PHARMACY NEWSLETTER

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Issued by:

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1. Pharmacy and Therapeutics Committee (P & TC) Updates

Formulary Updates

Addition	Deletion
Vonoprazan Tab 10mg, 20mg (Regular formulary item)	Dexlansoprazole Cap 30mg, 60mg
Fosfomycin Sachet 3g (Regular formulary item)	
Lansoprazole Inj 30mg (Regular formulary item)	
Silicon Sheets (Regular formulary item)	
Silver Nitrate Crystals (Regular formulary item)	

2. Management of Hypocalcaemia

Corrected calcium level = *current calcium + [0.8 × (4 – albumin in g/dl)]

***Corrected Serum Calcium is <8.5 mg/dL**

Evaluate possible causes and take corrective action

Decreased Albumin	Hypo-magnesemia (Magnesium replacement)	Hypo-parathyroidism	Concurrent Medications	Vitamin D Deficiency
Obtain ionized calcium and Calcium replacement done according to ionized calcium level.	Adults: Oral: 240-720mg/day of elemental magnesium Intravenous: 1-2 gm IV over15min Peads: 25-50 mg/kg IV Over 60 min	IV and oral Calcium and Oral Vitamin D	Decrease the doses or if Possible change the Therapy	Vitamin D replacement in form of oral or IV

If Corrected Calcium is still <8.5 mg/dl

Symptomatic	Asymptomatic
IV calcium chloride or calcium gluconate (Bolus and Infusion)	Oral calcium 1-3g/day

Evaluate :

Patient response to IV or oral calcium & current signs & symptoms

Serum calcium every 4-6 hours during IV therapy

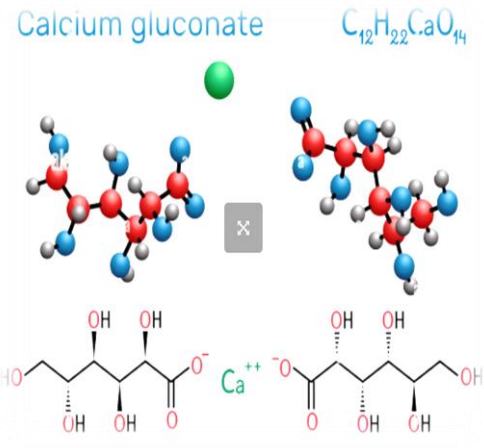
Serum calcium every 24-48 hours initially during oral therapy, then 1-2 times weekly

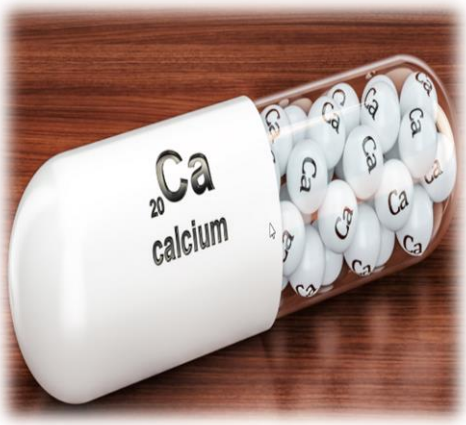
Symptomatic and calcium <8.5 mg/dL	•Re-bolus IV and increase maintenance infusion rate
Asymptomatic and calcium <8.5 mg/dL	•Increase maintenance infusion rate or increase dose of oral product
Calcium >8.5 mg/dL	•Change to oral calcium therapy & evaluate serum calcium in 48 hours

Hypocalcaemia Management
(Summary of / comparison of available calcium products along with dosing schedule)

Elemental Calcium Content in Different Dosage Forms

Dosage Form	Route	Strength	Elemental Calcium (mg)	Elemental Calcium (mEq)
Calcium Carbonate	PO	1g	400	20
Calcium Phosphate	PO	1g	350	17.4
Calcium Acetate	PO	1g	253	12.6
Calcium Lactate	PO	1g	130	6.49
Calcium Gluconate	IV	1g	93	4.65
Calcium Chloride	IV	1g	273	13.6
Calcium Citrate	Oral	1g	211	10.5
Calcium Lactate Gluconate	Oral	1g	129	6.4





Elemental Calcium Requirement

Age	Elemental Calcium Required
0-6 months	200mg
6-12 month	260mg
1-3 years	700mg
4-8 years	1000mg
9-18 years	1300mg
19-50 years	1000mg
51-70 years (Males)	1000mg
51-70 years (Females)	1200mg
>70 year	1200mg
14-18 years old (Pregnant/Lactating)	1300mg
19-50 years old (Pregnant/Lactating)	1000mg

Available Calcium preparations in GTTH

Brand	Generic	Strength	Elemental Calcium
Lophos Tablet	Calcium Acetate	667mg	169mg
Qalsium-D Tablet	Calcium Carbonate	1250mg	500mg
Inj. Calcium Gluconate	Calcium Gluconate	1000mg	93mg
Calcium-P Syp.	Calcium Phosphate	210mg/5mL	210mg/5mL
CAC-1000 plus	Calcium Lactate-Gluconate Calcium Carbonate	1000mg 327mg	129mg 130mg

3. Choice of Intravenous Fluids for Resuscitation in Dengue

An ideal physiological fluid resembles the extracellular and intracellular fluids compartments closely. However, the available fluids (Crystalloids, Ringer's Lactate, and Colloids) have their own limitations when used in large quantities. Therefore it is advisable to understand the limitations of these solutions to avoid their respective complications.

Crystalloids

0.9% saline ("normal" saline), plasma chloride ranges from 95 to 105 mmol/L. 0.9% Saline is a suitable option for initial fluid resuscitation, but repeated large volumes of 0.9% saline may lead to hyperchloraemic acidosis. Hyperchloraemic acidosis may aggravate or be confused with lactic acidosis from prolonged shock. Monitoring the chloride and lactate levels will help to identify this problem. When serum chloride level exceeds the normal range, it is advisable to change to other alternatives such as Ringer's Lactate.

Ringer's Lactate

Ringer's Lactate has lower sodium (131 mmol/L) and chloride (115 mmol/L) contents and an osmolality of 273 mOsm/L. It may not be suitable for the resuscitation of patients with severe hyponatremia. However, it is a suitable solution after 0.9% Saline has been given and the serum chloride level has exceeded the normal range. Ringer's Lactate should probably be avoided in liver failure and in patients taking metformin where lactate metabolism may be impaired.

Colloids

The types of colloids are gelatin-based, dextran-based, and starch-based solutions. One of the biggest concerns regarding their use is their impact on coagulation. Theoretically, dextrans bind to Von Willebrand Factor/Factor VIII complex and impair coagulation the most. However, this was not observed to have clinical significance in fluid resuscitation in dengue shock. Of all the colloids, gelatin has the least effect on coagulation but the highest risk of allergic reactions. Allergic reactions such as fever, chills, and rigors have also been observed in Dextran 70. Dextran 40 can potentially cause an osmotic renal injury in hypovolaemic patients.

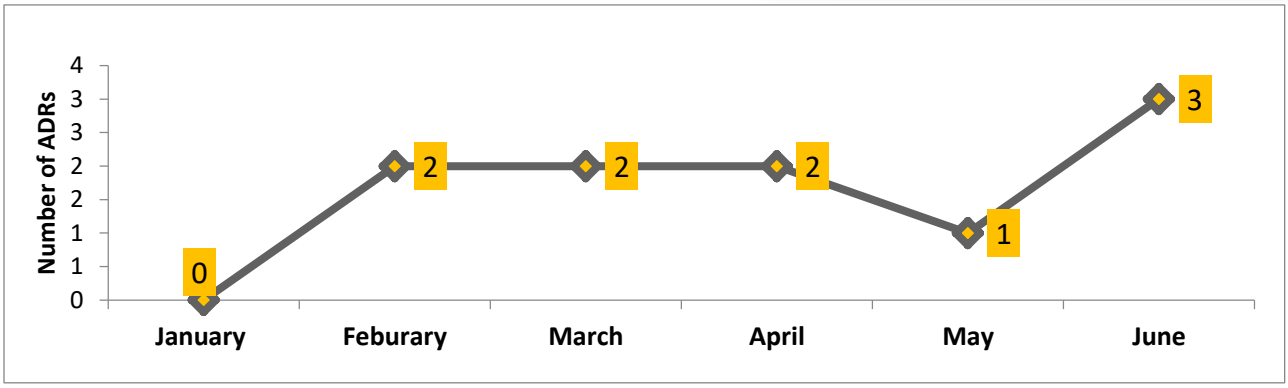
Dose of dextrans

- **10ml/kg over an hour. If the patient is in shock or has features of pulmonary oedema and has high HCT, a bolus of colloid (dextran 40 or tetrastarch) should be given as 10 ml/ kg (500 ml for an average adult) over an hour. In the midway of the bolus, frusemide 1 mg/kg should be given.**
- **The maximum amount of dextran for 24 hours is 3 boluses of 500 ml/hour (10 ml/kg/hour). The maximum of Tetrastarch is 5 boluses of 500 ml/hour (10 ml/kg/hour) in 24 hours.**

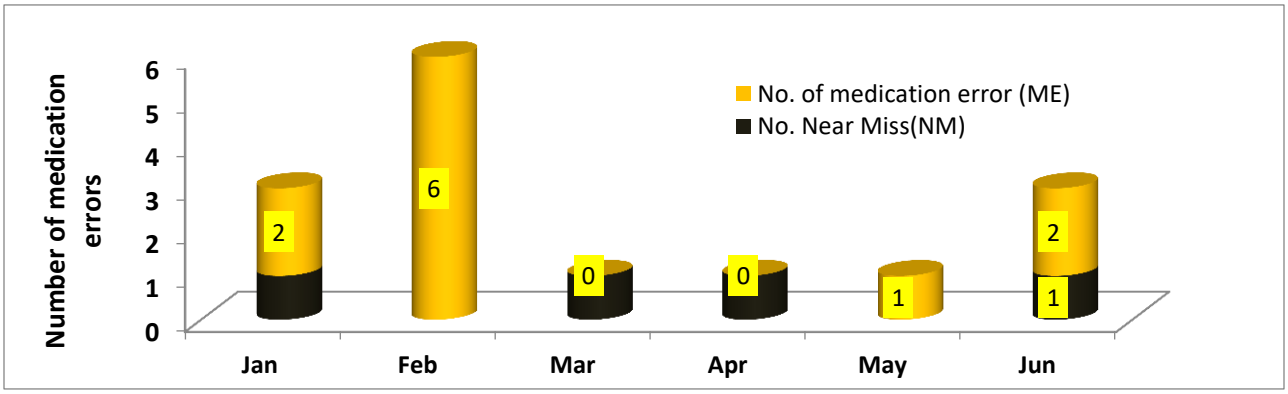
Complication

As dextran can sometimes interfere with cross matching, so it is advisable that blood should be drawn for grouping and cross matching before starting on dextran.

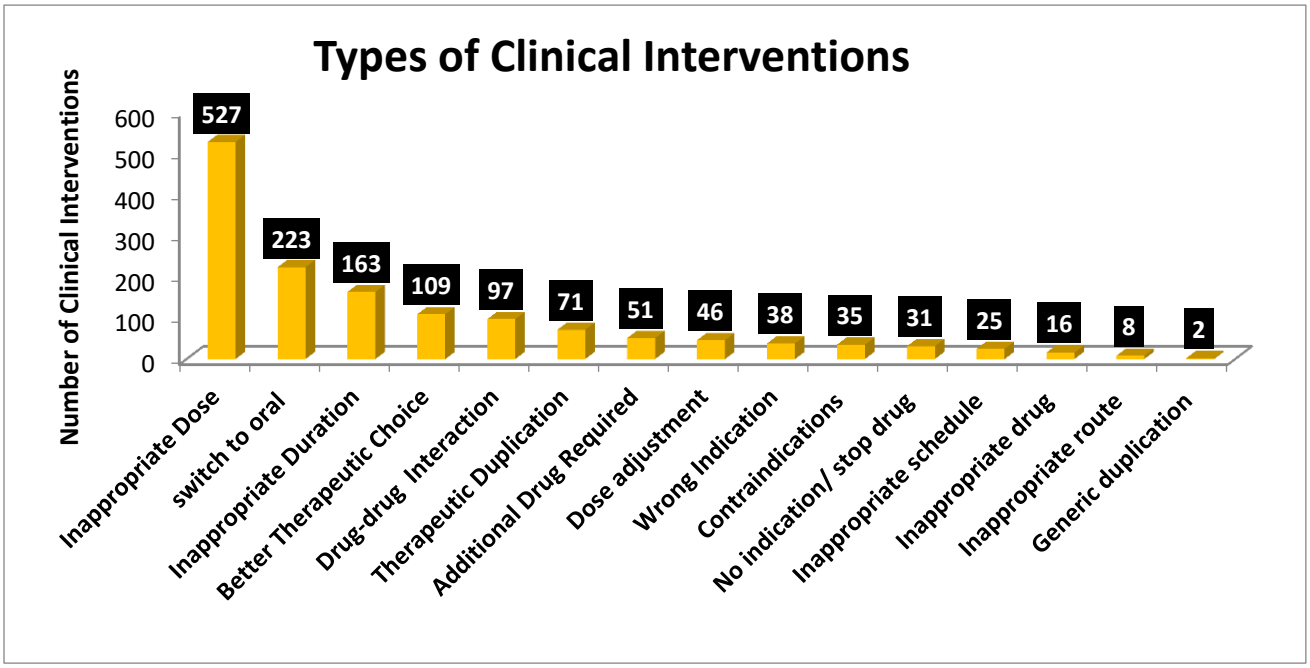
4. **Adverse Drug Reaction (ADRs) (Jan-June 2021)**



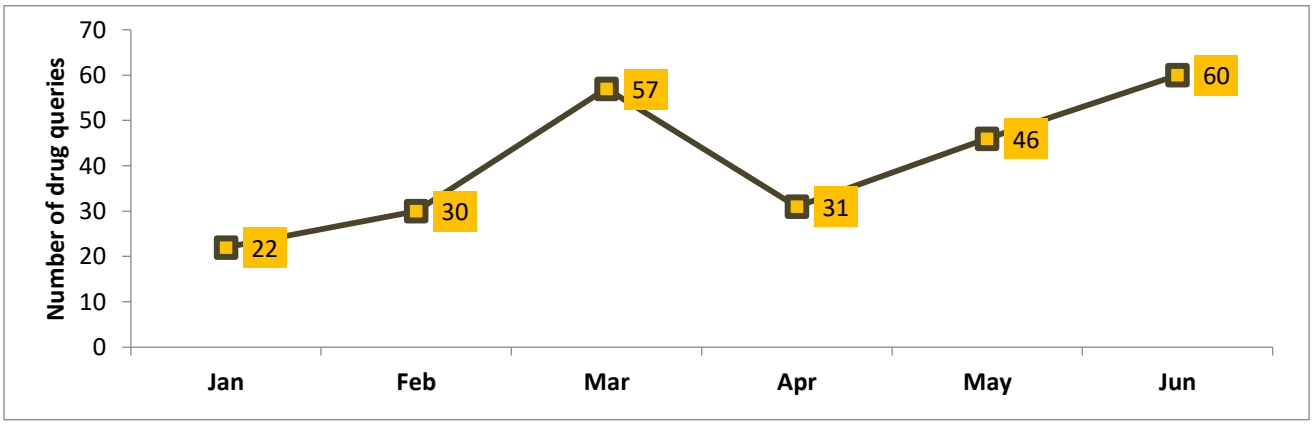
5. **Near Miss and Medication Error (Jan-June 2021)**



6. **Clinical Pharmacy Interventions (Jan-June 2021)**



8. Drug Information Queries Responded (Jan – June 2021)



WORLD PHARMACIST DAY (25th September) CELEBRATION, 2021