutic index which necessitates for close drug level monitoring. Therapeutic drug monitoring (TDM) involves measurement of drug concentrations in plasma, blood or serum so that optimal drug dosing can be maintained. However frequent TDM may be limited in neonate patients, particularly as it is an invasive procedure. This study aimed to assess the gentamicin pharmacokinetic (PK) parameters in neonates and to identify the necessity of repeated TDM in those presented with trough concentration (Cmin) >1.5 mg/L prior to initiating a new dosing regimen.
Method: Gentamicin concentration data of neonate patients admitted to a tertiary hospital, between January and December 2015 were retrieved. Non-compartmental analysis was used to determine PK parameters which includes the Cmin, peak concentration (Cmax), elimination rate constant (Ke), volume of distribution (Vd) and elimination half-life ($t_{1/2}$). PK parameters were compared in patients presented with Cmin >1.5 mg/L, where repeated blood samples were taken to determine for subsequent dosing regimen.
Results: A total of 1156 cases were reviewed, where gentamicin doses between 3.5-4.9 mg/kg were administered. The mean (SD) of Cmin and Cmax were 0.87±0.53 and 8.30±2.98 mg/L respectively, at steady state, while median (interquartile range, IQR) of the observed Vd, was 0.55(0.45–0.69) L/kg. In patients presented with Cmin >1.5 mg/L (n=42), where repeated TDM was done after withholding subsequent gentamicin doses, no significant difference was observed between initial PK data and the repeated PK data.
Conclusion: Gentamicin PK observed in the studied population was similar to previously reported data. In those with repeated TDM done (Cmin >1.5 mg/L) while withholding subsequent doses, no significant changes in PK data was observed, suggesting an estimation of subsequent dosing regimen can be made directly from the initial PK without subsequent TDM, thus can reduce unnecessary repeated blood sampling in these patients and promotes early drug optimization.

2

Title: Evaluation of Knowledge and Attitude of Healthcare Practitioners in Cytotoxic Drug Handling in Hosptial Tengku Ampuan Afzan (HTAA)

Author: Muhammad Nasri Yusoff, Muhammad Syahmi Md Nazir, Norhanim Solehah Che Abdullah, Tang Woan Torng.
Department of Pharmacy, Hospital Tengku Ampuan Afzan, Kuantan.
Department of Pharmacy, Pejabat Kesihatan Daerah Maran.
Department of Pharmacy, Pejabat Kesihatan Daerah Besut.

Background: Chemotherapy consisting cytotoxic drugs commonly prescribed for cancer patients. Increasing trend of cytotoxic drugs usage among the healthcare professional predispose the risk of occupational exposure among them. This study aimed to assess the level of knowledge among healthcare professionals on chemotherapy and to assess their attitude towards the safety related issues regarding chemotherapy.
Method: An observational, cross-sectional study was conducted in Hospital Tengku Ampuan Afzan (HTAA), involving staff nurses, pharmacists and doctors based on specific criteria. Questionnaire consisted of 40 main knowledge related questions and 5 behavioural attitude questions were delivered.
Results: A total of 120 healthcare professionals, including staff nurses (n=65), doctors (n=20) and pharmacists (n=35) participated in the study. Majority of them (57.3%) have answered the questionnaire correctly, with pharmacists showed significantly high mean score (65.4±10.7). Higher percentage of correct answers obtained (66%) on chemotherapy exposure, while lowest percentage of correct answer was on safe handling measures (52%). Minimal respondents (39.2%) feel confident handling the cytotoxic safely and majority of them (90%) responded were able to apply proper practice even when they were busy. From multiple linear regression analysis, previous training was found significantly associated with the knowledge score among the respondents ($p<0.001$).
Conclusion: The average knowledge score on chemotherapy in this study cohort can be considered as moderate, that affecting the attitude in handling cytotoxic drugs. This data serve as a baseline information for further interventions, in improving chemotherapy related knowledge among healthcare practitioners in HTAA, in ensuring optimal safety while handling the cytotoxic drugs.

3

Title: Medical Information Resources on Mobile Phone Among Healthcare Professionals: A Cross-sectional Survey

Author: Anisah Muhammad, Fareha Abdul Ghani, Rohaya Sulaiman, Wan Asfarina Wan Ismail, Nadirah Akmar Nasrun, Nurnazurah Faisal.
Department of Pharmacy, Hospital Tengku Ampuan Afzan, Kuantan, Pahang.

Background: Medical information resources (MIR) on smartphone has been widely used among healthcare professionals (HP), assisting in decision making of pharmacotherapy management. The benefit and its utilization in clinical practice among Malaysian HPis unknown. This study aimed to evaluate the utilization of MIR among Malaysian HP and factors that influenced HP's preference upon installing a MIR on any devices.
Method: A survey was sent to HP working in pharmacy, ward and clinic at a tertiary hospital in Pahang. A total of 1000 questionnaires consisted of 22 questions were distributed. The questionnaire sought information on HPs' background and detailed information regarding the use of MIR in their clinical practice.
Results: A total of 532 HP responded to the survey (response rate = 49.7%), with 72.7% (n=109) were pharmacists, 52.2% (n=227) nurses and 46.1% (n=196) doctors.Among these, 99.6% were aware of availability of medical smartphone application (MSA) while 96.4% were aware of medical online database (MOD).Majority of them (95.6%) utilised MSA in their clinical practice with MSA and internet were the most preferred method for searching information. Epocrates is the most preferred MSA used among doctors and pharmacists (14% and 14.1% respectively) while nurses preferred to use MIMS as their source of reference (29.3%). The most preferred MOD among HP wereEmbase (25.6%), Medline (17.3%), Pubmed (14.9%) and Ovid (14.9%). Among factors that influenced HP preference on MIR were immediate reference, trusted information and easy to understand information.
Conclusion: MIR on devices are widely used among HP in Malaysia. Both MSA and MOD are equally utilised, particularly those without registration fee. The use of local government-sponsored MSA such as Micromedex is under-utilised thus promotion used of this application is required.

4

Title: Value-added Services: Factors Influencing the Enrolment of Patients and Level of Satisfaction towards Services in Hospital Tengku Ampuan Afzan, Kuantan.

Author: Kwan Ee Wei, Helina Abdul Halim, Nor Hafizah Salehudin, Siti Husna Izzati Othman, Pang Zyu Wenn, Nur Shuhada Yusoff, Rabiatul Adawiyah Dalim.
Department of Pharmacy, Hospital Tengku Ampuan Afzan, Kuantan, Pahang.

Background: Pharmacy value-added services (VAS) has been established to overcome problems faced at traditional counter due to increasing number of patients. In Hospital Tengku Ampuan Afzan (HTAA), less than thirty percent (30%) of patients enrol in VAS. Hence, determining the factors influencing patients to enrol in VAS and their satisfaction level towards the services are needed to promote and improve the services.
Method: A cross sectional study was conducted in HTAA by using self-administered questionnaires to patients or caregivers whom enrol in VAS. The questionnaires consist of demographic data, factors influencing enrolment of patients or caregivers in VAS, level of satisfaction and expectations towards the services.
Results: There are fifty eight people responded to the survey (response rate : 13.5%). Majority of respondents enrolled in SPUB due to distance from HTAA (84.8%). Limited parking spot is the main factor for patients opt for drive-through service (95.2%). Of the SPUB and drive-through patients, most of them showed moderate satisfaction level while patients in UMP1M and SMS & Take were satisfied with the services. In this study, occupation (p value = 0.004) and distance from HTAA (p value = 0.048) were significantly associated with patients' satisfaction.
Conclusion: This study managed to identify significant factors which affect the satisfaction level towards VAS.

Ahli-ahli PharmCare yang bertugas

Perasmian majlis oleh Ketua Jabatan Farmasi, Pn. Hjh Samehah bersama ketua-ketua unit dan wakil

Para pemenang 'Best Dressed Award'

Majlis Sambutan Tahun Baru Cina 2019 & Hari Lahir Jan-April

- Tarikh: 20 Feb 2019
- Tempat: Perkarangan UFL
- Penganjur: PharmCare

Acara memotong kek oleh para staf kelahiran bulan Jan-April

Antara staf-staf jabatan farmasi yang sedang menikmati juadah yang disediakan

PHARMBOWL 2019

Tarikh: 16 Mac 2019

Tempat: Playground 6 Semambu

Penganjur: PharmCare

Let's make the pins dancing

Perlawanan sedang berlangsung

Johan Kategori Perempuan

Johan Kategori Lelaki

Oleh:
Safurah Khairul Fadzil

PharmHike PharmCare 2019

Tarikh: 20 April 2019

Tempat: Bukit Pelindung

Penganjur: PharmCare

Pendakian bermula

PRP turut melibatkan diri

"To walk in nature is to witness a thousand miracles".
Para peserta berjaya menyelesaikan pendakian!

Oleh: Safurah Khairul Fadzil

Sesi taklimat sedang dijalankan

GOOD GOVERNANCE MEDICINE COURSE

Sesi perbincangan kumpulan

Tarikh: 20 April 2019

Tempat: Bilik Mesyuarat Nilam ACC, HTAA

Penganjur: Pusat Maklumat dan Sumber Farmasi (PRIC)

Barisan para peserta dan urusetia

Oleh: Safurah Khairul Fadzil