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Medication Safety Bulletin

The Medication Safety Bulletin (MSB) is published by the Medication Safety Committee HAHO (MSC) biannually (May and Nov) as an educational publication to share issues related to medication safety. Please refer to the HA Risk Alert (HARA) for sharing of medication incident cases reported in HA.

Inside this issue:

Highlights of The Annual Medication Safety Forum 2018

The Annual Medication Safety Forum, themed **Change in Practice, Breakthrough in Medication Safety**, was held on 7 December 2018. Thank you for the support from speakers and attending colleagues. We hope you enjoyed sharing good ideas to make a better change in medication safety! The next Medication Safety Forum is scheduled on **2 December 2019 (Monday)**. We look forward to seeing your continuous participation!

The presentation files of sharing sessions in the Annual Medication Safety Forum 2018 are available at below link:

http://hadf.home/Events

You could also find the presentation files of previous years' Forums.

Promulgation: Self-Assessment Guide for Medication Safety in Public Hospitals

The review process of the **Self-Assessment Guide for Medication Safety in Public Hospitals** has been completed. This Guide would focus on key areas on Medication Safety with reference to MSC recommendations & guidelines, including checklist criteria being classified as **Mandatory or Recommended practices**. Take checklist criteria of the topic **Handling of Known Drug Allergy** as an example:

Checklist Criteria	Mandatory/Recommended (options)
Always DOCUMENT and CHECK patient's up-to-date drug allergy history before initiating any drug order.	Mandatory practice (Implemented/Not implemented/Not applicable)
Print out or issue allergy card to patient once the drug allergy records are updated.	Recommended practice (Implemented/Partially implemented/Not implemented/Not applicable)

A 3-year cycle is given to complete the Self-Assessment Guide at hospital level. Hospital can review the results and select a target area to set an achievement goal for the hospital to strive for; while the completed checklists would be analysed by MSC to formulate corporate strategy on medication safety. Comments from hospitals would be reflected via MSC representatives in their respective clusters for further discussion in MSC.

YOUR comments matters!

Medication Alert for SGLT-2 Inhibitors

*(Thanks to **Central Committee on Diabetic Service, HA** for the contribution to this article)*

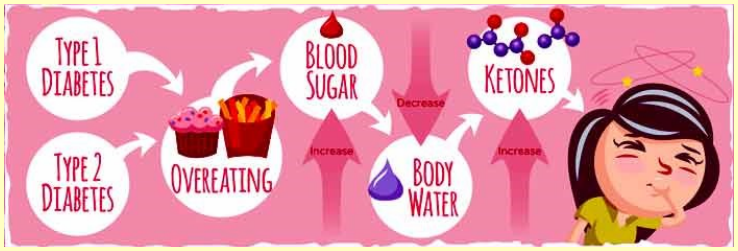
Sodium-glucose cotransporter type 2 (SGLT-2) inhibitors is an emerging class of oral anti-diabetic drugs that acts by reducing glucose reabsorption at the proximal renal tubules, resulting in increased urinary glucose excretion and leading to an improvement in insulin sensitivity. Dapagliflozin and Empagliflozin are available in the HA Drug Formulary as special drugs for Type 2 Diabetes Mellitus (T2DM) with established cardiovascular disease as add-on to 2 oral anti-diabetic drugs, or as adjunct to insulin to optimise glycemic control.

A recent systematic review and meta-analysis of randomised, placebo-controlled, cardiovascular outcome trials of SGLT-2 inhibitors in 34,322 T2DM patients (60% with established atherosclerotic cardiovascular disease) from three trials (EMPA-REG OUTCOME, CANVAS Program, DECLARE-TIMI 58) showed consistent pattern of cardiovascular-renal protection. SGLT-2 inhibitors moderately reduce the following:

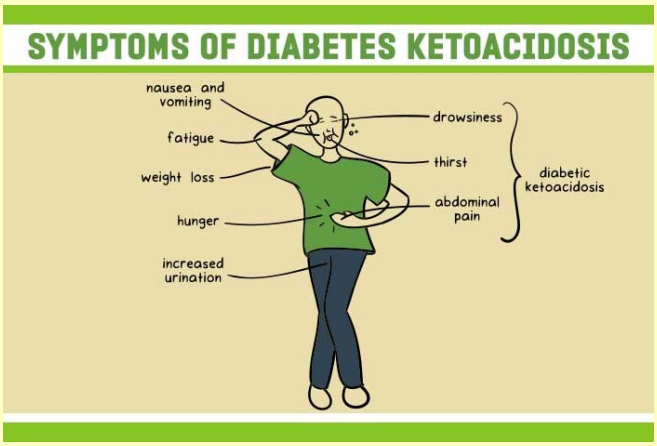
- Major adverse cardiovascular events (myocardial infarction, stroke or cardiovascular death) by 11% (95% CI 0.83-0.96) in patients with established atherosclerotic cardiovascular disease
- Reduction in hospitalisation for heart failure by 31% (95% CI 0.61-0.79)
- Reduction in progression of renal disease by 45% (95% CI 0.48-0.64) (1).

SGLT-2 inhibitors reduce HbA1c by 0.5-0.6%, may reduce body weight and are well tolerated. Safety concerns include mycotic genital infections, urinary tract infections, acute kidney injury, necrotising fasciitis of the perineum (Fournier's gangrene), amputation and fracture (for Canagliflozin). They are not recommended to be used in patients with GFR <45 ml/min, or with bladder cancer (for Dapagliflozin).

SGLT-2 inhibitors associated euglycemic diabetic ketoacidosis (euDKA) is rare, with an incidence of <1 in 1,000 patient-years. DKA results from a lowered insulin-to-glucagon ratio which stimulates lipolysis and ketogenesis (2).



FDA(US) issued warning on euDKA, that it can occur with blood glucose < 11 mmol/L, at a median of 2 weeks after initiation of SGLT-2 inhibitors (3). To minimise ketoacidosis, EMA(EU) recommended patient education on the symptoms of DKA, and to seek medical attention immediately. EMA also recommended temporarily stopping SGLT-2 inhibitors in patients undergoing major surgery or during hospitalisation for serious illness (4).



Because of the nonspecific symptoms and atypical presentation, diagnosis of DKA or euDKA may be missed or delayed in patients taking SGLT-2 inhibitors. AACE/ ACE identified metabolic stressful events like surgery, excessive exercise, myocardial infarction, stroke, severe sepsis and prolonged fasting as precipitating events. SGLT-2 inhibitors should be stopped at least 24 hours prior to elective surgery or invasive procedures or stressful activities like marathon, and the patients should avoid excessive alcohol and low carbohydrate ketogenic diet (5).

Health care professionals should have high index of suspicion for DKA in compatible precipitating scenarios. After prompt confirmation of blood ketones (beta-hydroxybutyrate) and high anion gap metabolic acidosis, SGLT-2 inhibitors should be stopped and the patient requires hospital admission to be commenced with intravenous insulin and dextrose infusion. It is to be of note that normal or mild elevation in blood glucose does not exclude the diagnosis of DKA during use of SGLT-2 inhibitors.

To minimise the risk of SGLT-2 inhibitors associated euDKA, CC(Diabetic Service) proposed to create a structured CMS medication alert to increase awareness.

"Watch for euglycemic diabetic ketoacidosis. Stop temporarily during hospitalisation, acute illness, peri-operative period and prolonged fasting."

References

(1) SGLT2 inhibitors for primary and secondary prevention of cardiovascular and renal outcomes in type 2 diabetes: a systemic review and meta-analysis of cardiovascular outcome trials. The Lancet 393(10166) Nov 2018.

(2) Euglycemic Diabetic Ketoacidosis: A Predictable, Detectable and Preventable Safety Concern with SGLT-2 Inhibitors. Diabetes Care Sept 2015; 38:1638-42.

(3) FDA warns that SGLT2 inhibitors for diabetes may result in a serious condition of too much acid in the blood. Drug Safety Communications 15 May 2015.

(4) EMA confirms recommendations to minimise ketoacidosis risk for diabetes.

Available from : https://www.ema.europa.eu/en/medicines/human/referrals/sglt2-inhibitors. Accessed April 2019.

(5) The American Association of Clinical Endocrinologists (AACE)/ American College of Endocrinology (ACE) Position Statement on the association of SGLT-2 inhibitors and diabetic ketoacidosis. Endocrine Practice 22(6):1-10, June 2016.

Oral anti-coagulants: Case sharing and Tips

Oral anti-coagulant, commonly called 'blood thinner(薄血丸)', is a group of medications which can prevent harmful blood clots from forming inside the blood vessels. Conventional product (e.g. warfarin) and newer agents (e.g. Apixaban, Dabigatran, Edoxaban, Rivaroxaban) are available in HA Drug Formulary.

There are two points to note before going to case sharing and tips:

(1) Bleeding is the most common side effect of all oral anti-coagulants; patients taking oral anti-coagulants may have a higher risk of bleeding

(2) For patients who are taking Warfarin, the dose of warfarin would be adjusted according to the International Normalised Ratio (INR) as measured by regular blood test

Case 1

- Patient attended A&E for dizziness
- After consultation, prochlorperazine 12.5 mg by **intramuscular route** was prescribed, and was then administered to patient's pelvic muscle
- After patient was admitted to ward for further management, it was found that patient was on long term Apixaban
- Patient was checked with no bruise or swelling on the injection site

Case 2

- Patient was transferred to ward A at 4:30pm
- As prescribed, warfarin 2mg daily was given to patient at 5:35pm on the same day
- At 10:15pm, it was found that the dose of warfarin should be **withheld if INR>3** as indicated in the prescription
- Patient was stable without bleeding; INR was checked on a daily basis

Tips for healthcare professionals for the safe use of oral-anticoagulants

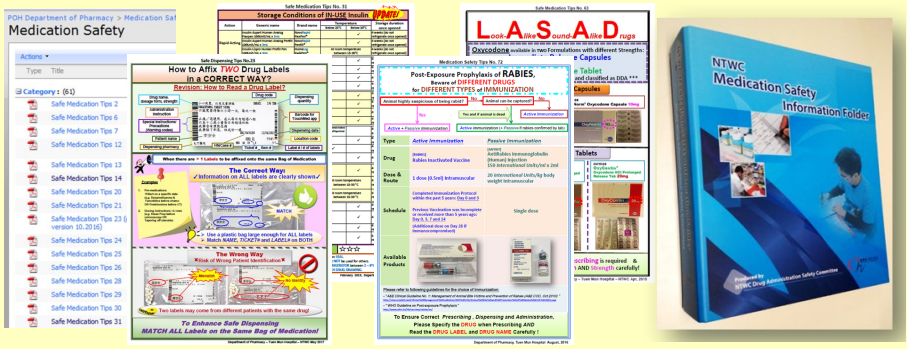
1. If the patient is on anti-coagulant medication, check with patient when is the last dose taken.
2. Consider route(s) of administration other than intramuscular route for patients taking oral anti-coagulants, in order to minimise the risk of bleeding.
3. Before drug administration, check for any criteria of withholding or administration (e.g. INR below or above certain value), and verify whether the criteria are fulfilled.

New Territories West Cluster's experience on Continuous Quality Improvement from Near Miss

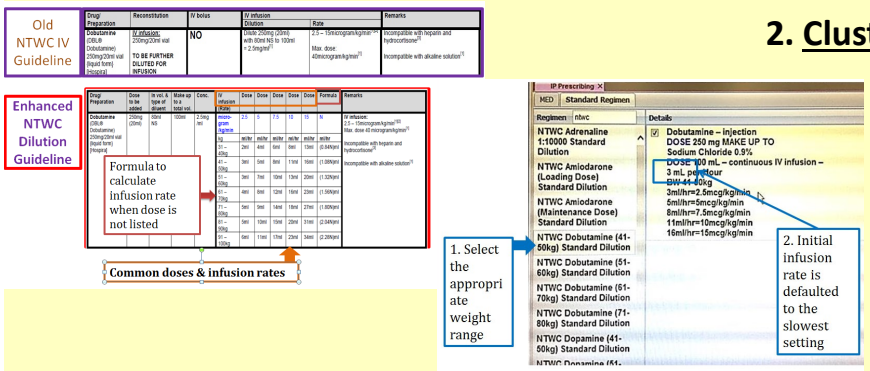
New Territories West Cluster has the following initiatives to promote medication safety:

1. Safe Medication Tips

- Issue "Safe Medication Tips" bulletin to remind clinical staff on newly raised potential risks on medication error.
- Designated folder to keep all medication safety information at workplaces.



2. Cluster IV Dilution and Administration Guideline incorporated into standard regimen in IPMOE



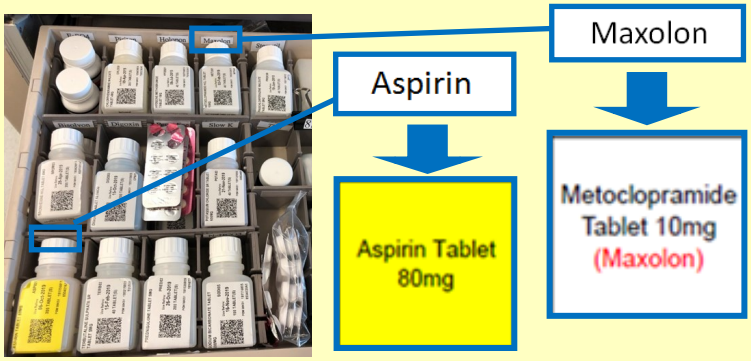
Regimens in cluster IV Dilution and Administration Guideline have been enhanced and built into IPMOE standard regimen template to minimize prescribing error in dilution and administration rate.

3. Medication safety training & promulgation

- Medication safety training is provided to all new clinical staff.
- Quarterly cluster Medication Safety Seminars with near miss & reported medication incident (MI) cases filmed to short video cases for sharing & learning.

4. Standardize the drug labels in drug trolleys at wards

Align the label descriptions used in drug trolleys at wards with the drug descriptions in IPMOE. Mechanism has been developed to add or update new labels at drug trolleys with the involvement of Pharmacy.



5. Invite frontline staff to reported MI/near miss case discussion

Frontline staff are invited to join the Medication Safety Committee pre-meeting to discuss the reported MI/near miss cases. They share their views on possible reasons behind and suggest feasible preventive measures.