ANNUAL REPORT ON SENTINEL AND SERIOUS UNTOWARD EVENTS

1 October 2011 – 30 September 2012

HOSPITAL AUTHORITY
HONG KONG

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醫院管理局
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ACKNOWLEDGEMENT

The Patient Safety and Risk Management Department, Quality and Safety Division would like to acknowledge the continuous dedication, support and commitment of all frontline staff, nurses, clinicians, risk managers and executives towards the improvement of patient safety.

We would like to take this opportunity to thank all colleagues for their invaluable and enduring efforts in planning and launching numerous improvement initiatives in the promotion of patient safety, risk identification and mitigation in the past years.

Patient Safety and Risk Management Department

Quality and Safety Division

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This is the 5th Annual Report on Sentinel and Serious Untoward Events since implementation of the Sentinel Event Policy in October, 2007 and subsequent revision of the policy in January 2010. The new Sentinel and Serious Untoward Event Policy (The Policy), in place since January 2010, has included the requirement of mandatory reporting of two more categories of events, namely, medication error and patient misidentification that could have resulted in the death or permanent harm of patients.

2. This Annual Report covers the period from 1 October 2011 to 30 September 2012, with a total of 34 Sentinel Events (SEs) and 102 Sentinel Untoward Events (SUEs) reported. There are 10 fewer SEs in this reporting period when compared with the total number of 44 SEs in 2010/11. The decrease can be accounted for by the reduction in the number of SEs related to "Patient suicide" in 2011/12 (10 cases less than the number in 2010/11).

3. For the 34 SEs reported in 2011/12, "Retained instruments or other material after surgery / interventional procedure" ranked top among all categories (14 cases; 41.2%), followed by "Death of an inpatient from suicide (including home leave)" (10 cases; 29.4%) and "Surgery / interventional procedure involving the wrong patient or body part" (5 cases; 14.7%).

4. A breakdown of the outcome of the 34 SEs reported shows that: (a) 14 (including 10 cases of "Patient suicide", 1 case of "Maternal death associated with delivery", and 3 cases of "Other adverse events resulting in permanent loss of function or death") had "extreme consequences"; (b) 9 had "moderate or major consequences"; and (c) 11 had "minor or insignificant consequences".

5. Out of the 102 SUEs reported in 2011/12, 92 (90.2%) and 10 (9.8%) were due to medication error and patient misidentification respectively. The outcome of all reported SUE cases revealed that 75 cases (73.5%) had "minor or insignificant consequences" while 27 (26.5%) had "moderate or major consequences".

6. Under the current SE/SUE Policy, a Root Cause Analysis (RCA) Panel would be set up for each reported SE or SUE to identify contributing factors and root causes as well as to make recommendations for continual improvement and risk management. The findings and recommendations of RCA Panels on preventing recurrence of similar SEs/SUEs would be shared with all staff in the half-yearly Patient Safety Forum and quarterly HA Risk Alert (HARA) Newsletter. To facilitate sharing, all HARA Newsletters could be accessed in the HA intranet and internet.

7. In our continuing journey to enhance patient safety and prevent occurrence of SEs/SUEs, we have:

- embarked on a number of approaches and initiatives to consolidate the safety culture;
- strengthened medication safety awareness to reduce medication errors;

- enhanced staff communication skills to ensure effective communication in the care process;
- encouraged staff to report near-miss cases using the specifically designed Advance Incident Reporting System 3.0;
- explored the use of communication systems for timely notification of incidents and mobilization of respective stakeholders and parties;
- strengthened investigation of incidents by focusing on the need to produce a good factual account and build up the expertise required for investigating incidents, and making recommendations on prevention of recurrence of similar incidents;
- implemented improvement measures recommended by RCA Panels on prevention and management of incidents.

It is hoped that by the publication of this Annual Report, by sharing and learning from reported SEs/SUEs and by the concerted efforts of all colleagues, we will be able to provide much safer care to all our patients in the future.

CHAPTER 1 – INTRODUCTION

8. Despite all efforts and intentions to minimize errors and maximize quality in the healthcare setting, it is well recognized that errors in patient care do occur. As healthcare providers, we should address such errors by describing honestly what, where and how mistakes and failures have occurred. By so doing, we could investigate into and learn from our mistakes or failures, and more importantly, explore ways and means to prevent recurrence of similar events in the future.

9. The sharing and communication of patient safety knowledge and analysis of patient safety incidents are undoubtedly important components in the promotion of patient safety. The lessons learned from adverse events should therefore be shared not only locally but also globally. HA has joined the Global Patient Safety Alerts (http://www.globalpatientsafetyalerts.com/English/Pages/default.aspx) and linked the HA Risk Alert Newsletter with similar publications produced by healthcare organizations worldwide. This has enabled HA to build up a collective understanding and knowledge on the identification, prevention, mitigation and management of patient safety incidents and risks.

10. This is the 5th Annual Report on Sentinel and Serious Untoward Events since the implementation of the Sentinel Event Policy in October 2007. The report documents all Sentinel Events (SEs) and Serious Untoward Events (SUEs) reported by HA hospitals from 1 October 2011 to 30 September 2012, and summarizes the

reviews on reported events and patient safety risks as well as improvement opportunities and learning points identified through Root Cause Analysis (RCA). It also outlines various planned or implemented risk reduction measures to prevent the recurrence of similar events by hospitals / clusters.

11. The aim of this Annual Report is to facilitate sharing of patient safety knowledge and lessons learned from adverse events. We sincerely hope that with the knowledge gained from reading this Report, we can all work together in our continuing endeavor to promote patient safety and safer patient journeys.

CHAPTER 2 – SENTINEL AND SERIOUS UNTOWARD EVENT POLICY

12. With effective from 1 January 2010, the Sentinel and Serious Untoward Events Policy (Annex I) has superseded the Sentinel Event Policy implemented in October 2007. The Policy covers the following categories:

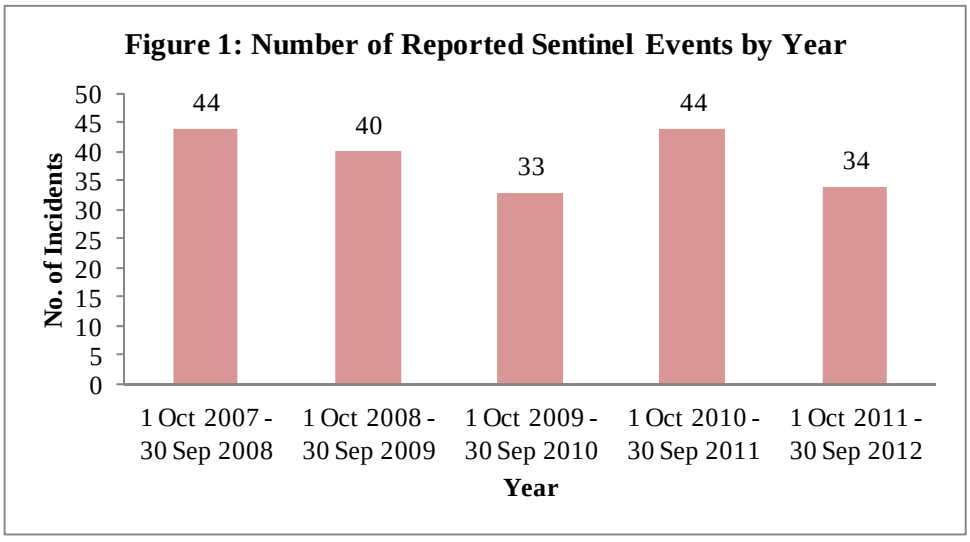
Sentinel Events (9 Categories)	
1	Surgery / interventional procedure involving the wrong patient or body part
2	Retained instruments or other material after surgery / interventional procedure
3	ABO incompatibility blood transfusion
4	Medication error resulting in major permanent loss of function or death
5	Intravascular gas embolism resulting in death or neurological damage
6	Death of an inpatient 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 (2 Categories)	
1	Medication error which could have led to death or permanent harm
2	Patient misidentification which could have led to death or permanent harm

13. The Policy defines the process for identification, reporting, investigation and management of SEs and SUEs. It also provides a framework for the reporting, response and management of SEs and SUEs in HA. According to this Policy, all SEs and SUEs will be investigated by a Root Cause Analysis Panel, which is an expert panel to be set up by the hospital to identify possible causes and explore improvement measures. The hospital will then submit a formal report to the HA Head Office within eight weeks' time on its findings, views and intended follow-up improvement actions. Improvement measures requiring larger scale coordination beyond the level of individual units or departments will be facilitated at the hospital and / or corporate level to prevent recurrence of similar incidents in the future.

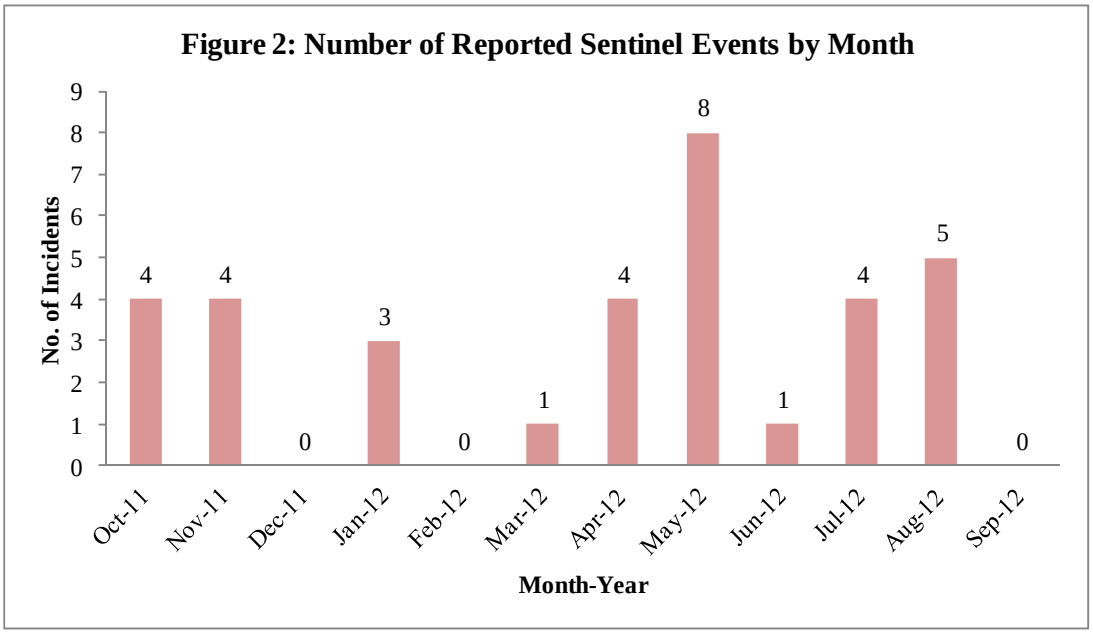
CHAPTER 3 – SENTINEL EVENTS REPORTED FROM 1 OCTOBER 2011 TO 30 SEPTEMBER 2012

Frequency of Reported SEs

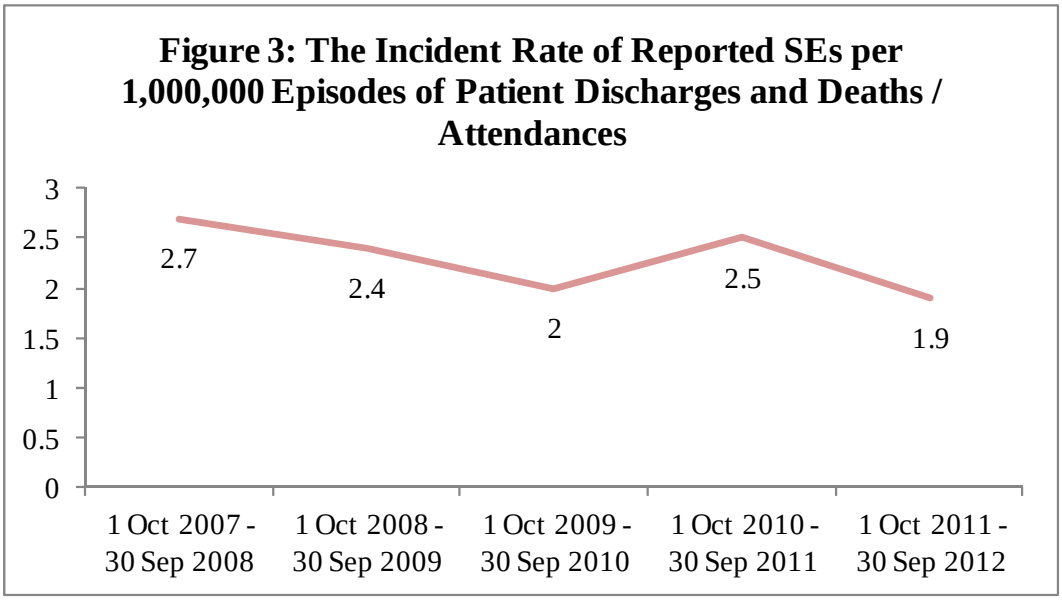
14. There were 34 SEs reported from 1 October 2011 to 30 September 2012. Since the implementation of SE Policy in October 2007, the number of SEs reported annually is shown in in Figure 1.



15. The number of reported SEs from October 2011 to September 2012 by month is shown in Figure 2.



16. The incident rate of reported SEs was 1.9 per million episodes of patient discharges, deaths / attendances for the period from 1 October 2011 to 30 September 2012. The trend of the incident rate of reported SEs in the past years is shown in Figure 3.



Breakdown of Reported SEs by Category

17. The breakdown of the number of reported SEs by category for the reporting period is shown in Figure 4 and the distribution of SEs by percentage in Figure 5.

Figure 4: Breakdown of Sentinel Events by Category

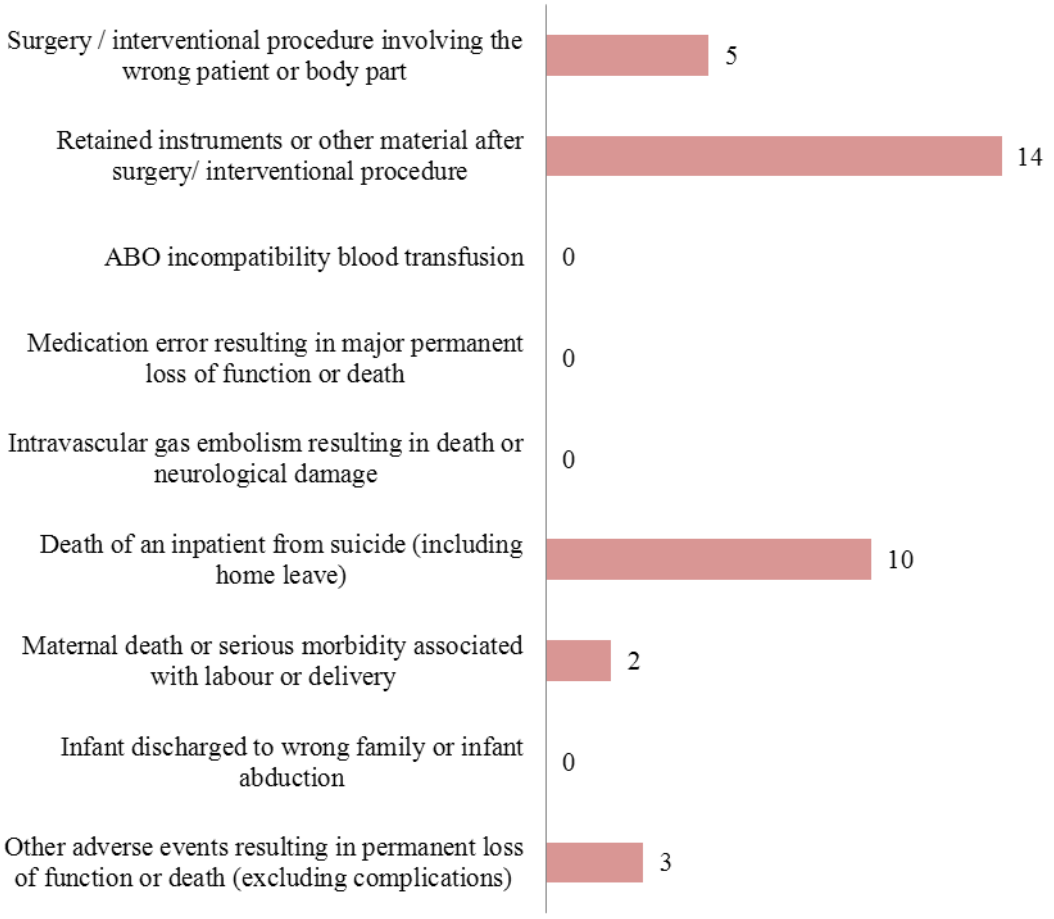
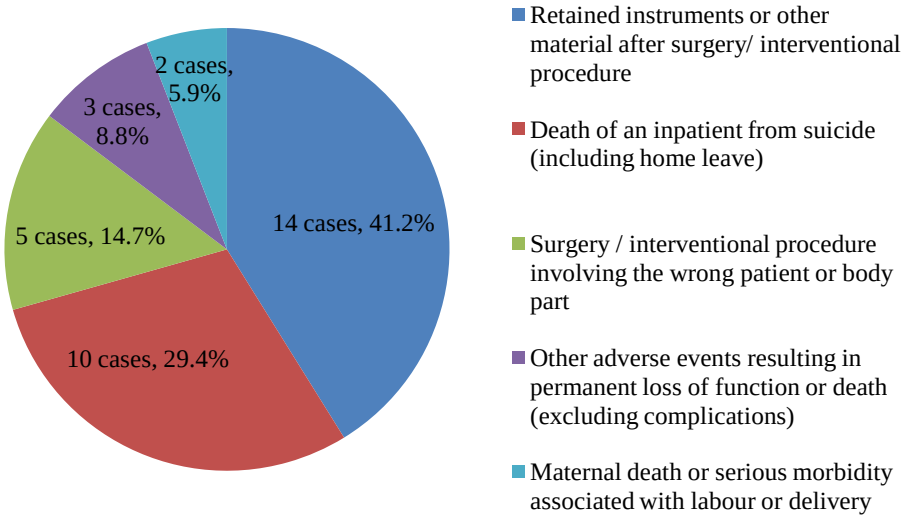


Figure 5: Distribution of Sentinel Events



18. A total of 34 SEs was reported for the period from 1 October 2011 to 30 September 2012. Among them, 14 (41.2%), 10 (29.4%) and 5 (14.7%) were from the category of "Retained instruments or material after surgery / interventional procedure", "Death of inpatient from suicide (including home leave)", and "Surgery / interventional procedure involving the wrong patient or body parts" respectively. These three categories together constituted about 90% of all reported SE cases in 2011/12.

Brief Description of the Reported SEs by Category

- **Retained instruments or other material after surgery / interventional procedure: 14 cases (41.2%)**
  - Surgical gauzes: 6 cases;
  - Cotton wool-like dressing material: 1 case;

- Intravascular guide wire: 1 case;
- Tip of internal sheath of resectoscope: 1 case;
- Broken segment of telescope: 1 case;
- Segment of broken tension band wire: 1 case; and
- Other instruments (a screw, a metal washer, a scleral plug): 3 cases.

- **Death of an inpatient from suicide (including home leave): 10 cases (29.4%)**

  Out of the 10 suicide cases:

  - By patient status, 6 (60%) and 4 patients (40%) committed suicide while staying in hospital and during home leave respectively; and
  - By patient group, 5 patients (50%) had terminal or chronic illnesses and 5 patients had mental illness respectively.

- **Surgical or interventional procedures involving the wrong patient or body part: 5 cases (14.7%)**
  - Ureterorenoscopy was performed on wrong side kidney;
  - Burr hole was performed on wrong side;
  - Local anaesthetic was injected to wrong eye;
  - Removal of wrong side JJ stent; and
  - Spinal surgery was performed on wrong level.

- **Maternal death or serious morbidity associated with labour or delivery: 2 cases (5.9%)**
  - Maternal death due to primary postpartum haemorrhage and genital tract trauma: 1 case; and

- Serious morbidity associated with delivery: 1 case.

- **Other adverse events resulting in permanent loss of function or death (excluding complications): 3 cases (8.8%)**
  - Death of a patient with permanent tracheostomy: 1 case;
  - Anti-coagulant given to patient with acute coronary syndrome and intracranial hemorrhage resulting in mortality: 1 case; and
  - Oxygen Delivery Tubing was found not connected to the Extracorporeal Membrane Oxygenation (ECMO) System: 1 case.

Outcome of Reported Sentinel Events

19. A breakdown of the outcome of reported SEs is as follows:

- Minor or insignificant consequence: 11 cases (32.4%);
- Major or moderate consequence: 9 cases (26.5%);
- Extreme consequence (i.e. death): 14 cases (41.1%)
  - Patient suicide: 10 cases;
  - Maternal death associated with labour or delivery: 1 case ; and
  - Other adverse events resulting in permanent loss of function or death: 3 cases.

Hospital Settings where Sentinel Events Occurred

20. Out of all the SEs reported in 2011/12, 29 (85.3%) occurred in general hospitals (Table 1).

Table 1: Setting Where Sentinel Events Occurred

Setting	No. of SEs (%)
General hospitals	29 (85.3%)
Psychiatric hospitals	5 (14.7%)

21. The comparison of occurrence of reported SEs by category in the past four years from 1 October 2007 to 30 September 2012 is illustrated in Table 2.

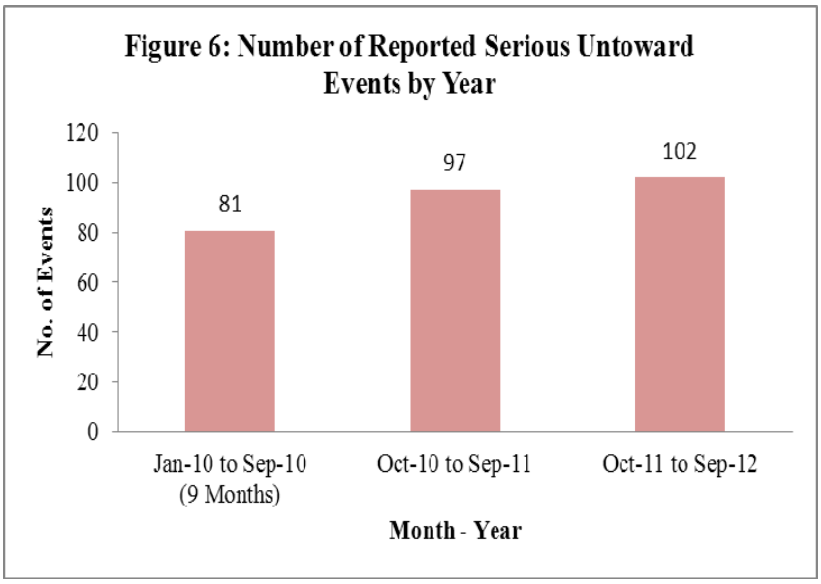
Table 2: Comparison of Occurrence of Sentinel Events by Category from 1 October 07 to 30 September 12

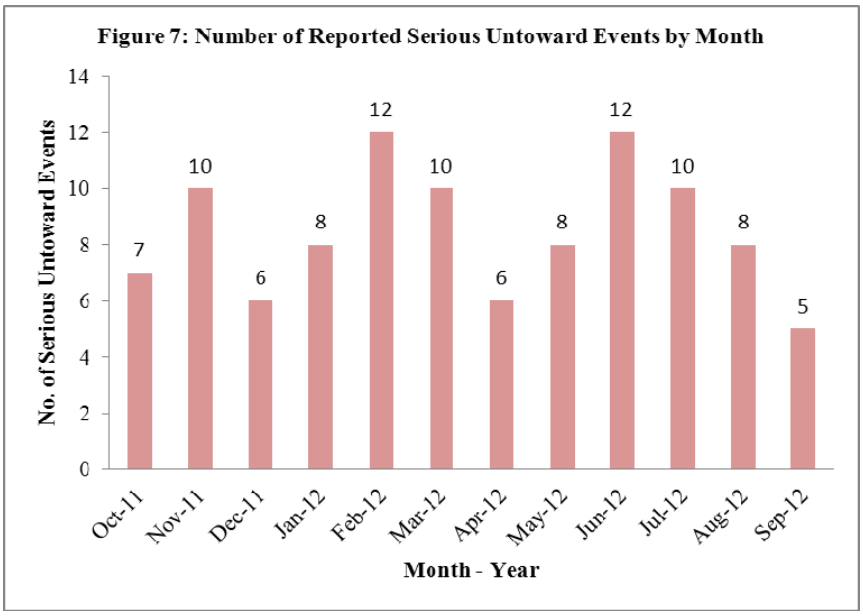
Reportable Sentinel Events	**1-Oct-07 to 30-Sept-08**	**1-Oct-08 to 30-Sept-09**	**1-Oct-09 to 30-Sept-10**	**1-Oct-10 to 30-Sept-11**	**1-Oct-11 to 30-Sept-12**	**Total number of SEs**
Surgery / interventional procedure involving the wrong patient or body part	5	10	5	3	5	**28**
Retained instruments or other material after surgery / interventional procedure	10	13	12	18	14	**67**
ABO incompatibility blood transfusion	1	0	0	1	0	**2**
Medication error resulting in major permanent loss of function or death	0	0	1	1	0	**2**
Intravascular gas embolism resulting in death or neurological damage	0	0	1	0	0	**1**
Death of an inpatient from suicide (including home leave)	25	15	11	20	10	**81**
Maternal death or serious morbidity associated with labour or delivery	1	2	2	1	2	**8**
Infant discharged to wrong family or infant abduction	1	0	0	0	0	**1**
Other adverse events resulting in permanent loss of function or death (excluding complications)	1	0	1	0	3	**5**
Total Number	**44**	**40**	**33**	**44**	**34**	**195**

CHAPTER 4 – SERIOUS UNTOWARD EVENTS REPORTED FROM 1 OCTOBER 2011 TO 30 SEPTEMBER 2012

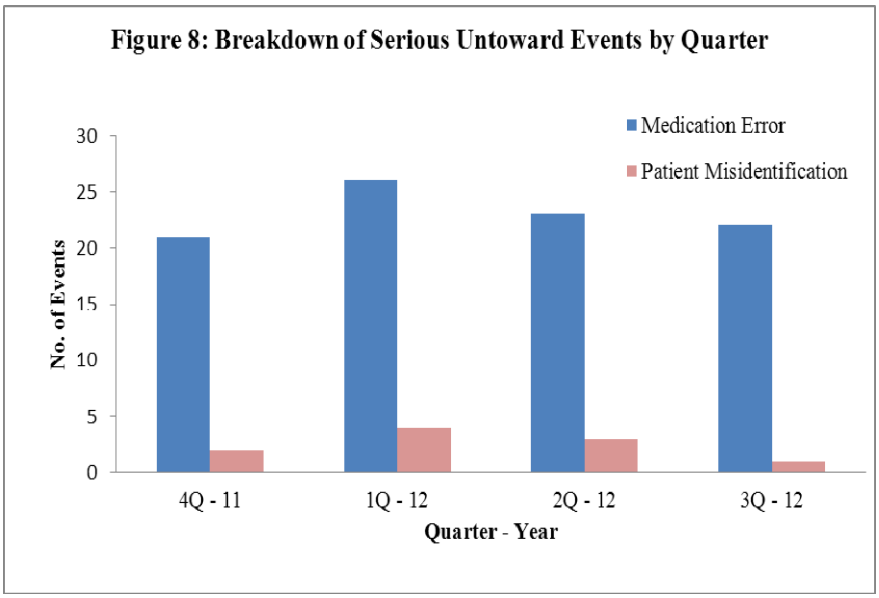
Frequency of Reported SUEs

22. A total of 102 SUEs were reported from 1 October 2011 to 30 September 2012. Since the implementation of SE & SUE Policy in January 2010, the number of SUEs reported annually is shown in Figure 6 and the number of reported SUEs by month for the period is shown in Figure 7.





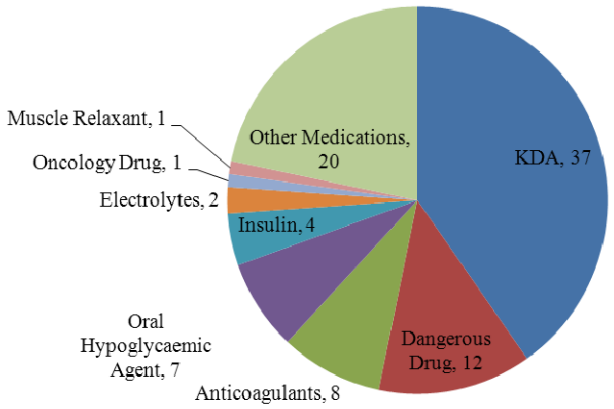
23. A breakdown of the 102 reported SUEs revealed that 92 (90.2%) and 10 cases (9.8%) were due to medication error and patient misidentification respectively. The occurrence of reported SUEs by quarter is shown in Figure 8.



SUEs from Medication Error

24. Among the 92 reported SUEs arising from medication error, 37 cases (40.2%) were related to the prescription or administration of "Known Drug Allergy" (KDA) drugs. This was followed by medication error involving "hypoglycaemic agents" (11 cases; 12%), "anticoagulants" (8 cases; 8.7%), "dangerous drugs" (12 cases; 13%), "concentrated electrolytes" (2 cases; 2.2%), "muscle relaxant" (1 case; 1.1%), "oncology drug" (1 case; 1.1%) and "other medications" (20 cases; 21.7%). The distribution of mediation error is shown in Figure 9.

Figure 9: Distribution of Medication Error



25. Of the 37 cases of medication error related to KDA drugs, the most commonly involved drugs were:

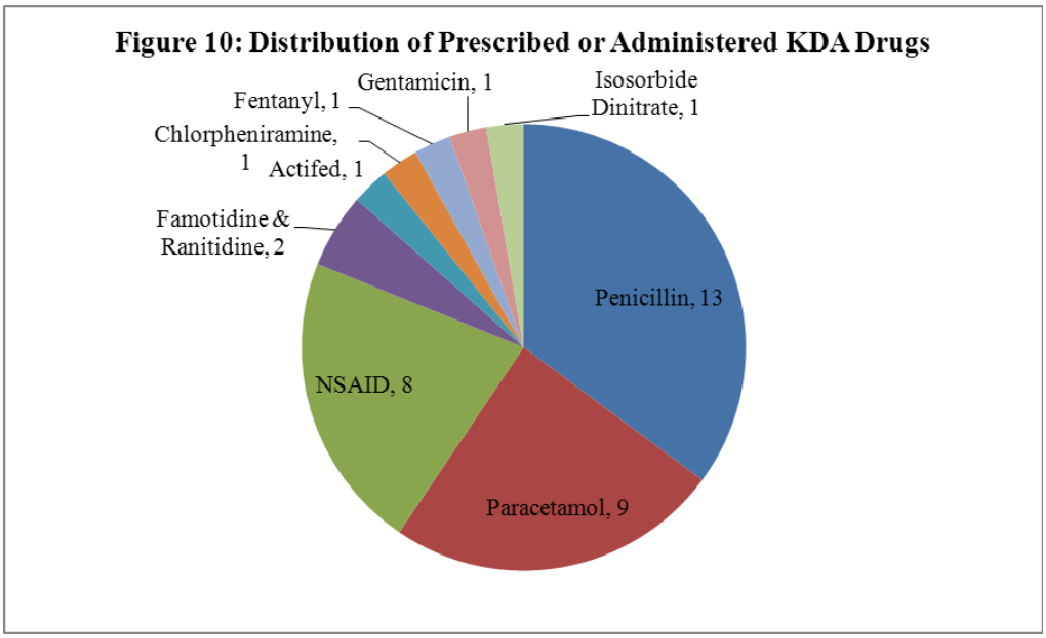
(i) Penicillin group: 13 cases (35.1%);

(ii) Paracetamol: 9 cases (24.3%); and

(iii) Non-steroidal Anti-inflammatory Drugs (NSAID), including Aspirin: 8 cases (21.6%).

These three groups together constituted 81% of the total KDA incidents. The number and distribution of KDA drugs involved is depicted in Figure 10.

Figure 10: Distribution of Prescribed or Administered KDA Drugs



26. The majority of patients who were prescribed or given KDA drugs had no allergic symptoms. A few patients developed allergic reactions which included generalized rigidity, skin rashes, lips swelling, bilateral eyelid oedema and itchiness after taking KDA drugs. One patient who needed intubation and mechanical ventilation gained good recovery subsequently.

SUEs from Patient Misidentification

27. A total of 10 SUEs due to patient misidentification were reported. These included incidents of misidentification of patients in the clinical management systems or misfiling of laboratory results in patients' notes resulting in prescription of inappropriate treatment. The types of patient misidentification incidents are

summarized in Table 3:

Table 3: Types of Misidentification Incidents

Description	4Q11	1Q12	2Q12	3Q12
Misidentification of patient during drug administration	1	1	2	0
Misidentification of patient in clinical systems e.g. Corporate Drug Dispensing History(CDDH), Electronic Patient Record (ePR) Summary	0	2	1	0
Misfiling of patient's laboratory report leading to inappropriate or unnecessary treatment	1	0	0	1
Misidentification of patient for blood taken resulting in the patient taking extra dose of Warfarin	0	1	0	0

Outcome of Reported Serious Untoward Events

28. The outcome of reported SUEs was as follows:

- Minor or insignificant consequence: 75 cases (73.5%);
- Moderate consequence (required higher level of care): 27 cases (26.5%); and
- Temporary major consequence: Nil.

CHAPTER 5 – ACTIONS TAKEN AND DISCUSSION

Analysis of Reported Sentinel Events

Sentinel Event Reporting

29. A total of 34 SEs was reported from 1 October 2011 to 30 September 2012 within HA. By comparison, the Department of Health in the State of Victoria, Australia received 58 reports of SEs in 2010 – 2011[1]; The Western Australia Department of Health received 96 reports of SEs in 2010 – 2011[2]; and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) in the United States received 1,243 reports of SEs in 2011[3].

30. There were 10 fewer cases of reported SEs in 2011/12 when compared with the last reporting period. This can be accounted for by the decrease in the number of "death of an inpatient from suicide (including home leave)" from 20 in 2010/11 to 10 in 2011/12.

Types of Sentinel Events Reported

31. Table 4 shows a comparison of the most common types of reported SEs in

[1] Supporting patient safety – Sentinel event program annual report 2010-11. Department of Health, State Government of Victoria
[2] Delivering Safer Healthcare in Western Australia – WA Sentinel Event Report 2010/2011. Department of Health, Government of Western Australia
[3] The US Joint Commission, Summary Data of Sentinel Events Reviewed by The Joint Commission: as of June 30, 2012.

HA, Australia and the US.

Table 4: The Most Common Types of Reported SEs

HA	Department of Health Service of State Government of Victoria	Western Australia Department of Health
Retained instruments or other material (14 cases; 41.2%)	Death of an inpatient from suicide (9 cases; 15.5%)	Death of an inpatient from suicide (7 cases; 7.3%)
Death of an inpatient from suicide (including home leave) (10 cases; 29.4%)	Retained instruments or other material (5 cases; 8.6%)	Maternal death or serious morbidity associated with labour or delivery (3 cases; 3.1%)

*The reportable inpatient suicides also include suicides committed during home leave in Hong Kong whilst only suicides committed in inpatient units are reported in Australia.

32. As shown in Table 4, "inpatient suicide" and "retained instruments" were the most commonly reported SEs in HA, Australia and the US.

33. According to the World Health Organization (WHO), approximately one million people died from suicide with a global mortality rate of 16 per 100,000 population in the year 2000[4]. In Hong Kong, the suicide rate has increased from 11.8 per 100,000 population in 1995 to 14.6 per 100,000 population in 2009[5].

[4] World Health Organization: suicide prevention (SUPRE).
[5] World Health Organization: suicide rates, by gender, China, Hong Kong SAR, 1995-2009.

Contributing Factors for Sentinel Events

34. The HA Head Office would appoint a Root Cause Analysis (RCA) Panel for every SE to conduct investigation and analysis, identify root causes and contributing factors as well as recommend appropriate improvement measures to prevent recurrence of similar SEs in future. The key contributing factors identified by RCA Panels for each category of SEs are summarized below:

- **Key contributing factors for "retained instruments or material"**

  Process:

  - Lack of standard protocol or checklists to guide and assure complete removal of implants and all their parts;
  - Lack of guideline on the use and documentation of wound swabbing and cleansing material;
  - Failure of current protocol to highlight risky areas or attract users' attention when checking integrity of instruments immediately after use in operating theatres;
  - Failure in proper counting of long gauze after episiotomy repair;
  - Difficulty in ascertaining the exact quantities and types of implants from the pre-operative X-ray assessment;
  - Difficulty in confirming the completeness of the used broken tension band wire during removal;
  - Difficulty in manually locating a scleral plug dislodged deep into the orbit;
  - Difficulty in detecting partial retention of individually packed cotton wool ball in the patient's wound during wound swabbing and cleansing.

Communication:

- Unclear communication between Theatre Sterile Supply Unit and Operating Theatre staff on instrument integrity;
- Ineffective communication among doctors and nurses.

Equipment:

- Difficulty in detecting defective delicate instruments by naked eyes;
- Failure to perform Intra-operative X-ray examination.

Management:

- Lack of hands-on training and competency assessment of newly joined residents in performing central venous catheter insertion.

Staff:

- Low awareness of staff on checking instrument integrity after use;
- Low alertness of staff on potential risk of retained foreign body within the surgical field resulting in failure to detect small items of "surgical material" which were missing and subsequently found outside the surgical field;
- Non-compliance with the Surgical Safety Policy and failure to follow the safety checklist;
- Failure to perform thorough wound examination;
- Failure of the surgeon and assistant to safeguard the complete removal of implants;
- Unaware of risk to pack the whole piece of gauze in vagina during episiotomy wound repair;
- Failure to detect and remove packed gauze by vaginal examination after episiotomy wound repair;
- Low awareness of staff on checking the number of broken fragments to be

taken out during operation.

- **Key contributing factors for "death of an inpatient from suicide (including home leave)"**
  - Underlying medical conditions (e.g. chronic or terminal illness) and mental health conditions (e.g. depression);
  - Staff's unawareness of environmental risks for patient suicide;
  - Solitude of patients accommodated in single room, isolated from others; and
  - Determination of a patient to end one's own life. This could mask the patient's depression and suicidal ideas. The patient would seem to be in a calm and stable mood.

- **Key contributing factors for "surgery/ interventional procedure involving the wrong patient or body part"**

  Process:

  - Long time lapse between "time out" and injection of local anaesthetic;
  - Failure to mark the operation side;
  - Absence of markings to assist the surgeon to identify the spinal level following removal of the metal markers after X-ray screening;
  - Lack of independent confirmation of correct operation site by another staff member.

  Equipment:

  - Inconvenient X-ray facilities in the operating theatre.

  Communication:

  - Lack of proper handover between different surgeons;

- Failure to verify the operating side among the operating team members;
- Failure of the scrub nurse to speak up despite awareness of the mistake.

Patient:

- Deformity of patient's bladder resulting in increased difficulty of the procedure.

Staff:

- Inadequate preparation and unfamiliarity with the procedure;
- Lapse of concentration and distraction of operating team members.

- **Key contributing factors for "other adverse events resulting in permanent loss of function or death (excluding complications)"**

Process:

- Inadequate documentation made the nursing team not fully aware of the type and condition of the patient's tracheostomy.

Communication:

- Inadequate communication among health care personnel during patient transfer between acute and rehabilitation hospitals to pass on information regarding the nature of the patient's tracheostomy.
- Inadequate communication following the change of practice in the connection of the ECMO support system upon transfer of patient.

Equipment:

- Difficult to diagnose the patient's intracranial hemorrhage from hard copy of computerized tomography films (reviewed by three clinicians) compared with images in computer monitor (reviewed by the radiologist).
- Insufficient alarm volume of oxygen saturation analyzer (48.5 – 52 dB) to

alert staff in the ward with ambient noise level of around 50 – 70 dB.

Management:

- Inadequate understanding of some staff members regarding tubing connection of the ECMO system.

Staff:

- Lack of awareness among the medical and nursing staff on the permanent nature of the patient's tracheostomy;
- Failure of both attending physician and cardiologist (who had reviewed the computerized tomography films and could have been affected in the review process by the negative findings reported by the previous doctor) to notice the patient's intracranial hemorrhage. As a consequence, they proceeded to focus on managing the patient's life threatening cardiac conditions.

- **Key contributing factor for "maternal death"**
  - No specific contributing factors could be identified in the reported case of maternal death.
  - Difficult in diagnosing the occurrence of patient's retroperitoneal haematoma which was a rare condition.

Improvement Measures

35. Taking into consideration the lessons learned from reported SEs, HAHO has continuously collaborated with clusters and hospitals to improve and redesign systems and work processes to enhance patient safety. Examples of risk reduction programmes introduced are outlined below:

- **Retained instruments or other material after surgery/ interventional procedure**

  Process:

  - To introduce mechanism (e.g. guideline, checklist) to ensure complete removal of implants;
  - To enhance the system in checking instrument integrity;
  - To perform routine x-ray before reversal of patient to ensure complete removal of broken wire in "multiple-fragment" cases;
  - To improve the gauze counting system and documentation.;
  - To perform a manual examination of post-operative packed wound especially for patients with post-operative symptoms and complications;
  - To perform intra-operative X-ray to ensure complete removal of all implants when large quantities are used.

  Communication:

  - To document in the operating record books details of scopes used in surgical operations;
  - To reinforce the documentation of wound packing;
  - To improve the communication system between the Theatre Sterile Supply Unit and Operating Theatre staff to ensure proper verification of instrument integrity;
  - To enhance communication among nurses and doctors on gauze packing and counting procedure during operations;
  - To reinforce team communication e.g. reciprocal communication in critical steps.

Equipment:

- To ensure all relevant X-ray images shown in the computer panels could be displayed throughout the operation;
- To use LED Hand Magnifier for integrity checking of used delicate instruments in operating theatres.

Management:

- To draw up department specific safety notes on "dealing with missing surgical material" for future intra-operative reference;
- To stop the use of cotton wool ball and replace them with non-woven gauze for wound swabbing or cleansing;
- To consider using long raytec gauze instead of short raytec gauze for wound packing;
- To implement briefing / debriefing practice to raise situation awareness in reducing human errors;
- To strictly enforce safety measures for removal of guide wire, e.g. "guide wire out" should be voiced out with acknowledgement; and assisting nurse should connect fluid lines only after confirmation of guide wire removal;
- To reinforce proper use and documentation of surgical safety checklists;
- To conduct a compliance audit on documentation of wound cleansing and dressing techniques;
- To promote high alertness among staff for missing "surgical material' inside the surgical field;
- To reinforce the training and assessment of competency of residents;
- To strengthen the training and supervision of doctors.

- **Death of an inpatient from suicide (including home leave)**

  Process:

  - To explore the possibility of enhancing the Palliative Team referral system for Clinical Oncology patients;
  - To perform regular psychological and emotional assessment for patients staying inside isolation rooms;
  - To enhance unobtrusive observation of patients at night time;
  - To put up bed-side suicide caution signage (in a format only recognizable by staff) to further alert staff of the need for close observation of at-risk patients.

  Environment & equipment:

  - To modify the shower facility in isolation rooms to reduce suicidal risk;
  - To review the quality and standard of CCTV systems and improve image visibility of patients under surveillance even under dim light;
  - To review the security measures at hospital main exits to prevent patients from slipping out of hospitals by following visitors.

  Management:

  - To raise staff awareness of a patient's unusual belongings to reduce the risk of suicidal act;
  - To develop a practice of continuous suicidal risk assessment of patients during their hospital stay especially for patients with changes in conditions;
  - To enhance training of staff on suicidal risk identification and assessment;
  - To recommend enhanced environmental scanning to identify high suicidal risk patients through departmental patient safety rounds.

- **Surgery / interventional procedure involving the wrong patient or body part**

  Process:

  - To explore the possibility of 2nd time-out to be conducted immediately before cannulation of ureter;
  - To implement team briefing for interventional procedures / operations;
  - To consider performing "time out" again just before injection of anaesthetic and incision;
  - To implement laterality marking for burr holes procedures;
  - To use fixed marking (e.g. use diathermy to mark the lamina or make a cut to the lamina) to identify the correct operation site for spinal surgery;
  - To confirm correct operation site by another staff member independently;
  - To use fluoroscopic guidance to ensure correct operation sites in difficult cases.

  Equipment:

  - To improve x-ray display facilities in Operating Theatres to ensure correct operation site.

  Communication:

  - To strengthen intra-operative handover procedures to safeguard critical information transfer;
  - To encourage staff to seek seniors' advice when performing unfamiliar procedures or encountering complicated situations;
  - To reinforce the "speak up" culture among surgical team members.

- **Other adverse events resulting in permanent loss of function or death (excluding complications)**

Process:

- To develop clinical guidelines to advise staff to engage in discussion with patient and family on potential risks before using anti-coagulant for patients with history of significant head injury;
- To explore the feasibility of not printing computerized tomography hard copy films to ensure that all computerized tomography (CT) brain scan images could be viewed on computer monitors;
- To enforce the arrangement for perfusionists or ECMO leaders to assist in between-floor transfer of patients.

Equipment:

- To explore the procurement of purpose-built oxygen saturation analyzer with louder alarm.

Communication:

- To improve handover communication for patients transferred from one hospital to another;
- To encourage clinicians to consult radiologists in interpretation of CT brain scan images of special cases.

Management:

- To enhance staff's awareness of different types of tracheostomy and their care;
- To establish communication structure to endorse changes in practice and ensure staff understanding of the changes;

- To update the patient transfer and handover checklists for patients undergoing ECMO treatment, including the checklists on different modes of set-up and critical steps in connecting the ECMO system;
- To enhance staff training on the use of ECMO machine.

- **Maternal death or serious morbidity associated with labour or delivery**
  - To alert staff to be vigilant of potential occurrence of major obstetric complications for high risk pregnancy cases;
  - To provide enhanced support and supervision by senior staff to ensure proper management of patients with obstetric emergencies.

Analysis of Reported Serious Untoward Events

36. Of the 102 SUEs reported from 1 October 2011 to 30 September 2012, 92 cases (90%) were related to medication error and 10 (10%) misidentification of patient or patient record / report leading to inappropriate treatment.

37. Of the 92 medication error cases, 37 were related to prescription and administration of "Known Drug Allergy" drugs to patients and one to severe allergy reaction to Diclofenac.

The key contributing factors identified were:

Process:

- Failure of the allergy checking function in Patient Management System to prompt the warning as the previous entry of drug allergy information was in "free text" format;

- Failure to comply with HA guidelines on Medication Management;
- Suboptimal allergy alert when using department protocol-driven medication;
- Inappropriate filing of clinical summary printouts as loose sheets in A&E folders resulting in doctors overlooking the information.

Staff:

- Deficiency in staff knowledge to recognize cross-sensitivity among drug classes;
- Low alertness of staff on the need for checking patients' drug allergy status;
- Inadequate experience – staff might not be on high alert for drug allergy problem when administrating Paracetamol.

The key improvement measures were:

Process:

- Make structure entry in Clinical Management System (CMS) as far as possible, since free text entry is not subjected to system check;
- Explore the effectiveness of printing the common NSAIDs and Antibiotics for quick reference;
- Remind staff to fax all Medication Administration Records (MAR) of all drugs including ward stock to Pharmacy for vetting.

Management:

- Reinforce the concept and practices on mandatory checking of drug allergy history before drug prescription and administration;
- Review the orientation and training program by incorporating KDA and enhance awareness of system behavior and pitfall of Medication Decision Support (MDS).

38. Twelve cases of reported SUEs were related to medication error arising from administration of dangerous drugs (as a result of extra dose, wrong rate and/or wrong drug).

The key contributing factors identified were:

Process:

- Lack of built-in safety-check module in the Clinical Information System (CIS) to alert the doctor if the dosage of Morphine infusion entered exceeds the dosage range;
- Use of "Paediatric Intensive Care Unit (PICU) Infusion Calculator" not well taken up by staff;
- Non-compliance with operational practices on sedation for diagnostic imaging;
- Non- compliance with the "5 rights" guideline and proper dangerous drug checking and administration procedure;
- Not following conversion guidelines in prescribing Morphine for administration by subcutaneous route.

Communication:

- Unclear decimal point in handwritten prescription;
- Ineffective communication among staff in the sedation process.

Staff:

- Lack of knowledge in morphine usage and double checking" requirement for dangerous drug administration;
- Failure to check correct spelling of Look-Alike Sound-Alike drug against prescription.

- Low alertness of staff to prescription of high alert medication.

The key improvement measures were:

Process:

- Enhance the system for clinical staff to make the correct dosage conversion and the reference dosage;
- Set up a system of close vital sign monitoring after starting of infusion.

Management:

- Enhance staff compliance with dangerous drug handling and administration;
- Provide structure training on proper use of infusion device.

39. Eight cases of reported SUEs were related to medication error resulting from the use of anticoagulants. The key contributing factors were:

- Lack of alert message in the CMS for the prescribing doctor when repeating a prescription from another hospital and the latest medication list, even though the previous prescription was shown on CMS;
- Difference in Warfarin dispensing policy in different hospitals;
- Co-existence of two dilution systems in ward setting;
- Failure to comply with the Checking Procedures for Administration of Medication and Policy for Safe Administration of Medication;
- Inadequate instructions / written orders of the saline flush in MAR prescription failing to specify which port to be flushed;
- Insufficient knowledge of staff on safe use of heparin locked lines; and
- Insufficient knowledge of staff on operation of intravenous infusion device.

40. Seven reported SUEs were related to the use of oral hypoglycaemic agent.

The key contributing factors were:

- Difficulty in differentiating two strip-pack drug preparations which were both white tablet of similar size;
- Failure of pharmacy staff to comply with the '3 checks' principles during the dispensing procedure;
- Lack of system safeguard to ensure correct prescription;
- Inadequate supervision of staff on case management; and
- Inappropriate login practice by staff in the use of CMS.

41. Four reported SUEs were related to the use of insulin.

The key contributing factors were:

- Insufficient knowledge of staff on Dextrose Insulin regime;
- Lack of standard insulin protocol within the department;
- Non-compliance with the "5 rights" principle before administering insulin;
- Misleading and ambiguous remarks on insulin dosage on MAR sheet;
- Lookalike design of Insulin syringe and 1 ml syringe; and
- Miscommunication among staff on insulin dosage.

The key recommendations were:

- Review the stock of insulin syringe;
- Review the department guideline; and
- Enhance staff alertness on the nurse of high alert medication.

42. Two reported SUEs were related to the use of electrolytes. The key contributing factors were:

- Non-compliance with the "5 rights" principle ;

- Inappropriate placement of highly concentrated electrolyte; and
- Lack of verification of prescribed IV infusion treatment for electrolyte imbalance against the patient's record.

43. One reported SUE was related to the use of oncology drug. The key contributing factors were:

- Unclear labeling of loose strip-packed drugs; and
- Non-compliance of staff with drug dispensing and checking process.

44. Another reported SUE was related to the use of muscle relaxant.

The key contributing factors were:

- Uncommon prescription of Rocuronium infusion in the clinical unit; and
- Lack of explicit description on concentration of muscle relaxant preparation.

The key recommendation was:

- Updated the "standard dilution chart" for commonly used medications' preparation.

45. Twenty reported SUEs were related to the use of other medications.

The key contributing factors were:

- Non-compliance with the '5 Rights' checking principle in drug administration;
- Non-compliance with proper dilution and administration rate of IV antibiotics;
- Lack of independent double-checking of pump settings before commencing infusion and regular monitoring of infused amount / volume after commencement of infusion;
- Lack of a clear workflow and documentation in handling patient's enquiry on

medication;

- Failure of staff to recognize the different generic name of drug during cross checking against Cluster Dilution Recommendation Table; and
- Incorrect computer entry due to the complex Medication Order Entry (MOE) screen.

The key improvement measures were:

- Develop department standard on safe practices for infusion of high alert medication;
- Ensure staff competency in operating different models of infusion pumps used in wards;
- Remind staff of the need to read the instrument leaflet carefully when handling uncommon medication;
- Reinforce staff on the importance to clarify clear medication with pharmacy;
- Enhance the MOE function; and
- Improve the process and documentation in handling patient's enquiry.

46. Ten reported SUEs were related to misidentification of patient or patient record / laboratory report leading to prescription of inappropriate or unnecessary treatment to patient. The key contributing factors were:

- Ineffective staff communication on handling abnormal laboratory results; and
- Failure to verify laboratory results before prescribing and administering medications.

Learning and Sharing

47. To promote learning and sharing, salient information on all reported SEs and SUEs, contributing factors and learning points are shared in the 'HA Risk Alert' (HARA), a newsletter published quarterly since November 2007. To raise staff awareness on patient safety, abstracts of local and global healthcare risk alerts are also included in each publication of HARA and promulgated in the half-yearly Patient Safety Forum.

CHAPTER 6 – CONCLUSION

48. This is the fifth Annual Report on Sentinel and Serious Untoward Events which documents all information on 34 SEs and 102 SUEs reported from 1 October 2011 to 30 September 2012.

49. A total of 34 SEs were reported in 2011/12, representing a reduction of 10 cases when compared with 44 SEs reported in 2010/11. This can be accounted for by the reduction of 10 SEs related to "Patient suicide" in 2011/12 when compared with 2010/11. Similar to previous Annual Reports, "Retained instruments or other material after surgery / interventional procedure" (14 cases; 41.2%), "Death of an inpatient from suicide (including home leave)" (10 cases; 29.4%) and "Surgery / interventional procedure involving the wrong patient or body part" (5 cases; 14.7%) were the three top categories of SEs reported in 2011/12.

50. There were altogether 102 SUEs reported in 2011/12, representing a slight increase of 5 cases when compared with 97 SUEs reported last year. A breakdown of these reported SUEs shows that 92 (90.2%) were related to medication error and 10 (9.8%) patient mis-identification.

51. This Annual Report summarizes all reported SEs and SUEs as well as risks, improvement opportunities and learning points identified by RCA Panels in the course of investigation into such events. It also documents various planned or implemented

risk reduction measures to prevent the future recurrence of similar adverse events by hospitals / clusters. With the publication of this Report, we sincerely hope that it would facilitate sharing of the lessons learned from adverse events and consolidating the safety culture in the promotion of patient safety in all HA hospitals and institutions.

CHAPTER 7 – THE WAY FORWARD

52. The key aim of publishing this Annual Report is to promote patient safety by documenting and learning from all reported SEs and SUEs. In our quality and patient safety journey, we will endeavor to enhance patient safety by adopting the following:

Build System and Process to Promote Safe Surgery

53. The HA will continue to consolidate the structure and processes to promote safe surgery in operation theatre, interventional procedure suites, and bedside. These will help to reduce the risk of retained instruments/materials, and that of wrong site surgery. Also, the HA will facilitate the sharing of implementation strategies and improvement actions through, for example, patient safety round and audits.

Enhance the Strategies and Recommendations for Prevention of Patient Suicide

54. The HA will continue to enhance strategies to reduce the risk of patient suicide. For example, guidelines and facility-related measures for prevention of suicide in inpatient settings will be reviewed.

Enhance Strategies for Safe Prescription in Patients with Known Drug Allergy

55. The HA will implement the various measures to enhance safe prescription in

patients with known drug allergies, namely (a) develop corporate guideline for safe prescription in patients with known drug allergy, (b) training for target professional group on minimizing prescription errors and (c) enhance the use of IT system to mitigate the risk of inpatient prescription error related to drug allergy.

Strengthen the "Team-based Approach" in Patient Care Processes

56. The HA will continue to address patient safety with emphasizes on human factors in risk reduction. The team-based approach is appropriate to encourage staff assertiveness in communication during the care processes. The HA will endeavor to enhance communication skills and strengthen leadership through training programs, such as crew resources management (CRM) and simulations to develop teams and effective management of resources. This is particular important in high-risk patient care environments (e.g. operating theatres, intensive care units, accident and emergency departments, and labour wards).

Facilitate the Reporting of Patient Care Events

57. The Advance Incident Reporting System (AIRS) has been revamped to facilitate reporting of near-miss events using the structured data approach. Also, the AIRS is designed to interface with the existing systems to improve accuracy of data input and facilitate reporting. For example, drug names are retrieved from the "Drug Master". Moreover, the workflow for reporting near-miss events has been streamlined for timely reporting. The new version of AIRS is planned to roll out to all hospitals and clinics in 2013.

Promote safety culture through "Patient Safety Round" and "Medication Safety Round"

58. Safety rounds provide the opportunities for direct communication with executives, managers, and frontline staff on aspects of safe systems and work processes. The HA will continue, through joint safety rounds, to foster an environment that encourages staff to make changes from the lessons learnt from reported incidents. Moreover, it enhances clinical governance and collaboration among healthcare professionals and executives to lead and monitor changes.

Concluding Remarks

"To err is human". In our healthcare setting, "Patient Safety" should be everybody's business. By understanding and sharing the lessons learned from the reported Sentinel and Serious Untoward Events, it is hoped that we can work hand-in-hand to ensure a safer journey for all patients under our care.

ANNEX I

HA SENTINEL AND SERIOUS UNTOWARD EVENT POLICY

1. Purpose

The Sentinel and Serious Untoward Event Policy defines the process for identification, reporting, investigation and management of Sentinel Events (SE) and Serious Untoward Events (SUE) in the Hospital Authority.

2. Scope

This Policy applies to sentinel and serious untoward events related to care procedures.

3. Objectives

- To increase staff's awareness to SE and SUE.
- To learn from SE and SUE through Root Cause Analysis (RCA), with a view to understand the underlying causes and make changes to the organization's systems and processes to reduce the probability of such an event in the future.
- To have positive impact on patient care and services.
- To maintain the confidence of the public and regulatory / accreditation bodies.

4. Definition of Mandatory Reporting Events

4.1 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 inpatient 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).

4.2 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.

5. Management of SE and SUE

5.1 Immediate response upon identification of an SE or SUE

5.1.1 Clinical Management Team shall assess patient condition and provide care to minimize harm to patient.

5.1.2 Attending staff shall notify senior staff of Department without delay (even outside office hours). Hospitals should establish and promulgate a clear line of communication for SE and SUE to all staff.

5.1.3 Department and hospital management shall work out an immediate response plan, including

- Disclosure to patient / relatives;
- When to notify HAHO;
- Public relation issues and media handling, (making reference to HAHO Corporate Communication Section's protocol / advice); and
- Appropriate support / counseling of staff.

5.2 Reporting (within 24 hours)

5.2.1 Hospitals must report SE and SUE through the Advance Incident Reporting System (AIRS) within 24 hours of their identification, to

- Provide an initial factual account;
- Mark the case as "SE" or "SUE" in AIRS accordingly.

5.2.2 Hospitals shall consider additional reporting requirements as indicated, for example, to Coroner in accordance to statutory requirement.

5.3 Investigations

5.3.1 Within 48 hours

5.3.1.1 For SE, HAHO shall appoint an RCA Panel, composing of members from hospital RCA team, respective COCs, external senior clinicians, HAHO coordinator and / or lay persons from Hospital Governing Committee, to evaluate the event reported.

5.3.1.2 For SUE, the RCA Panel shall be formed by respective hospital.

5.3.2 Hospitals shall submit a detailed factual account to HAHO in 2 weeks.

5.3.3 The RCA Panel shall submit an investigation report to the Hospital Chief Executive in 6 weeks.

5.3.4 Hospital shall submit the final investigation report to HAHO in 8 weeks.

5.4 Follow-up (post 8 weeks)

5.4.1 Implicated departments shall implement the action plan as agreed in the RCA report, and risk management team / personnel shall monitor compliance and effectiveness of the measures in due course.

5.4.2 The RCA panel in the HAHO shall review RCA reports to identify needs for HA-wide changes, and to share the lessons learned through Safety Alert, HA Risk Alert (HARA), Patient Safety Forum, SE and SUE Half Yearly Report (to public) and follow-up visits.

5.4.3 The HAHO would visit respective hospitals for the implementation of improvement measures.

ANNEX II

SUMMARY OF INDIVIDUAL SENTINEL EVENTS AND RECOMMENDATIONS FOR IMPROVEMENT

Category 1: Surgery / interventional procedure involving the wrong patient or body part

URETERORENOSCOPY WAS PERFORMED ON WRONG SIDE

Patient A was planned for **RIGHT** ureterorenoscopy. The chief surgeon Dr. Y performed time-out, proceeded with the procedure but cannulated the **LEFT** ureter instead. He sought help from Dr. Z when difficulties were encountered. Dr. Z completed the **LEFT** ureterorenoscopy successfully. Specimen identified as "left kidney urine" was passed to the scrub nurse to be sent out. The procedure was complicated by contrast extravasation of the left kidney and a left JJ stent was inserted. The error of wrong site procedure was then identified before the patient left the theatre. Right ureterorenoscopy was immediately done and the patient was subsequently discharged uneventfully.

Key contributing factors:

1. Inadequate preparation.
2. Lack of proper handover from Dr. Y to Dr. Z.
3. Inconvenient X-ray facilities in the operating theatre.
4. Failure of the scrub nurse to speak up despite awareness of the mistake.

Key recommendations:

1. Explore the possibility of 2nd time-out to be done immediately before cannulation of ureter.
2. Strengthen intra-operative handover procedures to safeguard critical information transfer.
3. Improve x-ray display facilities in operation theatre.
4. Reinforce the "speak up" culture among surgical team members.

BURR HOLE WAS PERFORMED ON WRONG SIDE

Patient was admitted due to head injury. CT brain showed left subdural haematoma but no neurological deficit detected. Patient was discharged and followed up in the Neurosurgery (NS) clinic. Patient's follow-up CT brain showed reduction in size of left subdural haematoma but new right subdural haematoma was noted. Thus, right burr hole drainage was scheduled with patient consent. Before the operation, the "Time-out Procedures" were performed by the assistant surgeon, anesthetist and circulating nurse. The site marking box was ticked as "Not Applicable" since side marking for burr holes is not a routine practice in NS Department. The surgeon positioned the patient and placed a shoulder support over the patient's left side and the patient's head was turned to the right side. Burr holes were performed on the left side and only minimal amount of haematoma was found. The surgeon's senior realized the error and then performed drainage of right subdural haematoma on the right side uneventfully. Patient had good recovery and was discharged later.

Key contributing factors:

1. Lapse of concentration and distraction of the involved operating team members.
2. The operation side was not marked.
3. Failure in communication to verify the operating side among the operating team members.

Key recommendations:

1. Implement laterality marking for burr holes procedures.
2. Implement team briefing for interventional procedures / operations.

LOCAL ANAESTHETIC WAS INJECTED TO THE PATIENT'S WRONG EYE

The patient was admitted for elective repair of retinal detachment of the left eye under retrobulbar anaesthesia. The operation site was marked above the patient's left eyebrow. Sign in and "time out" were performed by the surgeon and the nurse. The surgeon prepared the anaesthetic drug (2% lignocaine) and injected to the retrobulbar space of patient's right eye instead of left eye. The surgeon was informed that the anaesthetic drug was given to the incorrect eye. The surgeon subsequently injected the anesthetic drug and performed operation on the patient's left eye uneventfully. The patient's right eye was assessed and no harm was detected.

Key contributing factor:

Long time lapse between "time out" and injection of local anaesthetic.

Key recommendations:

1. To inject local anaesthetic immediately after completing "time out".
2. To consider performing "time out" again just before injection of anaesthetic and before incision.

REMOVAL OF LEFT INSTEAD OF RIGHT DOUBLE J (JJ) STENT

The patient has history of bilateral hydronephrosis with JJ stents in situ on both sides. The patient was scheduled for removal of right JJ stent only. Dr. A checked the case notes with Nurse B and noted that removal of right JJ stent under flexible cystoscopy (FC) was planned. Dr. A performed "time out" with the patient and nurses before the procedure. Dr. A confirmed the side (right) of the JJ stent to be removed. Dr. A found it difficult to obtain a good view due to tangling of both JJ stents, presence of turbid urine and deformity of bladder during the procedure. Dr. A removed the JJ stent incorrectly after tracking up the left ureteric orifice. Post procedure X-ray revealed the left JJ stent was wrongly removed. The left JJ stent was subsequently reinserted and right JJ stent was removed uneventfully.

Key contributing factors:

1. Deformity of bladder increases difficulty of the procedure.
2. Unfamiliarity with the procedure.

Key recommendations:

1. To seek seniors' advice when performing unfamiliar procedures or encountering complicated situations.
2. To use fluoroscopic guidance when performing difficult cases.

SPINAL SURGERY AT WRONG LEVEL

The patient has lumbar spinal stenosis, admitted for L4 laminectomy and L4/5 decompression. "Time out" was performed prior to confirming the spinal level by the use of intra-operative X-Ray with metal markers on L4. The markers were subsequently removed before laminectomy. The surgeon removed the presumably L4 lamina (L4 laminectomy). Before proceeding further, the team performed second "time out" and found that laminectomy was performed on L3 instead of L4.

The operation was subsequently revised and the correct surgery was performed in the same session.

Key contributing factors:

1. Absence of markings to assist the surgeon to identify the spinal level following removal of the metal markers after X-ray screening.
2. No independent confirmation of correct operation site by another staff.

Key recommendations:

1. To use fixed marking (e.g. diathermy to mark the lamina; make a cut to the lamina) to identify the correct operation site.
2. To confirm correct operation site by another staff independently.

Category 2: Retained instruments or other material after surgery / interventional procedure

RETAINED GAUZE / SPONGE AFTER OPERATION / PROCEDURE

Case 1: Cotton Wool-like Material

A patient was admitted to Hospital A for debridement of right thigh pressure ulcer. The operation was uneventful. Patient was discharged and referred to Community Nursing Services (CNS) of Hospital B for daily dressing. A CNS nurse paid home visits to perform wound dressing for the patient. A piece of old cotton wool-like substance soaked with brown-yellowish discharges was found and removed from the wound by CNS nurse. Patient was re-admitted to Hospital A for thigh wound management. No other retained dressing material was found.

Key contributing factors:

1. Individually packed cotton wool ball might be partially retained in the patient's wound during wound swabbing and cleansing.
2. Lack of guideline on the use and documentation of wound swabbing and cleansing material.

Key recommendations:

1. Reinforce the documentation of wound packing and conduct a compliance audit on documentation of wound cleansing and dressing technique.
2. Stop the use of cotton wool ball and replace it with non-woven gauze for wound swabbing or cleansing.

Case 2: Short Raytac Gauze

Patient was admitted via AED to the Medical Unit and underwent an emergency operation for his right shoulder arthritis. During the procedure, Dr. A packed a short raytec gauze inside patient's right shoulder wound without informing the theatre nurses. During wound closure, nurse A and nurse B performed swab count. Dr. B noticed one gauze was dropped onto the floor and asked the nurses to search again. Wound closure was continued. Nurse B reconfirmed with Dr. B that no gauze was left inside the wound. In view of the small incision site, Dr. B considered that it was unlikely that the gauze was being retained in the wound.

The wound was closed and column of the surgical safety checklist was completed before the missing gauze was found. As the short raytec gauze was still missing after another thorough search, X-ray was ordered and a foreign body was shown inside the patient's right shoulder. Re-exploration of right shoulder wound was performed and a short raytec gauze was removed.

Key contributing factors:

1. Ineffective communication among doctors and nurses.
2. Non-compliance with the Surgical Safety Policy.

Key recommendations:

1. Enhance communication among nurses and doctors on gauze packing and counting procedure during operation.
2. Reinforce team communication e.g. reciprocal communication in critical step.
3. Consider using long raytec gauze instead of short raytec gauze for wound packing.
4. Reinforce proper use and documentation of surgical safety checklist.

Case 3: Plain Gauze

A patient underwent an emergency marsupialization operation for left Bartholin's abscess. A piece of soaked gauze was packed in the patient's wound which was then covered with a pile of gauzes. The packed gauze was documented in operation record and post-operative order in the patient's record. The operating theater nurse handed over the wound packing information to the ward nurse. On the next day morning round, the patient told the surgeon that a mass had fallen off and was discarded. The surgeon inspected the wound and subsequently discharged the patient. Two days later, the patient attended AED for persistent wound swelling and pain. No wound examination was conducted and the patient was discharged with a course of antibiotics. One week later, the patient was admitted via AED for persistent wound swelling with discharge. A piece of gauze was found retained inside the patient's wound and was removed. The patient's condition improved and the patient was subsequently discharged.

Key contributing factor:

Failure of thorough wound examination.

Key recommendations:

1. To perform a manual examination of post-operative packed wound.
2. To conduct a proper wound examination for patients with post-operative symptoms

and complications.

Case 4 – 7: Long Gauze

Patient A attended AED and delivered a baby with complications of broken cord and retained placenta during the process. Subsequently, the retained placenta was delivered completely. She had persistent foul smelling lochia after discharge from hospital. A piece of gauze was removed in a mainland hospital.

Patient B gave birth to a baby by normal vaginal delivery. She attended the Maternity and Child Health Centre for post-natal check-up. A piece of gauze was found and removed during vaginal examination.

Patient C gave birth to a baby by normal vaginal delivery. She attended a private hospital because of something protruding out from vagina. A piece of gauze was found and removed.

Patient D gave birth to a baby by vacuum extraction. During episiotomy repair, the resident explained to the patient the finding of a bluish mark (later confirmed a birth mark) on the baby's chest. The resident continued the wound repair while having the conversation with the patient. The patient had increasing wound pain and smelly lochia. She subsequently attended a private clinic. A piece of gauze was found and removed in the course of vaginal examination.

Key contributing factors:

1. Failure in proper counting of long gauze after operation.
2. Unaware of risk to pack the whole piece of gauze in vagina during episiotomy wound repair.
3. Failure to detect and remove packed gauze by vaginal examination after wound repair.

Key recommendations:

1. Improve the counting system
    - Ensure double counting of the gauzes used for the episiotomy repair independently by the operator and another staff;
    - Document the quantity of gauzes on the counting form immediately after unpacking;
    - Enhance the design of the gauze counting form and use clearer wordings in the form.
2. Remind staff to be vigilant when performing post-wound repair vaginal examination to exclude the possibility of retained foreign object.
3. Strengthen the training and supervision of doctors

- Establish a structured assessment of interns on episiotomy repair;
- Empower staff to alert the interns' supervisors should they detect any deviation from normal practice;
- Reinforce safety awareness regarding surgeries and clinical procedures, including the importance of counting and risk of item retention.

RETAINED PART OF INSTRUMENT / MATERIAL

Case 1: Screw

The patient was admitted for removal of implant and wound debridement on left ankle. The surgery was uneventful. The surgeon subsequently realized that a screw was not been removed from the fibula. After undergoing another operation for removal of the screw, the patient was discharged uneventfully.

Key contributing factors:

1. Lack of standard protocol or checklists to guide and assure complete removal of implants and all their parts.
2. The surgeon and the assistant of the operation had failed to safeguard the complete removal of the implants by not ascertaining and confirming the nature and number of implants to be removed.

Key recommendations:

1. Consider introducing standard guideline for implant removal.
2. Adjust the setting of system auto-shutdown to ensure all relevant X-ray images shown in the computer panels could be displayed throughout the operation.
3. Introduce mechanism (e.g. checklist) to ensure complete removal of implants.
4. Implement briefing / debriefing practice to raise situation awareness in reducing human errors.

Case 2: Tip of Internal Sheath of Resectoscope

Transurethral Resection of Bladder Tumour (TURBT) was performed on a patient. No instrument defect was noted during dissembling and checking. However, staff in the Theatre Sterile Supply Unit (TSSU) subsequently noted that a tip of the resectoscope was missing. Operating theatre (OT) colleagues were informed but the message was not passed on to the surgeons. The error was only discovered 2 months later when X-ray image revealed a foreign object in the patient's pelvis. An operation was performed to remove the foreign object which was found to be the

tip of the resectoscope's internal sheath. The patient recovered uneventfully.

Key contributing factors:

1. The current protocol for checking integrity of instrument immediately after use in OT does not highlight risky areas to attract user's attention.
2. The communication between TSSU and OT staff on instrument integrity is not clear.

Key recommendations:

1. Enhance the system in checking instrument integrity.
2. Revise and improve the communication system between TSSU and OT staff to ensure proper verification of instrument integrity.

Case 3: Metal Washer

A patient was admitted for removal of implants used for fracture internal fixation. Post-operative X-ray revealed that a 3.5mm metallic washer was not removed. Removal of retained washer was later performed and the patient was discharged on the same day.

Key contributing factors:

1. The operation involved large quantity and many different types of implant.
2. It was difficult to ascertain the exact quantity and types of implant from the pre-operative X-ray assessment.
3. Intra-operative X-ray examination was not performed.

Key recommendation:

Perform intra-operative X-ray to ensure complete removal of all implants when large quantity of implants is involved.

Case 4: Intravascular Guide Wire

A post craniotomy patient developed low blood pressure, requiring insertion of a central venous catheter (CVC). 2 doctors and 1 assisting nurse performed the procedure. The supervising doctor had to answer an urgent phone call during the procedure. After completion of the procedure, the guide wire was found missing. X-ray imaging revealed that the guide wire was retained in the patient's central vein. The guide wire was retrieved uneventfully.

Key contributing factors:

1. Lack of hands-on training and assessment of the competency of the newly joined resident in performing CVC insertion.
2. Bedside procedures safety checklist was not followed effectively. The checklist was signed without eye-witnessing the removal of the guide wire from the patient's body.

Key recommendations:

1. To reinforce the training and assessment of competency of trainees.
2. To strictly enforce safety measures for removal of guide wire, e.g. "guide wire out" should be voiced out with acknowledgement; and assisting nurse should only connect fluid lines after confirmation of guide wire removal.

Case 5: Broken of Segment of 70˚ Telescope

The patient was suffering from right knee osteoarthritis and was admitted for elective surgery. Arthroscopic removal of loose body was done and the patient was discharged 2 days later. The patient attended AED 4 days after discharge because of increasing pain and swelling on right knee and leg. The patient was readmitted for further management of radio-opaque signal at posterior aspect of joint. Upon rechecking the instruments used in the last arthroscopic removal, a metallic covering defect at the end of the 70˚ telescope was found. The shape and size of the defect was compatible with the image shown in X-rays and computerized tomography scan. Right knee arthroscopic removal of foreign body was performed. The patient's recovery was uneventful.

Key contributing factors:

1. Difficulty in detecting defect of delicate instruments by naked eyes.
2. Low awareness of staff on checking the integrity of instruments after use.

Key recommendations:

1. To use LED Hand Magnifier to facilitate checking and inspecting the integrity of delicate instruments after use in operating theatre.
2. To document details of scopes used in surgical operations into the operating record book.

Case 6: Retained Scleral Plug after Left Eye Vitrectomy

The patient who suffered from rhegmatogenous retinal detachment and cataract of

the left eye was admitted for elective vitrectomy and endolaser to retina. A scleral plug was found missing during the operation. The operative site was searched twice but the missing scleral plug could not be located. The patient was discharged to ward but the scleral plug could not be found despite thorough search in the operation theatre. X-ray orbit of the patient showed a shadow compatible with the missing plug. A subsequent operation was performed to remove the patient's retained scleral plug on the same day.

Key contributing factors:

1. Low staff's alertness on potential risk of retained foreign body (FB) within the surgical field as small items of "surgical material" were commonly found missing and subsequently found outside the surgical field afterwards.
2. Difficulty to manually locate dislodged scleral plug into deep space of the orbit.

Key recommendations:

1. To promote high index of suspicion among staff for missing "surgical material" inside the surgical field.
2. To draw up a department specific safety notes for dealing with missing "surgical material" as future intra-operative reference.

Case 7: Segment of Broken Tension Band Wire

The patient was admitted for an elective surgery to remove a broken wire after fixation of fracture patella done in 2008. The operation was performed under spinal anaesthesia. A residual wire segment of the broken wire was noted in a post operation. Another operation was schedule under local anaesthesia on the following day to remove the 1.5cm residual wire segment. The patient recovered uneventfully.

Key contributing factors:

1. Difficulty in confirming the completeness of the used broken tension band wire during removal.
2. Low awareness of staff on checking the number of broken fragments to be taken out during operation.

Key recommendation:

Perform routine x-ray before reversal of patient to ensure complete removal of broken wire in "multiple-fragments" cases.

Category 6: Death of an inpatient from suicide (including home leave)

Out of the 10 suicide cases, 6 patients committed suicide while staying in hospital and 4 committed suicide during home leave; 6 patients had mental illness, 2 had terminal cancer or chronic illnesses, 1 from isolation ward and 1 from general ward.

Key contributing factors:

Apart from the underlying medical conditions of patients and their mental health conditions (e.g. depression from the chronic or terminal illnesses), the following are other factors that may have contributed in varying degrees to a patient's suicide:

1. Sudden and unpredicted change of mental conditions and behavior of patients.
2. Underlying illness of the patients, e.g. psychiatric conditions, chronic illnesses.
3. Underlying illness of the patient.
4. Staff's unawareness of environmental risks for patient suicide (e. g. door knob).
5. Solitude of patients accommodated in single room, isolated from others.
6. Determination of patient to end own life. This could mask the patient's depression and suicidal ideas. The patient could be seen to be in a calm and stable mood.

Key recommendations:

Process	1. Explore the possibility of enhancing the Palliative Team referral system for Clinical Oncology patients. 2. Perform regular psychological and emotional assessment for patients staying inside isolation rooms. 3. Enhance unobtrusive observation of patients at night time. 4. Put up bed-side suicide caution signage (in a format only recognizable by staff) to further alert staff of the need for close observation of at-risk patients.
Environment & equipment	1. Modify the shower facility in isolation rooms to reduce suicidal risk 2. Review the quality and standard of CCTV systems and improve image visibility of patients under surveillance even under dim light. 3. Review the security measures at hospital main exits to prevent patients from slipping out of hospitals by following visitors.

Management	1. Raise staff awareness of a patient's unusual belongings to reduce the risk of suicidal act. 2. Develop a practice of continuous suicidal risk assessment of patients during their hospital stay especially for patients with changes in conditions. 3. Enhance training of staff on suicidal risk identification and assessment.

Category 7: Maternal death or serious morbidity associated with labour or delivery

MATERNAL DEATH WITH PRIMARY POSTPARTUM HAEMORRHAGE & GENITAL TRACT TRAUMA

The patient gave birth to a normal baby girl by normal vaginal delivery. Soon after delivery, the patient developed postpartum bleeding and cervical tear was suspected by the attending midwife. The on-call medical officer, a resident specialist, and an associate consultant were called for assistance. To manage the persistent oozing and massive blood loss, a total of three operations were performed for the patient in the obstetric OT and main OT subsequently. Despite all treatment, the patient's condition continued to deteriorate and the patient eventually succumbed.

Concluding Remarks by Investigation Panel:

1. The occurrence of retroperitoneal haematoma in the patient was rare and it was difficult to diagnose.
2. Panel members appreciated the efforts of both the doctors and nurses who demonstrated high quality teamwork and spirit in managing the patient's emergency situation.

SERIOUS MORBIDITY ASSOCIATED WITH DELIVERY

The patient underwent emergency Lower Segment Cesarean Section for threatened preterm labour and small preterm twins. The operation was uneventful and two normal healthy babies were delivered. Soon after delivery, the patient complained of headache. Her blood pressure was noted to be high. No proteinuria was detected. The patient later reported that her headache had much improved. Her blood pressure had returned to normal after she was given 2 bolus injection of antihypertensive drug. The patient's conscious level deteriorated 2 hours later. She developed up-rolling eyeball and was noted to have hypertension. Her CT brain revealed acute intracranial haemorrhage. The patient underwent an emergency neurosurgical operation followed by rehabilitation care afterward.

Concluding Remarks by Investigation Panel:

1. The care provided by the clinical team to this high-risk pregnancy patient was considered timely and appropriate.
2. It is recommended that more support and supervision by senior staff would be beneficial in the management of patients with obstetrical emergencies.

Category 9: Other adverse events resulting in permanent loss of function or death (excluding complications)

DEATH OF A PATIENT WITH A PERMANENT TRACHEOSTOMY

A patient with a permanent tracheostomy undergoing stroke rehabilitation suddenly developed cardiac arrest and passed away. It was subsequently found that the gauze covering the permanent tracheostomy was inappropriately appended on all four edges to the patient's skin for a number of days.

Concluding Remarks by Investigation Panel:

1. There was a lack of awareness among the medical and nursing staff on the permanent nature of the patient's tracheostomy.
2. The patient's tracheostomy was managed as a temporary one. The tracheostomy stoma was inappropriately covered by gauze fixed by adhesive tape on all 4 edges.
3. There was inadequate communication among health care personnel during patient transfer between acute and rehabilitation hospitals to pass on information regarding the nature of the patient's tracheostomy.
4. The documentation was inadequate to assist the nursing team to be fully aware of the type and the condition of the patient's tracheostomy.

Recommendations:

1. Enhance staff's awareness of different types of tracheostomy and their care.
2. Improve handover communication of patients from one hospital to another.

ANTI-COAGULANT GIVEN TO PATIENT WITH ACUTE CORONARY SYNDROME (ACS) AND INTRACRANIAL HEMORRHAGE (ICH)

A patient developed syncope, fell onto the ground and sustained head injury with loss of consciousness. Computerized Tomography (CT) of brain was performed and reviewed by the AED doctor, on-call physician and cardiologist. Without noting a small amount of ICH, the patient was prescribed anti-platelet and anti-coagulant therapy to treat the concomitant ACS. However, a second CT brain scan after patient's deterioration revealed massive ICH. A radiologist noted a

small amount of ICH in the 1st scan retrospectively. The anti-coagulant and anti-platelet therapy might have aggravated the patient's ICH and the patient passed away subsequently despite treatment.

Concluding Remarks by Investigation Panel:

1. The sign of bleeding was subtle in the first CT brain scan film.
2. The patient's ICH was more difficult to diagnose from hard copy CT films compared with computer monitor images.
3. Both the attending physician and cardiologist who had reviewed the CT films could have been affected by previous doctor's opinion (negative finding) and failed to notice the patient's ICH. They thus proceeded to mainly focus on managing the patient's life threatening cardiac conditions accordingly.

Recommendations:

1. Develop clinical guidelines to advise staff to have prior discussion with patient and family on potential risks of using anti-coagulant for patients with history of significant head injury.
2. Explore the feasibility of not printing CT hard copy films to ensure that all CT brain scan images be viewed on computer monitor.
3. Encourage clinicians to consult radiologist for interpretation of CT brain scan images of special cases.

OXYGEN DELIVERY TUBING WAS FOUND NOT CONNECTED TO THE EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO) SYSTEM

The patient was transferred from Hospital A to Hospital B for further treatment of acute myocarditis and slow heart rate. In view of the patient's deteriorating condition 2 days after admission, the patient was transferred to the operating theatre for insertion of catheter to connect with the life support ECMO system. Following the operation, the patient's condition further deteriorated after transfer to the Cardiothoracic Surgical Intensive Care Unit for continuous monitoring and treatment. On examination, it was found that the oxygen tubing was not connected to the ECMO system. The tube was immediately reconnected by staff to improve the patient's blood oxygen saturation. However, the patient's heart function showed no subsequent improvement and the patient was certified dead on the 6th day of admission.

Key contributing factors:

1. Inadequate communication following the change of practice in the connection of the ECMO support system upon transfer of patient.
2. Inadequate understanding of some staff members regarding tubing connection of the ECMO system.
3. Insufficient alarm volume of oxygen saturation analyzer (48.5 – 52 dB) to alert staff in the ward with ambient noise level of around 50 – 70 dB.

Key recommendations:

1. Establish communication structure to endorse changes in practice and ensure staff understanding on the changes.
2. Enforce the arrangement for perfusionists or ECMO leaders to assist in between-floor transfer of patients.
3. Update the patient transfer and handover checklists for patients undergoing ECMO treatment, including the checklists on different modes of set-up and critical steps in connecting the ECMO system.
4. Enhance staff training on the use of ECMO machine.
5. Explore the procurement of purpose-built oxygen saturation analyzer with louder alarm.

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