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Wrong Repackaging and Reconstituted Drug Bank: A Potential cause of Serial Medication Errors: A Case Report

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ABSTRACT

Background: Medication error is common in anaesthetic practice. Such errors could result in serial medication errors if reconstituted into a multi-dose bank. This is a report of potential serial medication errors in which suxamethonium could have been administered as vitamin K.

Objective: To highlight the potential risk of medication errors from wrong repackaging and the risk of serial medication errors from reconstitution of drugs into a multi-dose drug bank.

Method: A 3.5kg male baby delivered by Caesarean section (CS)at term, with Apgar scores 8 and 10 developed apnoea following administration of suxamethonium which was reconstituted and labelled as vitamin K by the attending midwife. Full recovery was achieved after manual ventilation using Ambu bag.

Conclusion: A combination of wrong repackaging and reconstitution of drugs into a multi-dose bank is a potential source of serial medication error. Such errors could be averted if appropriate formulations that do not require reconstitution are manufactured by pharmaceutical companies. Same safety regulations before administration of drugs should also apply during repackaging of drugs.

Key words: Wrong repackaging, Reconstituted drug bank, Serial medication errors

Background:

Lack of standardized nomenclature in describing medication related occurrences was observed by Yu et al(2005), and such ambiguities and variability of the medication safety related terms and definition constitutes a barrier to reportable events (Dean 2003). Fermer et al simply defined medication error as failure in the treatment process that leads to or has the potential to lead to harm to the patient (Fermer & Aronson 2006). It is therefore considered an error during the execution of a planned act[4]. It can occur during prescribing, transcribing, dispensing, administration of drugs, and subsequent monitoring of the effect (Norman 1981).

National coordinating council for reporting and prevention of medication error defines medication error as any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in control of health care professional, patient or consumer (National coordinating council, 2016).

In a study by Merry & Peck (1995) 89% of the respondents reported at least one error in drug administration (while a lower incidence of 56% was however reported by Nwasor et al (2014), with the incidence increasing with increase in years of practice. A larger survey by Orser et al (2001) revealed at least one drug error in 85% of the respondents.

Analysis of errors and equipment failures in anaesthesia revealed that errors in drug administration constituting 138 (23.67%) (Cooper et al 1984). Associated factors includes failure to check 223 (43.98%), haste due to situation 131 (25.83%), lack of sleep/fatigue 55 (10.84%), visual restriction 83 (16.37%), inattention or carelessness 166 (32.74%), and failure to follow personal routine 55 (10.84%). These factors may have played significant role in the failure to accurately identify the suxamathonium even with the wrong repackaging.

Drug administration errors occur during prescription (39%), transcription (12%), dispensing (11%), and administration (38%) (Bates et al 1995). In this report, a case of sudden apnea in a neonate with Apgar score 8

and 10 at 1 and 5 minutes post delivery following the administration of suxamethonium mistakenly assumed to be vitamin K.

Case Report:

A male baby weighing 3.5kg was delivered by elective Caesarean section at term, with Apgar score 8, 10. The baby developed apnoea after administration of injection from a multi-dose pool labelled as vitamin K, and was successfully resuscitated by assisted manual Bag valve ventilation with Ambu bag.

Inspection of the content of the vitamin K packet revealed a mixture of vitamin k and suxamethonium injections, and an empty ampoule of suxamethonium was seen in the sealed container where used ampoules were stored. This explained the cause of apnoea in the baby with previously satisfactory Apgar score. The reconstituted multi-dose injection was discarded, and a fresh one prepared and labelled correctly. Correct repackaging of suxamethonium and vitamine K was also done.

Discussion

The issue of medical errors in clinical practice has been reported (Dean 2003, Yu et al 2005, Fermer & Aronson 2006). Drug related medical errors can occur at various stages of clinical service. It can occur during prescribing, transcribing, dispensing, administration of drugs, and subsequent monitoring of the effect (Norman 1981). A survey by Nwasor et al (2014) revealed that 79% of drug errors were as a result of ampoule swaps due to similarities in drug labels. Syringe swap was reported to be commoner (70.4%) by Orser et al (2001), and mis-identification of labels constituted 46.8%. Eighty four percent of the respondents expected a reduction in error with improved labelling standards (Orser et al 2001). There was however no similarities in ampoule design and label between suxamethonium and vitamin K in this report. It therefore suggests that the error may have occurred because attention was focused on the label on the packet instead of the ampoule label. Inattention or ignorance of the fact that suxamethonium is not another name for vitamin K may also have been contributory to the swap. It has been recommended that drug labels should be read carefully, and double-checked before it is administered (James et al 2004). Education has been shown to be crucial in the prevention of medication errors (Flyn et al 2010), and should be extended to other health personnel involved in drug administration.

Correct repackaging and non-collection of drugs in excess of what is required for a particular case should be encouraged. The need for repackaging arises if the medications are collected in excess of what is required, and safety guidelines advocated during drug administration may not be observed. The drugs repackaging are sometimes even left for other health workers with little or no requisite experience on the process which further increases the risk of error in repackaging of unused drugs.

The tendency to identify drugs with the label on the drug packet, and not the content is even more likely when there is similarity in ampoule design, poor legibility of the labels and in emergency situations. Any drug so wrongly identified and reconstituted into a multi-dose drug bank as often practiced in paediatrics, predisposes to serial medication errors and this was averted in the report as a result of timely audit of the cause of apnoea in a baby with previously normal Apgar score. Drugs that do not require reconstitution into multi-dose bank should therefore be made available for paediatric use. A closer supervision of other health personnel involved in drug administration may significantly reduce the risk of such errors. The need for regular reports of drug related incidences cannot be over-emphasized.

Conclusion: Dilution of drugs into a multi-dose bank has the potential of causing serial medication errors. It is therefore important to produce paediatric formulations that do not require further dilution into multi-dose bank. Safety standards observed before drug administration should also be applied during repackaging.

DECLARATIONS:

The authors categorically state that this manuscript, including related information and figures has not been previously published and the manuscript is not under consideration elsewhere.
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Figure 1: The mixture of vitamin K and suxamethonium in vitamin K packet.