For Information
on 9 January 2012

Legislative Council Panel on Health Services

Handling of medical incidents in public hospitals

PURPOSE

This paper briefs Members on the handling of medical incidents in public hospitals and the relevant clinical governance structure in the Hospital Authority (HA).

HANDLING OF MEDICAL INCIDENTS IN PUBLIC HOSPITALS

2. HA has all along attached great importance to the quality of its services and patient safety. It has put in place an established system and guidelines for reporting and handling of medical incidents. An electronic system, namely the Advanced Incidents Reporting System (AIRS), has been introduced since 2004 to enable frontline staff to report incidents directly from their workplace computer stations, thereby facilitating prompt action to support the staff and patients involved.

3. In October 2007, with reference to international practice, HA implemented the Sentinel Event Policy to make mandatory the reporting of nine categories of incidents, with standardized definition of sentinel events and process for their reporting, investigation and management in the public hospitals. HA further improved the reporting mechanism in January 2010 by mandating the reporting of two more categories of serious untoward events, namely, medication error and misidentification that could have led to death or permanent harm. The full list of medical events for reporting under the Sentinel and Serious Untoward Event Policy (the Policy) is at Annex A.

4. Under the Policy, public hospitals are required to report all sentinel and serious untoward events to the HA Head Office via the AIRS within 24 hours and handle them in accordance with established

procedures. Through the arrangement, we aim to minimize harm and provide necessary support to patients, family and staff involved, and encourage open disclosure of the incidents.

5. Each sentinel events and serious untoward events will be investigated by an expert panel appointed by HA, with a view to identifying the likely causes of the incidents and improvement measures. The hospital involved will submit a report on the incident to the HA Head Office within eight weeks' time. Improvement measures will be implemented at the hospital level to avoid recurrence of similar incidents, while the HA Head Office will coordinate the implementation of improvements on systems and work procedures at corporate level as appropriate.

Statistics of Sentinel and Serious Untoward Events in HA

6. The HA Head Office compiles yearly report on sentinel event for submission to the HA Board and for release to the public. Internally, through staff training and the three-monthly "Risk Alert" newsletter, HA shares among the healthcare professionals the experience of handling medical incidents. A copy of the latest edition of Risk Alert is at **Annex B**.

7. During the 12-month period from 1 October 2010 to 30 September 2011, a total of 44 sentinel events and 97 serious untoward events were reported. Detailed statistics are at **Annex C**.

CLINICAL GOVERNANCE STRUCTURE IN HA

8. Since its establishment, HA has established a clinical governance structure for safeguarding the standard of care and sustaining improvement of service quality and professional accountability.

9. For medical services, HA adopted the Clinical Management Team and Chief of Service (COS) framework to emphasize specialist-led services and peer review of clinical competency. The specialists in clinical departments are responsible for providing training, guidance and direct supervision to junior doctors for maintaining professional standards. The COS of each clinical department is accountable for upholding

clinical service quality in the department and reports to the top management of the hospital. Similar professional supervision and training frameworks are in place for nursing and allied health professionals.

10. HA has also set up Quality and Safety (Q&S) team in clusters and hospitals to promote patient safety culture among clinical staff and implement programmes to reduce risk and enhance service quality. When a medical incident is reported, the Q&S team of the relevant cluster will take necessary action to assess the risk, support investigation of the incidents and coordinate communication with internal and external stakeholders.

11. Other measures and programmes have also been implemented over the years to ensure service standards and continue to improve service quality. These measures/programmes include clinical audits, monitoring and improvement programme of surgical outcome, hospital accreditation pilot scheme, review mechanism for introduction of new medical technology and drugs, and the internal mechanism governing research ethics. HA has also put in place a two-tier complaint management system to follow-up on patients' feedback and identify areas for further improvement. The clinical governance framework, together with different measures mentioned above, provide timely information on performance of different hospitals that is useful in benchmarking and improving HA's services.

Review of Clinical Governance in HA

12. Good clinical governance is fundamental to the delivery of quality healthcare services. HA has planned to conduct a review of its clinical governance system with reference to the international best practice and to identify opportunities to further strengthening clinical governance of public hospitals. The review will commence in early 2012.

RESOURCES AND MANPOWER TO SUPPORT DELIVERY OF QUALITY SERVICE

13. Apart from putting in place an effective clinical governance structure, HA would also ensure that adequate resources and manpower are available to support the provision of quality services. HA takes into

account a number of factors when allocating resources to its clusters, which include the population growth and demographic changes across different regions, the impact of cross-cluster flows with patients seeking medical services at hospitals/clinics outside of their residential districts, as well as resources required for implementing new service programmes, addressing service pressure of the local community, training of staff and procurement of equipment and drugs etc. Reference will also be made to the mix of cases with varying degree of co-morbidity and complexity at different hospitals when allocating resources within HA.

14. As for manpower, HA has been monitoring closely the strength of healthcare professionals of all disciplines and specialties to ensure adequate manpower are available to meet service demand. The manpower of medical, nursing and allied health professionals in HA has increased by 8.1%, 4.6% and 13.1% respectively from 2006-07 to 2010-11. The number of care-related support staff also increased by about 26% in the same period. The overall manpower of all clusters has been enhanced in the past few years.

15. HA currently faces a tight manpower situation given the increasing demand and number of patients arising from the ageing and growing population. The rapid development of the private healthcare sector has also attracted healthcare professionals away from the public sector. HA has allocated additional resources to implement a series of measures to recruit and retain healthcare manpower, which include enhancement and improvement of remuneration package, working environment, promotion prospects and training etc., To increase doctor manpower, HA is actively recruiting local full-time and part-time doctors and pursuing recruitment of non-local doctors through limited registration. For nursing manpower, with increased training places of the HA nursing schools and graduates of local universities, HA is able to recruit more nurses this year and in the coming years.

ADVICE SOUGHT

16. Members are invited to note the content of the paper.

Food and Health Bureau
Hospital Authority
January 2012

Annex A

Types of Events Required To Be Reported Under HA's Sentinel and Serious Untoward Events Policy

Sentinel events

1. Surgery / interventional procedure involving the wrong patient or body part
2. Retained instruments or other material after surgery / interventional procedure
3. ABO incompatibility blood transfusion
4. Medication error resulting in major permanent loss of function or death
5. Intravascular gas embolism resulting in death or neurological damage
6. Death of an in-patient from suicide (including home leave)
7. Maternal death or serious morbidity associated with labour or delivery
8. Infant discharged to wrong family or infant abduction
9. Other adverse events resulting in permanent loss of function or death (excluding complications)

Serious untoward events

1. Medication error which could have led to death or permanent harm
2. Patient misidentification which could have led to death or permanent harm

Annex B

RISK ALERT

ISSUE 23 OCT 2011

A Risk Management Newsletter for Hospital Authority Healthcare Professionals

IN THIS ISSUE

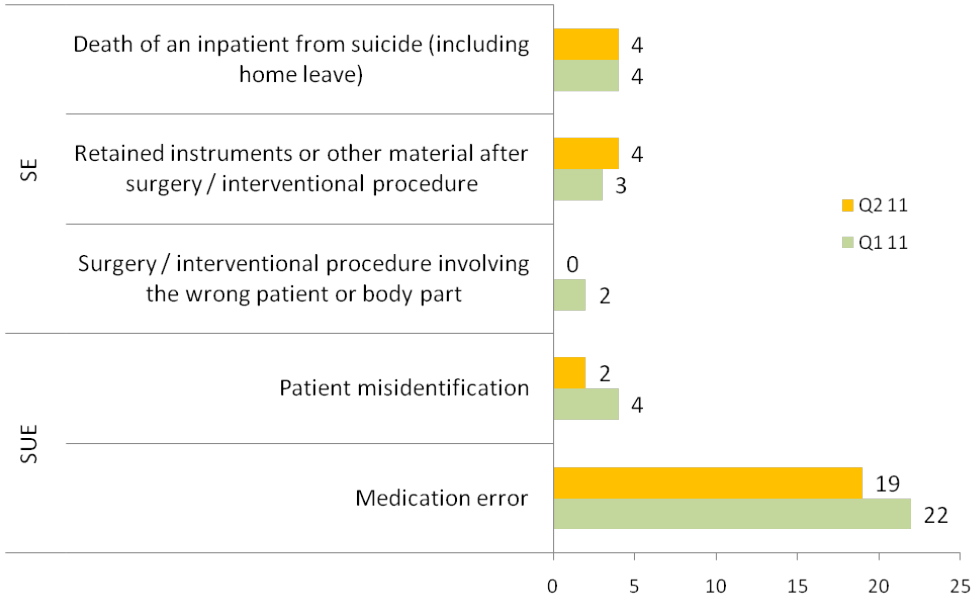
A Physician's Perspective on Medication Safety

Medication prescription is an integral process in the practice of internal medicine. To be effective and safe, medications need to be prescribed and administered correctly in the right dosage. As most of the patients have multiple chronic medical conditions requiring long-term treatment, polypharmacy is a common issue. A large proportion of the patients are elderly and dependent and may not be familiar with the individual drugs that they are taking. With the large number of medication prescription and administration transactions in the busy ward and clinic environment, medical and nursing staff need to be vigilant about the potential for medication errors.

It is important to reinforce the safety check measures when medical and nursing staff are prescribing and administering medications. However, it would be necessary to recognize that these measures impose additional workload and it is understandable if the clinical staff experience performance fatigue with repetitive action on a prolonged duration under time constraint. While they should be reminded of the risk of medication incidents, the control measures should focus on high-risk drugs with serious consequence. More automatic system safeguards making use of information technology should be introduced to reduce reliance on manual performance by the staff. Implementation of medication unit dosing for in-patients would reduce the burden on the nursing staff in drug administration. Clinical pharmacy service would provide invaluable support to the busy ward staff in preventing medication incidents. Medication administration practices should be aligned within hospitals and clusters. Frequent change of generic brands should be avoided to reduce confusion to the frontline medical and nursing staff. Clinicians should also periodically review the medication profile of their patients and discontinue those which were either actually not taken by the patients or no longer clinically necessary.

Dr. Patrick LI, Chairman, COC, Internal Medicine

DISTRIBUTION OF SENTINEL (SEs) & SERIOUS UNTOWARD EVENTS (SUEs) (Q2 2011)



SENTINEL EVENTS Q2 2011

RETAINED GAUZE / CONSUMABLES / DRESSING MATERIAL

Case 1: Raytec gauze

- Emergency caesarean hysterectomy was performed on a patient with massive post-partum haemorrhage.
- Two scrub nurses assisted the operation while two circulating nurses counted off and weighed the bags of blood-soaked gauzes to estimate blood loss.
- The scrub nurse and a circulating nurse did the final surgical counting before wound closure (including counting the number of ***tied-up gauzes already put away in the bags***). No discrepancy was detected.
- The mother and baby were discharged after 5 days.
- The mother was admitted via A&E for left loin pain 9 months later.
- Plain abdominal x-ray and CT scan showed a 2.4 x 5.6 x 6.5cm shadow, with hyper dense line suggestive of a retained gauze in the right iliac fossa of the patient.
- A long raytec gauze was removed in a subsequent elective laparoscopic operation.
- The patient's recovery was uneventful after the operation.

Key Contributing Factors:

1. Failure to conduct final count of ***individual number*** of raytec gauzes at the end of the operation.
2. Unclear role delineation among the nurses in surgical counting.

Recommendations:

1. To enhance the departmental guideline on surgical counting.
2. To explore the use of "surgical counting system" to ensure proper surgical counting procedure and practice.
3. To consider adopting complementary checking measures in high risk operations.
4. To enhance communication and "speak up" culture among member of the surgical team.

Case 2: Dressing strip

- A patient had persistent sinus discharge on the right foot.
- He was followed up at Orthopaedics & Traumatology (O&T) clinic and was also receiving wound care and regular dressing by community nurse. A podiatrist prescribed silver impregnated special dressing strip (three layered gauze) for packing of patient's chronic sinuses by community nurse.
- Four dressing strips were packed into the wound. Subsequently, two dressing strips were removed during consultation in the O&T SOPD.
- The podiatrist switched the prescription of packing material to Betadine gauze. The community nurse continued with the patient's wound dressing and packing.
- One month later, one dressing strip was discovered from a new wound on the lateral aspect of the patient's right foot.
- Exploration of the plantar sinuses was recommended by the attending doctor but was declined by the patient.

Key Contributing Factors:

1. Documentation of the number of gauzes packed or removed from the wound had not been included in the operational procedure.
2. Dressing strips with multiple layers were used.

Recommendations:

1. To enhance communication between the podiatrist and community nurse, e.g. by using a standard template to document the number of gauze used and removed.
2. To use single layer dressing strips for packing deep wound instead of multi-layer dressing.

Case 3: Endocap

- An emergency oesophagogastroduodenoscopy (OGD) was performed on a patient with acute oesophageal varices bleeding.
- Endoscopic variceal ligation was performed by using a "Six Shooter" ligator.
- Bleeding stopped and an elective follow-up OGD was done 2 days later.
- A retained endocap was found in the oesophagus and was removed.
- The patient suffered no adverse outcome from the retained endocap.

Key Contributing Factors:

1. The endocap could not be perfectly fitted onto the endoscope because of size discrepancy.
2. The endoscope was not thoroughly checked after the procedure.
3. Inadequate knowledge and experience of doctors on the equipment and the setting of Endoscopy Unit (EDU).

Recommendations:

1. To review / develop guideline and reminders for setting up and aftercare of endoscopes, with inclusion of equipment integrity check in the procedure sign out checklist.
2. To conduct EDU orientation course for surgeons and interns utilizing its service.
3. To stock different sizes of endocaps to reduce chance of size discrepancy.

Case 4: Cut suction catheter

- A patient who was diagnosed with metastatic squamous cell carcinoma of hypopharynx had airway obstruction and tracheostomy done.
- Repeated blockage of tracheostomy tube requiring tube change for four times.
- On the last tube exchange, a suction catheter, after being cut short, was used as an insertion guide.
- Subsequent CT scan of thorax and neck revealed a retained cut tubing in the patient's left lower lobe bronchus.
- Bronchoscopy was performed to remove the retained fragment.

Key Contributing Factors:

1. No standard guideline on best practices for tracheostomy tube exchange, particularly relating to the use of insertion guide (including length, material & procedure).
2. No equipment count/check after procedure.

Recommendations:

1. To implement proper practice when using cut suction catheter as insertion guide for tube exchange by adopting 15 cm above tracheostomy stoma as a minimum length of the cut suction catheter.
2. To enforce proper communication and documentation on all objects used and their count during and after procedures.
3. To provide training and organize sharing session on tracheostomy tube exchange procedure.

PATIENT SUICIDE

Four inpatients / home leave patients committed suicide in the 2nd quarter of 2011, including 1 psychiatric in-patient, 2 psychiatric patients while on home / day leave and 1 patient with chronic illness who committed suicide outside hospital.

Recommendations:

1. Beware of the risk in providing patient with items, e.g. power cable, which can be used for hanging..
2. Design washroom to ensure that the partitions are extended up to the ceiling to minimize risk of being used as supporting point for hanging.
3. Alert to significant change in patient's pain score.

Conclusions from the RCAs:

1. Difficulty in identifying all at risk psychiatric patients with the existing suicide assessment tool.
2. Suboptimal awareness of severe psychiatric symptoms (such as hallucination) by medical & nursing staff.

SERIOUS UNTOWARD EVENTS Q2 2011

Of the 21 cases reported in the second quarter of 2011, 19 were related to medication errors and 2 were related to patient misidentification.

MEDICATION INCIDENTS INVOLVING KNOWN DRUG ALLERGY

Case Highlight: **Severe Allergy Reaction** *to Non-Steroidal Anti-Inflammatory Drug (NSAID)*

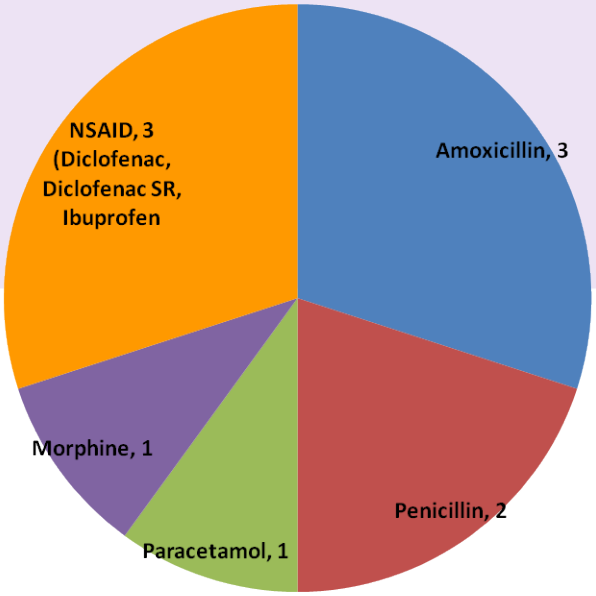
Case 1:

- A patient attended GOPC for shoulder pain and was prescribed Diclofenac SR.
- Despite "Drug Allergy on NSAID" was printed on the prescription, the drug was dispensed to the patient by the pharmacy.
- Allergy warning was not activated at CMS or the pharmacy system as the allergy information was typed in "free text" mode.
- Patient developed severe acute asthma attack and was admitted to ICU.
- Patient recovered after treatment.

Case 2:

- A patient attended A&E for back pain.
- The allergy history was not detected at Triage Station.
- A doctor assessed the patient , noted history of drug allergy on CMS and wrote "Penicillin & Ibuprofen" allergy at the corner of AED record sheet.
- The same doctor later prescribed Ketorolac 30mg to the patient for severe back pain.
- A nurse, not aware that Ketorolac was a NSAID, administered the medication.
- The patient developed acute respiratory distress with loss of consciousness and was transferred to ICU for mechanical ventilation.
- Patient recovered after treatment.

Known Drug Allergy (10)



Common Contributing Factors:

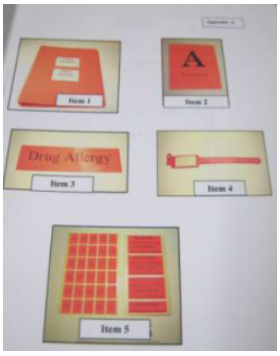
1. Lapse of concentration.
2. Inadequate knowledge of different drugs of the same class.
3. Failure to comply with the guideline on drug administration (conduct allergy check).
4. Did not clarify doubtful or illegible information.
5. Inadequate communication among clinical team members.
6. Bypassed (Pharmacy) vetting system.

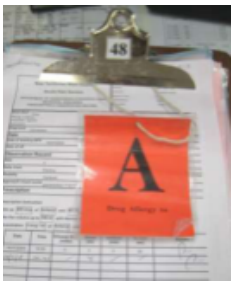
Useful steps to prevent prescribing & administering drugs with "Known Drug Allergy"

1. Enhance the "known drug allergy" alert and warning display for in-patients.
2. Introduce procedures to prevent inadvertent administration of antibiotics of Penicillin group to patients with "known drug allergy" to Penicillin.

Other useful measures

1. Use Red Drug Allergy patient wrist band, MAR record folder.
2. Post warning of drug allergy on the wall, and charts.
3. Use common drug class reference card.
4. Minimize ward stock of Penicillin group antibiotics.
5. Require 2 staff (preferably 1 doctor + 1 nurse) to complete the checklist before obtaining the first dose of Penicillin group antibiotics from ward stock.





MEDICATION INCIDENTS INVOLVING ANTICOAGULANTS

Case 1: Prescribed wrong Warfarin dosage

- A doctor intended to increase Warfarin dosage to 2mg daily but wrongly typed in "5" via the Medication Order Entry (MOE). Warfarin 5mg daily was dispensed to patient.
- Patient took the wrong dose for around 1 month and was subsequently admitted to hospital for Warfarin overdose.
- Patient was discharged home after treatment.

Case 2: Omitted prescription of Warfarin on discharge

- A doctor prepared a discharge prescription in advance leaving out Warfarin because the dose was still being adjusted. The provisional prescription was saved in the computerized system.
- The patient was discharged 2 weeks later. The same doctor forgot to update and check the prescription .

Recommendations for cases 1 & 2:

1. To check the prescription printout against the MAR before signing.
2. To engage patients/ carers in the disease management process and treatment plan, so that they are aware of medication change.

Case 3: Inadvertent infusion of Heparin

- A doctor entered an order "recheck INR level" and "start Heparin if INR level dropped to <1.5" as an " indicated condition" into CMS.
- An intern transcribed the order but omitted the part "start Heparin if INR < 1.5". Only loading dose of Heparin and the maintenance dose was transcribed into the patient's MAR.
- A nurse administered the Heparin according to the MAR order without checking the CMS instruction and INR level. The patient's INR was actually > 1.5 and did not need the Heparin infusion.
- Patient suffered no adverse outcome from this incident.

Recommendations for case 3:

Clear communication among staff is essential to avoid error especially in cases like "if… then…" orders.

Case 4: Heparin infused at the wrong rate

- A doctor prescribed Heparin infusion at a rate of 750 units/hr (the dilution method would need the setting of the infusion rate at 7.5ml/hr at Syringe Pump).
- Nurse A prepared the Heparin syringe and counter-checked with Nurse B. Both nurses did not counter check with the infusion rate against the standardized "Drug Dilution Table".
- While setting up the infusion pump, both nurses did not check against the patient's MAR and wrongly set the infusion rate at 75ml/hr (10 times higher than the prescribed dose).
- Patient's vital signs were stable and the patient did not complain of any discomfort.

Recommendations for case 4:

1. To reinforce the practice of double checking of calculated infusion rate and the setting of the infusion rate on the pump by 2 staff for high risk drugs.
2. To make use of standardized Drug Dilution Table for infusion drugs.

MEDICATION INCIDENTS INVOLVING DANGEROUS DRUG

Case 1: Wrong dose of Midazolam

- A doctor prescribed Midazolam 3mg IV as pre-medication.
- Nurse A checked out 1 vial of Midazolam (15mg/3ml) and counter-checked with the nurse i/c. She then diluted the entire 15mg with normal saline to a final preparation of 15mg/15ml Midazolam.
- Nurse A mistakenly administered the entire content of the syringe (15mg) to the patient.

Case 2: Methadone inadvertently administered instead of Pethidine

- Pethidine 50mg IM was prescribed for post-operative pain.
- Nurse A wrongly took an ampoule of Methadone instead of Pethidine.
- Nurse B only counter-checked the number of remaining ampoules (for documentation) without checking drug identity.
- Nurse A administered Methadone to the patient without a second person check.

Recommendations for cases 1 & 2:

1. To counter-check the identity and dosage of dangerous drugs (DD) by two nurses before administration.
2. To ensure the correct strength by checking the drug package label and the MAR.
3. To properly label all diluted preparation syringes.
4. To check the drug against the DD register to ensure the right drug and dose being given.

OTHER MEDICATION INCIDENTS

Case 1:

- A doctor intended to prescribe Prednisolone and Acyclovir to an end-stage renal failure patient.
- He consulted a renal physician on the adjustment of Prednisolone dosage but not Acyclovir (which should be reduced for renal failure).
- Full dose of Acyclovir 800mg 5 times daily was prescribed.
- The patient was subsequently admitted for dizziness and confusion from Acyclovir toxicity.
- After treatment, patient was transferred to general ward and was given explanation on the incident.

Contributing Factor:

Knowledge gap in adjusting the dosage of Acyclovir for renal failure patients.

Recommendation:

To enhance staff awareness of dosage adjustment for renal failure

Case 2:

- Nurses A and B prepared an infusion for a patient. Nurse A checked the Syntocinon infusion fluid while Nurse B checked the infusion device.
- Nurse B thought the flow rate had been set correctly by Nurse A and did not check against the prescription before starting the infusion device.
- Nurse A assumed Nurse B had checked against the prescription and set the device correctly.
- Syntocinon infusion rate was wrongly set to 125ml/hr instead of 3ml/hr.
- The error was revealed when the fetal heart rate dropped to 80bpm with 14.9ml of Syntocinon already infused.
- Infusion was stopped and the fetal heart rate returned to 140bpm.
- The baby was delivered by vacuum extraction. Conditions of baby and mother were both satis factory.

Contributing Factor:

Non-compliance with the guideline of checking the administration of infusion at prescribed rate before signing the MAR.

Recommendation:

To emphasize the importance of counter-checking the flow rate before commencing the infusion.

Case 3:

Gliclazide metabolite was detected in the urine of a non-diabetic patient.

Conclusion

No contributing factor could be established.

PATIENT MISIDENTIFICATION

Case 1:

A patient was dispensed 4 wrong medications due to picking up of wrong drug basket by dispensing staff (basket for ticket no. 563 was mistaken for ticket no.553). The prescription was collected by the patient's domestic helper. The patient was subsequently detected with low blood pressure in out-patient clinic.

Contributing Factors:

- Lapse of concentration
- Misinterpretation between staff and domestic helper.

Recommendation:

To ensure the correct drugs are dispensed by checking the drug basket ticket number and patient identity.

Case 2:

A patient with elevated potassium level (5.1 mmol/l) was given extra potassium chloride supplement (10mmol KCL Q8H) by a verbal order due to misfiling of laboratory result from another patient. Rechecked potassium level was 4.4mmol/l.

Contributing Factor:

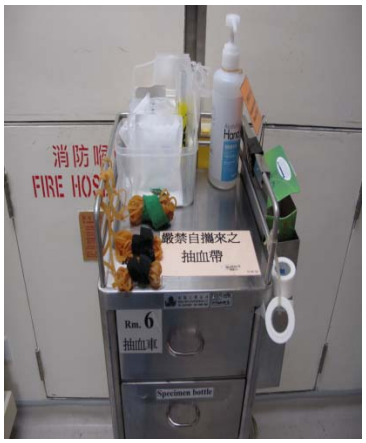
Non-compliance with the cross-checking procedure of a patient identification.

Recommendation:

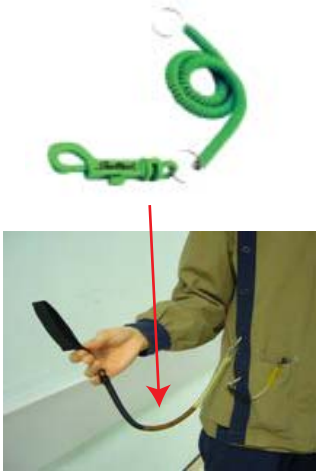
Need to verify the patient identity on lab report before issuing treatment order.

GOOD PRACTICE ON PREVENTING THE LEAVING OF TOURNIQUET OR DISPOSABLE GLOVE ON PATIENTS

Tourniquet or disposable glove used as tourniquet were repeatedly left on patients' limbs after blood taking. There are different risk reduction programs or ways to prevent recurrence of similar incidents devised by various hospitals. The following are some examples:



Safety Designs & Devices



Sharing of Good Practice Tips

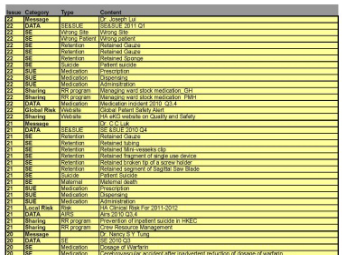
SHARING

HARA FOR LEARNING & SHARING

The HA Risk Alert is a rich source of information on clinical risks and risk reduction measures. It is important to learn from the reported incidents. With 23 issues of HARA published, it may not be easy to search a specific type of incidents. The incidents reported in HARA are now indexed (as excel file) to facilitate viewing and searching. The incidents can also be searched by the use of keyword via iGATEWAY provided by NTEC.

To visit HARA and the index file, please access (Thematic View >HAHO >Quality and Safety> HA Risk Alert or use the following link:

http://qsdportal/psrm/Public/HA%20Risk%20Alert/HA%20Risk%20Alerts%20Index.htm



To search by keyword via iGATEWAY at iNTEC:
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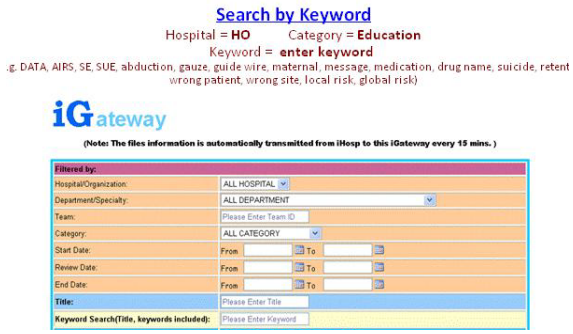
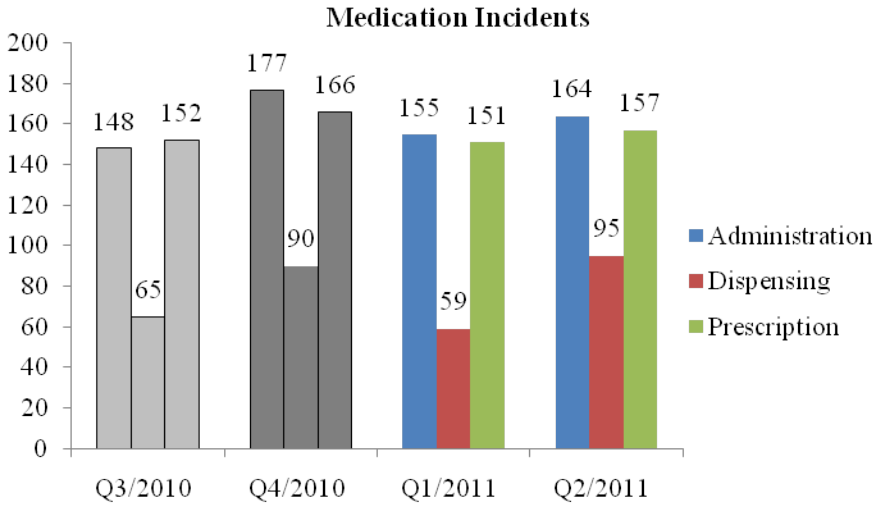
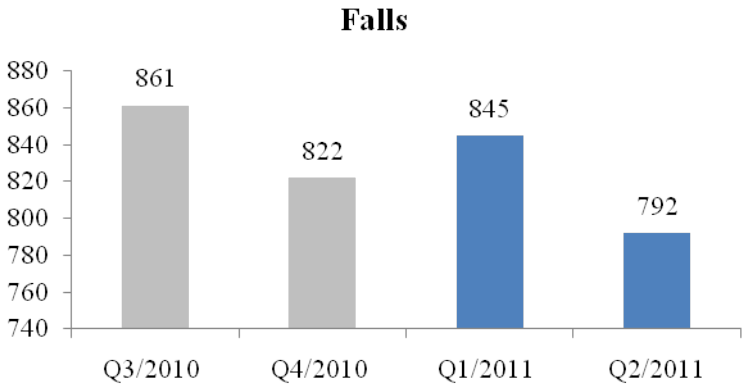
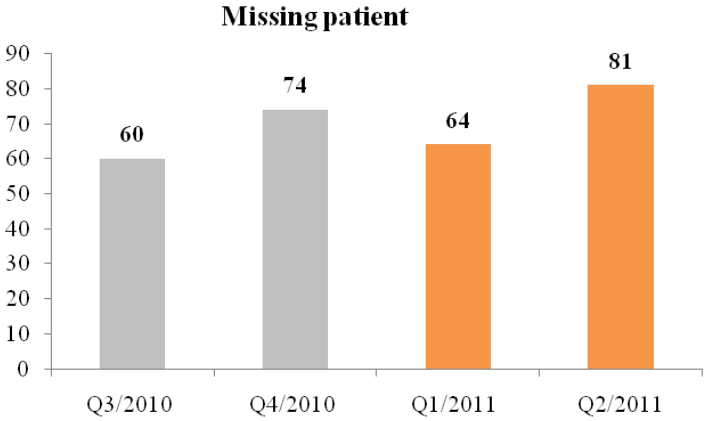


TOP REPORTED CATEGORIES OF INCIDENTS IN AIRS (Q1 – Q2 2011)



〔 #Incident reporting in AIRS is voluntary
* Medication cases include near miss incidents without affecting patients. 〕





Annex C

Number of Sentinel Events in HA
(1 October 2007 to 30 September 2011)

	Reportable Sentinel Events	**From 1 Oct 07 to 30 Sept 08** (12 months)	**From 1 Oct 08 to 30 Sept 09** (12 months)	**From 1 Oct 09 to 30 Sept 10** (12 months)	**From 1 Oct 10 to 30 Sept 11** (12 months)
1.	Surgery / interventional procedure involving the wrong patient or body part	5	10	5	3
2.	Retained instruments or other material after surgery / interventional procedure	10	13	12	18
3.	ABO incompatibility blood transfusion	1	0	0	1
4.	Medication error resulting in major permanent loss of function or death	0	0	1	1
5.	Intravascular gas embolism resulting in death or neurological damage	0	0	1	0
6.	Death of an inpatient from suicide (including home leave)	25	15	11	20
7.	Maternal death or serious morbidity associated with labour or delivery	1	2	2	1
8.	Infant discharged to wrong family or infant abduction	1	0	0	0
9.	Other adverse events resulting in permanent loss of function or death (excluding complications)	1	0	1	0
	Total Number	**44**	**40**	**33**	**44**

Number of Serious Untoward Events in HA
(1 January 2010 to 30 September 2011)

	Reportable Serious Untoward Events	**From 1 Jan 10 to 30 Sept 10** (9 months)	**From 1 Oct 10 to 30 Sept 11** (12 months)
1.	Medication error	72	88
2.	Patient misidentification	9	9