In a memorandum issued in February 94, the Hospital Authority has announced the setting up and the implementation of a Medication Incidents Reporting Programme (MIRP) in the HA. This memo has outlined the background and the development process leading to the setting up of the programme. It also described the necessary actions to be taken when medication incidents have occurred in the hospitals and the procedures to be followed in reporting the medication incidents by the hospitals. All hospitals are required to submit quarterly statistical returns to the Chief Pharmacist’s Office (CPO) so that data for the entire HA can be analysed and consolidated. Thus the MIRP comprises a local Reporting Programme at each HA Institution and an overall monitoring and supporting function at the HAHO.

**Mechanism of MIRP**

Medication incidents in the hospitals are reported locally in each hospital using standardised forms. Any staff coming to the knowledge of a medication incident could report, particularly, managers responsible for operational units, i.e. COS, DOM, WM, DM are encouraged to report. Thus, nursing personnel, pharmacy staff and doctors can initiate the report. The identity of the staff involved in the incident and the patients are NOT REQUIRED to be reported. Completed reports are directed in hospital Drug Committee or equivalent mechanism who will appoint a panel consisting of at least one doctor, one pharmacist and one nurse to review all reported cases in conjunction with the respective managers on a periodic basis.

The Hospital Drug Committee will identify the underlying causes of each incident and recommend appropriate preventive or remedial measures to the HCE. Hospital Drug Committee will also report the statistical data to CPO using a standardised return form.

**Data Analysis**

In July 1994, The first batch of the statistical returns was received. These are carefully analysed and are summarised and presented in the following

**Medication Incidents Information**

Statistically, the medication incidents reporting rate for any given period should be reported. This can be calculated from the number of medication incidents reported divided by the total number of doses administered for that period. However, owing to the absence of the latter data, only the total number of medication incidents reported can be presented.

**A) Number of Cases Reported :**

There were 31 returns from 39 hospitals with a total of 1086 cases of incidents reported, majority of which were non-patient related and none has resulted in patient damage. Some reports further divide the numbers into In-patient cases and Out-patient cases. The proportion is shown in fig. 1.

![Figure 1. Proportion of Reported Cases](image-url)

The proportion of out-patient incidents was about three times as many as the in-patients’. This could be due to the fact that it is more straight forward to detect incidents on out-patients’ prescriptions.
B) Type of Staff Involved :

Medical, nursing and pharmacy staff are involved in more than 99% of medication incidents. Medical staff have the highest number accounting for 72.3% of all medication incidents reported, whilst nurses and pharmacy personnel account almost equally for the rest of the incidents. At this initial stage of MIRP, this distribution should come as no surprise as doctors are the ones who initiate the drug therapy process and the documentation of drug orders are the early points at which medication incidents can arise. One common problem for the doctors may be the unfamiliarity with the medication ordering systems, the drug formulary system and the approved abbreviations used in the hospital. Many incidents involving doctors are those orders which require further clarification by the other personnel e.g. nurses or pharmacy staff. (See paragraphs under D)

![Type of Staff Involved](image)

Figure 2. Type of Staff Involved in Medication Incidents

C) Type of Incidents :

The most common type of incident reported was grouped under ‘Others’ by the hospitals. There is insufficient information to analyse what these errors are. Hospitals in reporting the incidents are requested to supplement this information in their returns to facilitate further data analysis.

Wrong dose and wrong drug are the most common types of errors reported. According to Appendix 3 of the Working Party’s Report On Drug Administration Procedures and Practices In Public Hospitals, wrong dose is defined as any dose varying from that prescribed by more than 10%, while wrong drug is defined as a drug administered / dispensed in place of one specifically prescribed by the doctor.

Drug omission accounts for 13% of the errors whilst wrong time and wrong patient each account for about 6%, leaving ‘extra dose’ and wrong route accounting for the rest of the errors.

D) Underlying Causes :

From fig. 4, again, as in type of error, most hospitals have not identified the underlying causes of the incident. It is important to know the underlying cause in order to prevent the same incident from happening again. Hence, hospitals are encouraged to provide further details in this column in the future. Unclear prescription stands out as the single most common underlying cause. This finding is similar to the pattern observed in overseas settings. This is due to the mechanism of drug distribution system in place in the hospitals where medication orders are screened and ambiguous drug orders are detected and clarified. It has been established that clear prescribing practice guidelines and its adherence by the medical staff can help to reduce incidents of this nature.

E) Patient Outcome :

Non-patient related incidents refer to incidents discovered before medication administration and as indicated in fig. 5. Almost two thirds (635 nos.) of the cases were detected and
intervened before medication actually reaches the patients. For the other one third, the effects were analysed as follows :-

**F) Severity Index of Incidents :**

A severity indexing system is used to rate the incident so as to identify the most important ones.

![Severity Index of Incidents](image)

Figure 6. Severity Index Distribution on Medication Incidents

Most of the incidents belonged to index ‘1’ and are incidents which had occurred without causing injury to patient. 29 incidents have occurred with severity index of ‘2’ or above. In this case, no ultimate patient injuries have resulted. Severity index is defined as follows :-

- **6** = an incident occurred that resulted in patient death.
- **5** = patient received medication incorrectly and sustained permanent injury.
- **4** = patient injured by the error and required either antidote to reverse the process or transferred to a higher level of care.
- **3** = patient required increasing monitoring with a change in vital sign as a result of the incident but no ultimate injury.
- **2** = patient required increasing monitoring as a result of the incident but no change in vital sign and no patient injury.
- **1** = incident occurred that did not result in patient injury.
- **0** = incident stopped before reaching the patient.

Incidents with severity index of 4, 5, or 6 should be examined by the Hospital Drug Committee so that measures are taken to ensure the same incident will never be repeated.

**Discussion :**

**Case Study One : Vinblastine / Vincristine**

1. **BACKGROUND**

   1.1 Vinblastine is used for the treatment of lymphomas, lymphosarcoma, choriocarcinoma and carcinoma unresponsive to other therapy, and embryonal carcinoma of the testis.

   Normal dose = 100ug to 500ug per kg weekly
   Packing = 10mg in 10 ml vial

   1.2 Vincristine is used for the treatment of acute leukemia, Hodgkin's disease, non-Hodgkin lymphomas, rhabdomyosarcoma & other sarcoma, neuroblastoma, Wilms' tumour, breast & small cell lung cancer.

   Normal dose = 25ug to 75ug per kg weekly
   Packing = 2mg in 2ml vial

2. **DESCRIPTION OF INCIDENT**

   2.1 Vinblastine 8mg, amongst other drugs, were written on a chemotherapy protocol chart.

   2.2 This protocol was transcribed to the chemotherapy prescription sheet.

   2.3 In the process of transcription, Vincristine 8mg was written onto the prescription sheet. The medication was prepared as Vincristine 8mg and administered to the patient.

3. **CAUSES FOR THE INCIDENT**

   3.1 Transcription Error

   The incident was due to error in transcription of medication orders.

   3.2 System Failure

   Both Vinblastine and Vinbl astine were available as stock preparations. The overdose on Vincristine was not picked up by the nurse who transcribed the order and was not picked up by the doctor who signed the prescription sheet. The pharmacist could not check the prescription because the drug was taken from ward stock. The error was not picked up by the nurse who had to draw up the content from 4 vials of Vincristine Injection.

4. **RECOMMENDATIONS**

   4.1 There should be no transcription of medication order. The original prescription sheet should be referred to in dispensing, in drug preparation and drug administration.

   4.2 Professional staff including doctors, nurses and pharmacy staff should be fully aware of the normal dosage range of drugs. Any deviation from normal dosage range should be checked and confirmed.

   4.3 The quantity of potent drugs available as ward stocks should be carefully controlled.

   4.4 Ward stock should be minimised.

   4.5 When the preparation of a single drug, especially of injections, calls for a multiple of ampoules/vials, always check and confirm if this is the correct drug at the correct dose.
Nurses should be thoroughly familiar with the top doses of toxic drugs and the details of treatment protocols. Always check and confirm. No assumptions can be made at any time.

Case Study Two: Clozapine Tablet

1. BACKGROUND

1.1 Clozapine is used for the treatment of Schizophrenia non-responsive to or intolerant of classical neuroleptics.

1.2 The major side effects of clozapine include granulocytopenia and leucocytosis, both of which can be fatal and require careful monitoring.

1.3 Clozapine is available as 25mg and 100mg tablet. Both are round in shape, yellow in colour and in strip pack of ten tablets.

2. DESCRIPTION OF INCIDENT

2.1 A prescription was written for Clozapine 50mg nocte.

2.2 The prescription was entered to the computer as two 25mg Clozapine tablets at bedtime.

2.3 25mg Clozapine tablets should be dispensed. However, the same quantity of 100mg clozapine tablets was picked up by mistake. It passed the double check system of the pharmacy and was dispensed to the patient.

2.4 The patient noticed the difference in the appearance of the tablets and brought them back to the doctor without taking them.

3. CAUSES FOR THE INCIDENT

3.1 Similar appearance and package

Both the 25mg and 100mg tablets were light yellow in colour, round in shape and in similar strip package. The similarity in appearance of the two dosage forms and packaging has led to the mistake in dispensing.

3.2 Unfamiliarity with the new drug

The drug was new to the staff who might not be aware that more than one dosage form is available.

4. RECOMMENDATIONS

4.1 Drug manufacturers have responsibility in ensuring that their drug products are adequately labelled and distinctively packaged. Those products that are potentially problematic or are known to cause mix-up and confusion should be referred to the Chief Pharmacist who will notify the manufacturers for appropriate changes to be made.

4.2 All concerned staff in the pharmacy should be well informed upon the introduction of new drugs, particularly those with similar packaging and serious side effects.

4.3 Drug products that look alike, should be stored in separated positions. Always observe and practise the R.L3 rule: ‘Read Label 3 times.’

Summary

This is the first time that data of this nature has been collected, compiled and disseminated for the entire HA. This is the result of trust and support from all the hospitals and staff who have shown a positive attitude towards the programme. In the process of data analysis and the preparation of this bulletin, the sensitivity of the issue addressed is already borne in mind. Whilst the data and information may attract interests and curiosity from outside the Hospital Authority, the information can be used in a positive manner to target areas where improvement in quality is necessary. By classifying the types of incidents and the use of a severity index in medication incident reporting, it allows us to focus on those reported incidents that have had the greatest impact on patient outcome. Actions can then be taken to minimise their future occurrence.

The MIRP will be an on-going quality assurance programme in HA involving all the hospitals. It is aimed to issue the bulletin periodically in the future. In each issue, emphasis will be made to cover a particular area of the MIRP with the ultimate objective of improving patient safety. All comments and suggestions are most welcome and should be directed to the attention of the Chief Pharmacist at Block A, 12/F., PYNEH.