Medication Incidents Reporting Programme Bulletin

醫院管理局
HOSPITAL AUTHORITY

BULLETIN 25 JULY 2010

Update of "Do NOT Use" List

A "Do Not Use Abbreviations" List had been developed and released in November 2008. As one of the 2010/11 Annual Plan, the Medication Safety Committee (MSC) had updated the list with respect to prescription writing to help reducing number of medication errors related to the misinterpretation of prescription orders.

In this respect, MSC had compiled a "Do Not Use" List by adding two more items, i.e. "trailing zero" and "omission of zero before decimal point" which have been reported overseas and locally as being frequently misinterpreted and involved in harmful medication errors or near-misses. In order to facilitate the promulgation, a new poster was designed and distributed to hospitals in July 2010.

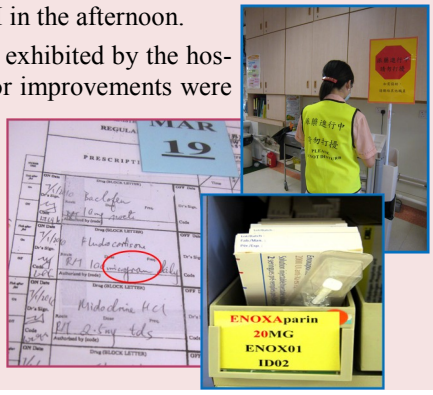
Do Not Use	Use Instead	Potential Problem
Trailing zero after decimal point (e.g., 5.0 mg)	5 mg (no zero after decimal)	10-fold overdose if decimal point is not seen
Omission of zero before decimal point (e.g., .5 mg)	0.5 mg (use zero before decimal)	10-fold overdose if decimal point is not seen
u or U (unit)	units	Misinterpreted for "0" (zero) or "4" (four)
iu or IU (International unit)	units	Misinterpreted for IV (intravenous) or "10" (ten)
q.d., qd, Q.D., QD, o.d., od, O.D., OD (daily)	daily	Misinterpreted as qid (four times daily)
q.o.d., qod, Q.O.D., QOD (every other day)	on alternate days	Misinterpreted as qd (daily) or qid (four times daily)
mcg, µg	microgram	Misinterpreted for mg (milligrams)

Medication Safety Committee

The MSC continued to carry out hospital visits to other clusters for post-implementation review of issued guidelines. The representative team conducted visits to NTEC and HKWC on 15 Jan and 24 May 2010 respectively.

On 15 Jan 2010, the team visited the Medical, Ambulatory Cancer Centre, In-patient Pharmacy and A&E Department of PWH in the morning and visited the Psychiatric, Pharmacy, Medical & Geriatric and Orthopaedics of TPH in the afternoon. On 24 May 2010, another representative team of MSC visited Chemotherapy Day Centre, Paediatric/ Neonatal Intensive Care Unit, Central Pharmacy and A&E Department of QMH in the morning and visited Male Medical & Geriatric, Male Orthopaedic and Pharmacy of FYKH in the afternoon.

During the two visits, the team observed many good practices and initiatives exhibited by the hospitals to enhance medication safety. At the same time, some opportunities for improvements were also identified and recommendations were made.



Some of the good practices observed are highlighted as follows:

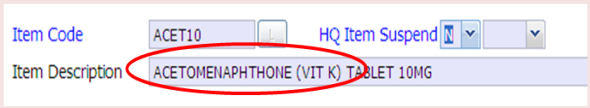
1. Compliance to "Do Not Use Abbreviations" policy
2. No interruption policy during drug administration by putting a "Do not disturb" signage on the drug trolley and wearing a special outfit
3. Using tall-man lettering labels on drug cabinets in wards and pharmacies for look-alike drug names

Educational Sharing on Vitamin K

Management of warfarin/ superwarfarin poisoning

Warfarin/ superwarfarin inhibits the synthesis of vitamin K_1-depedent clotting factors II, VII, IX and X through potent inhibition of vitamin K_1-2,3-epoxide reductase. Superwarfarin is 100 times more potent, with much longer plasma and tissue half-lives (weeks to months) than warfarin. Vitamin K_1, given orally or intravenously, is the specific antidote to Warfarin/ superwarfarin poisoning, while vitamin K_4 has no effect on this poisoning management.

A patient with suspected warfarin or superwarfarin poisoning required antidote treatment. However, the patient was prescribed and dispensed with acetomenaphthone (Vit. K_4) for about 2 weeks, possibly due to the drug confusion between phytomenadione (Vit. K_1) and acetomenaphthone (Vit. K_4). Since the existing abbreviation appeared in the computer drug database is Vit. K instead of Vit. K_4, one might easily select the wrong "Vit. K" as the antidote in the Medication Order Entry (MOE) of Clinical Management System (CMS).



Improvement measures to prevent recurrence

In order to avoid drug name confusion-induced prescribing error, the MSC decided to revise the approved abbreviation of acetomenaphthone from Vit. K to Vit. K_4. The HA-wide approved abbreviation list will be updated accordingly.

Phytomenadione (Vit. K_1) available in HA

Injections: 10mg/ml and 2mg/0.2ml; Tablet: 5mg

Acetomenaphthone (Vit. K_4) available in HA

Tablet: 10mg

Case Sharing

Wrong drug dispensed

Stelazine was mistaken as Sertraline and dispensed to the patient

A patient attended A&E department and was diagnosed with anxiety disorder. The physician prescribed him with an antidepressant, Sertraline tablet 25mg daily on a manual prescription form. Pharmacy staff misinterpreted the prescription as "Stelazine® (Trifluoperazine) tablet 25 mg daily" which led to wrong drug entry into the MOE of Pharmacy Management System (PMS) and wrong drug dispensed to the patient. The patient developed acute extrapyramidal side effects after taking one dose of the dispensed drug.

RECOMMENDATIONS

- ☑ *Always prescribe drugs via CMS MOE when available*
- ☑ *Be cautious in handling manual prescription*
- ☑ *Always counter-check the drug label and drug identity against the original prescription carefully at every stage*

Wrong drug administered

Midazolam was mistaken as normal saline and administered to the patient

While a 76-year-old patient was waiting for permanent pulse generator implantation at cardiac catheterization laboratory, a physician ordered "Midazolam 2mg and Fentanyl 25mcg IV stat" verbally. The nurse administered the two drugs according to physician's verbal order and then flushed the IV extension tubing with 5ml normal saline (NS). An extra dose of 5mg Midazolam was given to the patient after administration of Midazolam 2mg and Fentanyl 25mcg due to the diluted Midazolam (1mg/ml) was mistaken as NS.

RECOMMENDATIONS

- ☑ *Should not order dangerous drugs through verbal order*
- ☑ *Counter check the medication with another nurse before administration for high risk medications like dangerous drugs and IV medications*
- ☑ *Always label the syringe if not used immediately after preparation*

Wrong drug administered

Fentanyl was mistaken as normal saline and administered to the patient

A new born baby was admitted to NICU for imperforate anus. After transverse colostomy procedure was performed, the baby was put on Fentanyl infusion 150mcg in 24ml D5 at 1ml/hr. Fluid challenge of 30ml NS over 1 hour was prescribed and administered to the baby via a separate line as she was found with no urine output. The nurse suspected some resistances in the IV line, so 3ml purge (quick feed) of "NS" was given twice. The nurse soon discovered that the remaining volume of the Fentanyl infusion was in shortage of 7ml and suspected the fluid used was Fentanyl instead of NS. Fentanyl was then stopped.

RECOMMENDATIONS

- ☑ *Label the infusion lines clearly and as close to patient as possible*
- ☑ *Trace the infusion line from the solution, through the pump and back to the point of entry*
- ☑ *Counter-check the medication with another nurse before administration for high risk medications like dangerous drugs and IV medications*

Wrong rate of administration

Loading dose of Phenytoin was injected exceeding the maximum rate (50mg/min)

A 67-year-old patient was admitted to ICU due to septic shock. The patient developed sudden convulsion and was controlled with Diazepam. Her convulsion recurred and was controlled again with Diazepam. In view of her recurrent seizure, 1000mg loading of Phenytoin IV stat was prescribed. Nurse administered the drug via central line at a faster than the recommended maximum infusion rate. Patient developed asystole after administration of 350-400mg Phenytoin.

RECOMMENDATIONS

- ☑ *Consult senior physician when in doubt*
- ☑ *Provide clear instruction on the rate of administration*
- ☑ *Consider adding warning labels on the drug cabinet to remind staff for the maximum infusion rate of Phenytoin (50mg/min)*

Wrong dosage

Overdosed Midazolam was administered

A 80-year-old patient with a history of diabetes mellitus, hypertension and end stage renal failure requiring continuous ambulatory peritoneal dialysis (CAPD) was admitted for closed reduction of right ankle fracture. Closed reduction was reattempted and Midazolam 7.5mg and Fentanyl 50mcg were given intravenously to facilitate the procedure for reduction of her strong muscle tone and pain. The physician intended to give "half ampoule" of 5mg/5ml midazolam (i.e. 2.5mg), but "half ampoule" of 15mg/3ml was given instead (i.e. 7.5mg). Patient developed benzodiazepine overdose symptoms and was transferred to the Intensive Care Unit for higher care.

RECOMMENDATIONS

- ☑ *Prescribe dosage in mg and not in volume*
- ☑ *Keep 1 strength of Midazolam (5mg/ml) in ward to avoid practice discrepancy among wards*
- ☑ *Be cautious in prescribing and administering drugs especially opioid-benzodiazepine combination to patients who are old-aged or with poor renal function, as dosage adjustment might be required*

The Number of Incidents by Severity (Jul – Dec 2009)	
Severity Index	**Jul - Dec 2009**
0	130
1	441
2	83
3	12
4	4
5	0
6	0

Top 3 Most Common *PRESCRIBING ERROR* (Jul – Dec 2009)		
Position	In-patient	Out-patient
No. 1	Wrong Strength/ Dosage (20%)	Wrong Patient (51%)
No. 2	Wrong Drug (19%)	Wrong Strength/ Dosage (12%)
No. 3	Wrong Patient (14%)	Wrong Drug (9%)

Top 3 Most Common *DISPENSING ERROR* (Jul – Dec 2009)		
Position	In-patient	Out-patient
No. 1	Wrong Drug (39%)	Wrong Drug (24%)
No. 2	Wrong Strength/ Dosage (16%)	Wrong Strength/ Dosage (20%)
No. 3	Wrong Dosage Form (11%)	Wrong Patient (17%)

Top 3 Most Common *ADMINISTRATION ERROR* (Jul – Dec 2009)		
Position	In-patient	Out-patient
No. 1	Dose Omission (24%)	Wrong Dose (26%)
No. 2	Extra Dose (14%)	Extra Dose (21%)
No. 3	Wrong Dose (11%)	Wrong Drug (9%)

Summary of Incidents by Most Common Underlying Causes (Top 5) in Jul – Dec 2009

Underlying Causes			
In-patient	**Total 345**	**Out-patient**	**Total 145**
1. Failure to comply with policies or procedures	46%	1. Failure to comply with policies or procedures	44%
2. Failure in communication/misinterpretation of order	16%	2. Incorrect computer entry	18%
3. Distraction	14%	3. Distraction	14%
4. Similar drug name/appearance	6%	4. Failure in communication/misinterpretation of order	13%
5. Incorrect computer entry	6%	5. Similar drug name/appearance	12%