

**ANNUAL REPORT ON
SENTINEL AND SERIOUS UNTOWARD EVENTS**

October 2017 – September 2018

**HOSPITAL AUTHORITY
HONG KONG**

January 2019



醫院管理局
**HOSPITAL
AUTHORITY**

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Acknowledgement

This 11th Annual Report on Sentinel and Serious Untoward Events manifests Hospital Authority's (HA) ongoing efforts in the improvement of patient safety and delivery of quality healthcare. Since the implementation of the Sentinel & Serious Untoward Event Policy eleven years ago, root causes of incidents were analysed and lessons learnt were shared for continuous learning. Our colleagues have also been striving at formulating patient safety precautions and enhancing staff awareness to minimize the happening of similar events. Their hard work and dedication is well-appreciated.

We are pleased to extend our sincere gratitude to all colleagues who have participated in reporting and investigating incidents as well as providing invaluable advice and recommendations for the betterment of our healthcare system in the interest of our patients, staff and community.

Patient Safety and Risk Management Department
Quality and Safety Division

Contents

Executive Summary	4
Introduction	6
Sentinel Events Statistics	8
Yearly trend	8
Sentinel events reported in 4Q17 - 3Q18	12
Retained instruments / material	14
Inpatient suicide	15
Wrong patient / part	16
International sentinel event reporting	17
Serious Untoward Events Statistics	19
Yearly trend	19
Serious untoward events reported in 4Q17 - 3Q18	21
Untoward medication error	22
Patient misidentification	24
Analysis of Sentinel Events	25
Analysis of Serious Untoward Events	30
Risk Reduction Measures	33
Learning and Sharing	35
The Way Forward	36
ANNEX I: HA Sentinel and Serious Untoward Event Policy	39
ANNEX II: Description of Consequences	42
ANNEX III: High Alert Medications List	43
ANNEX IV: Individual Sentinel Events	44
Category 1: Wrong patient / part	44
Category 2: Retained instruments / material	46
Category 6: Inpatient suicide	52
Category 7: Maternal death	55
Category 8: Wrong infant/ abduction	56
Category 9: Others	57

Executive Summary

1. This annual report provides a summary of all Sentinel Events (SE) and Serious Untoward Events (SUE), comprising 22 SE and 83 SUE, reported between October 2017 and September 2018. Compared with the last reporting period, there was a decrease in SE from 40 to 22 and an increase in SUE from 69 to 83.

Sentinel Events

2. The 22 reported SE represented an incident rate of 1.1 per 1,000,000 episodes of patient attendances / discharges and deaths. Of these SE, 20 occurred in acute general hospitals with 24-hour Accident and Emergency (A&E) services.

3. The top three categories of SE were *retained instruments or other material after surgery / interventional procedure* (10 cases); *death of an inpatient from suicide (including home leave)* (7 cases) and *surgery / interventional procedure involving the wrong patient or body part* (2 cases).

4. Of the 10 *retained instruments or other material after surgery / interventional procedure* cases, 7 were related to the counting of instruments / material and the other 3 involved broken instruments / material.

5. Of the 7 cases of *death of an inpatient from suicide (including home leave)*, 3 were inpatients, 4 were patients on home leave or day leave. The overall assessment and management of these 7 cases was determined to be appropriate by investigation panel.

6. The 7 reported cases of *death of an inpatient from suicide (including home leave)* represented a suicide rate of 0.6 per 100,000 inpatient admissions. For reference, the reported estimated inpatient suicide rates in general hospitals of the United States ranged from 5 to 15 per 100,000 admissions.

7. Of the 2 cases of *surgery / interventional procedure involving the wrong*

body part, 1 occurred in the procedural room and 1 occurred in interventional suite.

8. Other reported SE were *maternal death or serious morbidity associated with labour or delivery* (1 case), *infant discharged to wrong family or infant abduction* (1 case) and *other adverse events resulting in permanent loss of function or death (excluding complications)* (1 case).

9. Among the 22 SE, 8 (comprising 7 cases of *death of an inpatient from suicide (including home leave)* and 1 case of *maternal death or serious morbidity associated with labour or delivery*) resulted in mortality.

10. Of the remaining SE, 3 had major / moderate consequence and 11 had minor / insignificant consequence.

11. The major contributing factors of SE were grouped into communication, knowledge / skills / competence, work environment / scheduling, patient factors, equipment and policies / procedures / guidelines, and safety mechanisms. Recommendations were made to address these factors.

Serious Untoward Events

12. Of the 83 SUE which could have led to death or permanent harm, 76 were *untoward medication error* and 7 were *patient misidentification*.

13. The three most common *untoward medication error cases* were prescription of a *known drug allergen* (17 cases), involving a *dangerous drug* (13 cases) and prescription of an *anticoagulant* (7 cases). Of all the *known drug allergen* cases, 3 were related to Paracetamol and 3 were related to Non-Steroidal Anti-Inflammatory Drugs (NSAID), which are the two most commonly involved drugs.

14. Of the 83 SUE, 7 had temporary major consequence, 17 had moderate consequence and 59 had minor / insignificant consequence.

Introduction

15. The Sentinel Event (SE) Policy was implemented in 2007, while the element of Serious Untoward Event (SUE) was incorporated later in 2010. After implementation of Sentinel and Serious Untoward Event Policy (The Policy) in 2010, the Policy was updated in July 2015 (Annex I) with inclusion of supplementary notes on definitions and qualification criteria of SE as well as new Chinese translations of SE and SUE.

16. The Policy dictates how hospitals are to manage SE and SUE. This includes the reporting of these incidents, and how they are investigated, which is to utilise root cause analysis (RCA) methodology. The RCA panels are tasked to review and identify the root cause(s) and to make recommendations for the hospital and Hospital Authority Head Office (HAHO) management to improve patient safety.

17. This eleventh annual report provides a summary and analysis of the SE and SUE reported via the Advance Incident Reporting System (AIRS) between October 2017 and September 2018 (4Q17 - 3Q18). The aim of publishing this Annual Report is to share the lessons learnt from SE and SUE, with a view to improving quality patient-centred care through system improvement and teamwork.

18. To facilitate understanding on the scope and definition of SE and SUE, the following abbreviated captions for various SE and SUE categories, highlighted in blue, will be used in this report:

Sentinel Events (9 Categories)

- | | |
|------------|--|
| Category 1 | Surgery / interventional procedure involving the wrong patient or body part
[Wrong patient / part] |
| Category 2 | Retained instruments or other material after surgery / interventional procedure
[Retained instruments / material] |
| Category 3 | ABO incompatibility blood transfusion |

[Blood incompatibility]

- Category 4 Medication error resulting in major permanent loss of function or death
[Medication error]
- Category 5 Intravascular gas embolism resulting in death or neurological damage
[Gas embolism]
- Category 6 Death of an inpatient from suicide (including home leave)
[Inpatient suicide]
- Category 7 Maternal death or serious morbidity associated with labour or delivery
[Maternal morbidity]
- Category 8 Infant discharged to wrong family or infant abduction
[Wrong infant / abduction]
- Category 9 Other adverse events resulting in permanent loss of function or death (excluding complications)
[Others]

Serious Untoward Events (2 Categories)

- Category 1 Medication error which could have led to death or permanent harm
[Untoward medication error]
- Category 2 Patient misidentification which could have led to death or permanent harm
[Patient misidentification]

Sentinel Events Statistics

Yearly Trend

19. Since the implementation of the Policy in October 2007, there were 403 SE reported to date. Figure 1 shows the yearly distribution of SE by category, with the total number of cases for each year and for the top three / two categories of the year indicated.

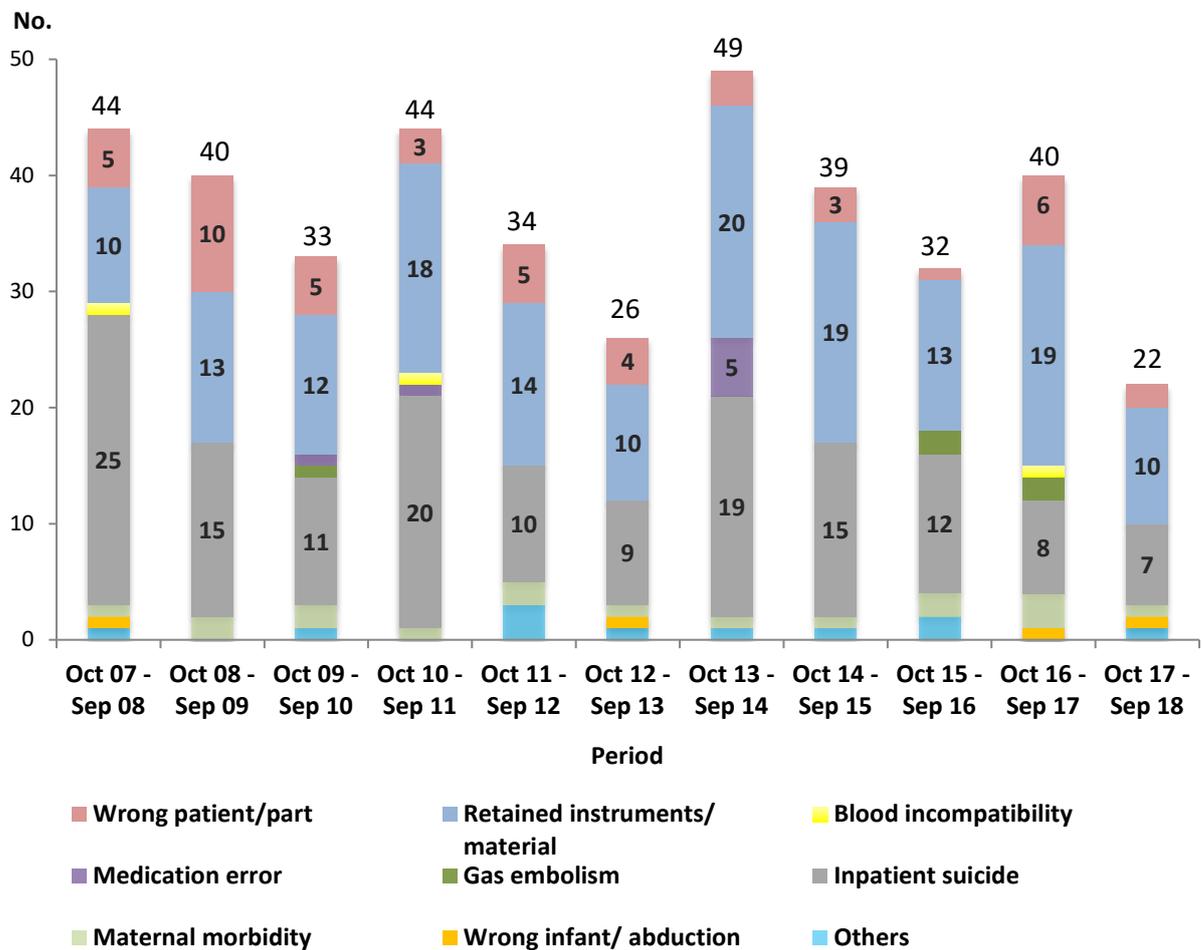


Figure 1: Yearly distribution of SE by category

20. From 2007 to 2018, the annual number of episodes of patient attendances / discharges and deaths had increased from approximately 16 million to 21

million. The SE incident rate per 1,000,000 episodes of patient attendances / discharges and deaths was 1.1 (Figure 2).

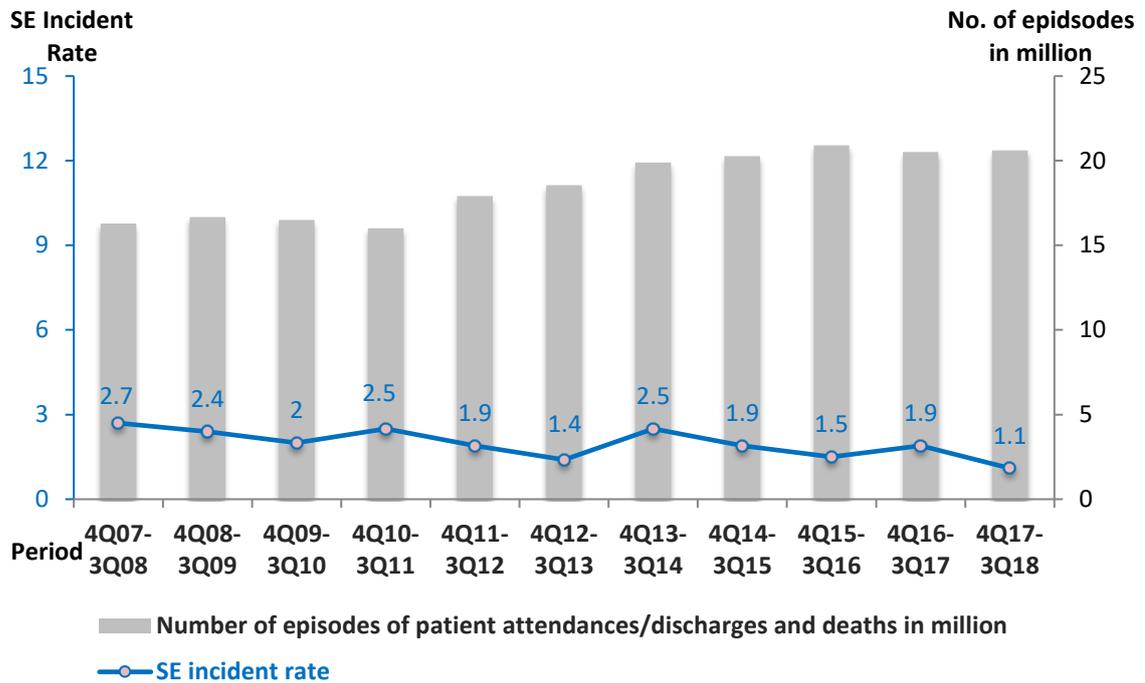


Figure 2: Yearly SE incident rates per million episodes of patient attendances/ discharges and deaths

21. The yearly trend of top three SE and their accumulated figures are depicted in Figure 3 and Table 1 respectively. *Retained instruments / material* (158 cases), *inpatient suicide* (151 cases) and *wrong patient / part* (47 cases) constituted most of the SE reported.

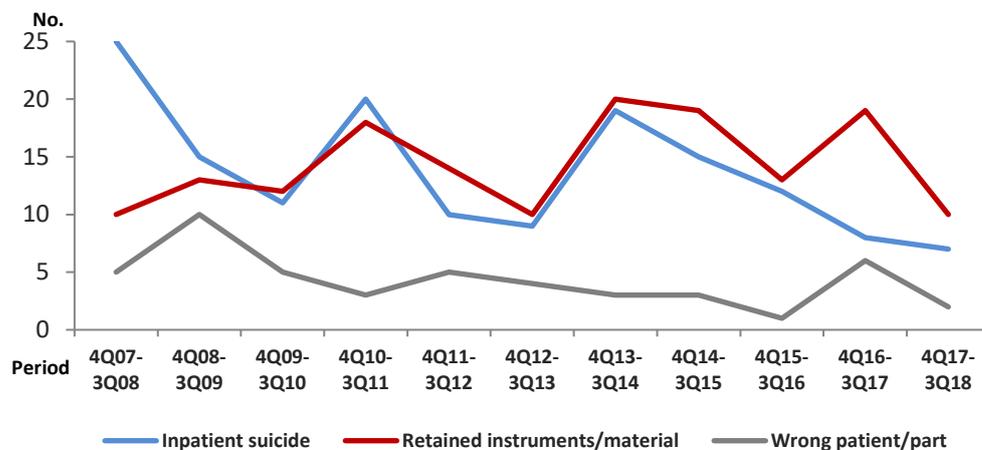


Figure 3: Yearly trend of top three SE

Category	4Q07	4Q08	4Q09	4Q10	4Q11	4Q12	4Q13	4Q14	4Q15	4Q16	4Q17	Total
	3Q08	3Q09	3Q10	3Q11	3Q12	3Q13	3Q14	3Q15	3Q16	3Q17	3Q18	
Retained instruments/ material	10	13	12	18	14	10	20	19	13	19	10	158
Inpatient suicide	25	15	11	20	10	9	19	15	12	8	7	151
Wrong patient/part	5	10	5	3	5	4	3	3	1	6	2	47
Maternal morbidity	1	2	2	1	2	1	1	1	2	3	1	17
Medication error	0	0	1	1	0	0	5	0	0	0	0	7
Gas embolism	0	0	1	0	0	0	0	0	2	2	0	5
Wrong infant/ abduction	1	0	0	0	0	1	0	0	0	1	1	4
Blood incompatibility	1	0	0	1	0	0	0	0	0	1	0	3
Others	1	0	1	0	3	1	1	1	2	0	1	11
Total	44	40	33	44	34	26	49	39	32	40	22	403

Table 1: Number of SE by category

22. Throughout the years, *retained instruments / material; inpatient suicide (including home leave)* and *wrong patient / part* had remained the three top most frequently reported SE.

23. Of all 403 SE reported since October 2007, 145 cases had minor or insignificant consequences (i.e. no injury sustained / minor injury), 71 sustained major / moderate consequences (i.e. temporary / significant morbidity) and 187 led to extreme consequences (i.e. major permanent loss of function / disability or death) (Figure 4). Out of the 187 cases leading to extreme consequences, 151

were due to *inpatient suicide*. A description of the consequences is illustrated in Annex II.

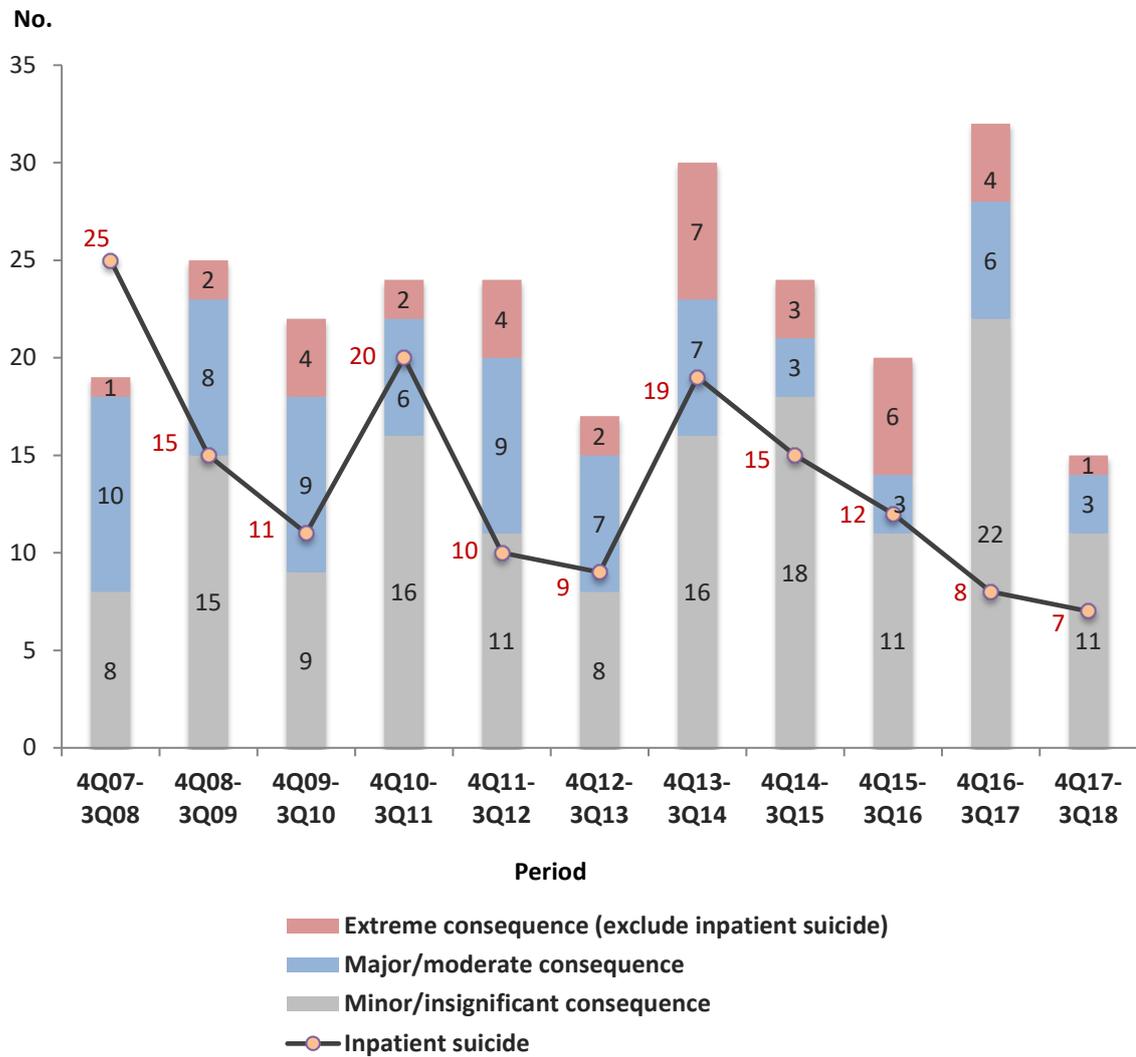


Figure 4: Yearly outcome of SE

SE Reported in 4Q17 – 3Q18

24. The distribution of the 22 reported SE in 4Q17 – 3Q18 by category is shown in Figure 5. The three most commonly reported categories were *retained instruments / material* (10 cases); *inpatient suicide* (7 cases) and *wrong patient / part* (2 cases).

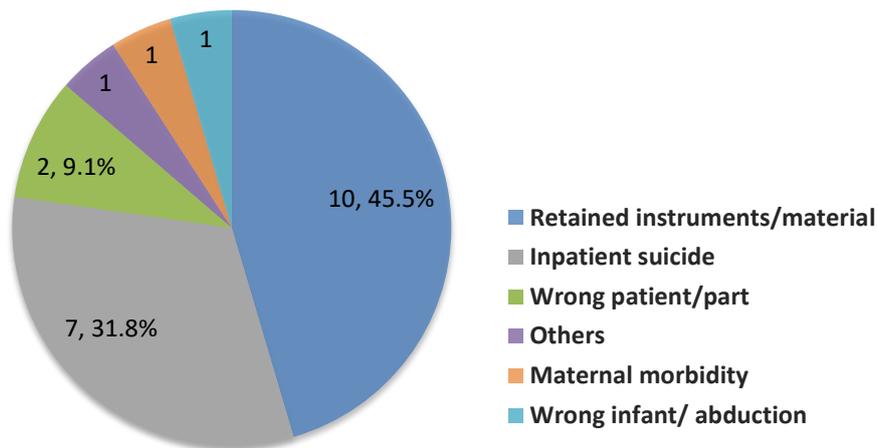


Figure 5: Distribution of SE by category

25. The quarterly distribution of 22 reported SE is illustrated in Figure 6.



Figure 6: Quarterly distribution of SE

26. The following table shows the distribution of SE in different hospital settings:

Hospital Setting	Number of SE	Percentage
Acute general hospitals with 24-hour accident and emergency (A&E) services	20	91%
Hospitals with a mix of acute and non-acute services and psychiatric service	1	4.5%
Psychiatric hospitals	1	4.5%

Table 2: Distribution of SE by hospital setting

27. Among the 22 SE cases, 8 had resulted in mortality (comprising of 7 *inpatient suicide* and 1 *maternal morbidity* cases). For the remaining SE cases, none had extreme consequences, 3 had major / moderate consequences and 11 had minor / insignificant consequences (Figure 7).

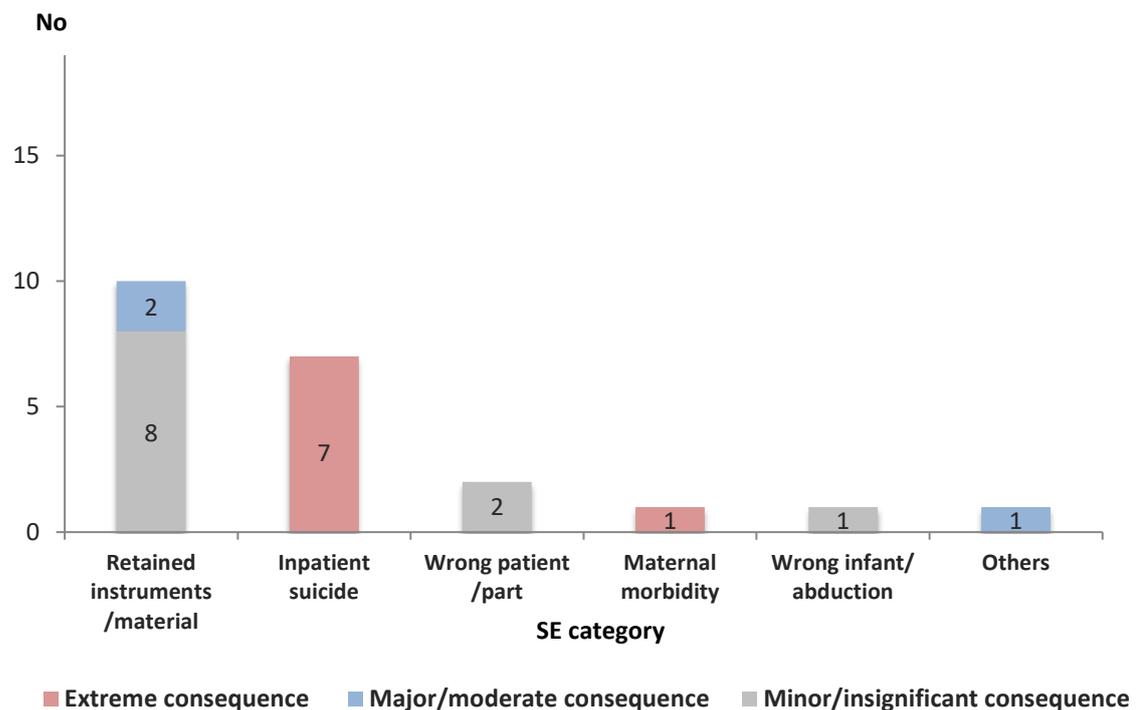


Figure 7: Outcome of SE by category

Retained instruments / material

28. Out of the 10 SE cases of *retained instruments / material*, 3 were broken instruments / material cases and the other 7 were related to the counting of instruments / material cases. Their quarterly distribution is shown in Figure 8.

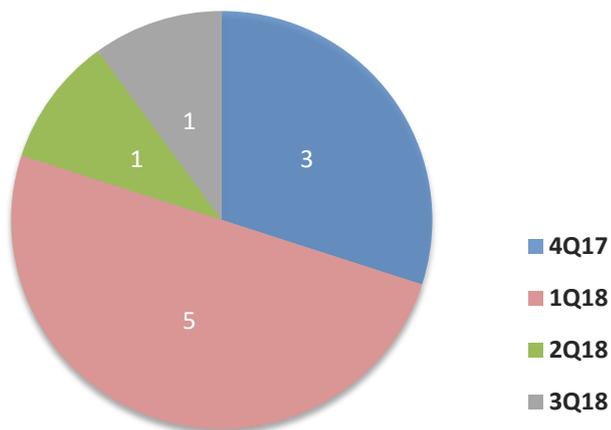


Figure 8: Quarterly distribution of retained instruments/material

29. The distribution of the nature of the 7 related to the counting of instruments / material cases is shown in Figure 9.

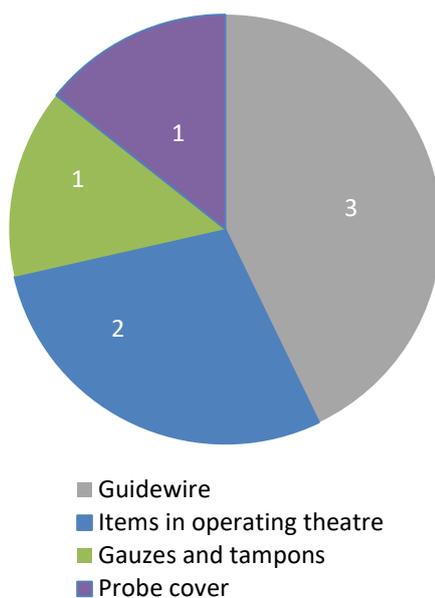


Figure 9: Nature of incidents related to the counting of instruments / material

Inpatient suicide

30. Figures 10 - 13 show the distribution of the 7 *inpatient suicide* cases by different categories during the reporting period.

31. Of the 7 *inpatient suicide* cases, 4 patients had malignancies or chronic disease and 3 patients had psychiatric illness. The 3 inpatients committed suicide either by hanging or jumping from height in a premises near the hospital. The other 4 patients, who were on home leave or day leave, committed suicide by jumping from height or hanging. The inpatient suicide incident rate for the reporting period was 0.6 per 100,000 inpatient admissions.

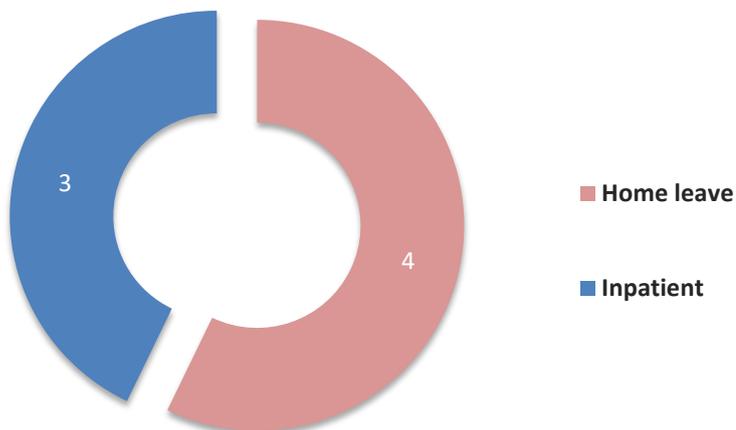


Figure 10: Location

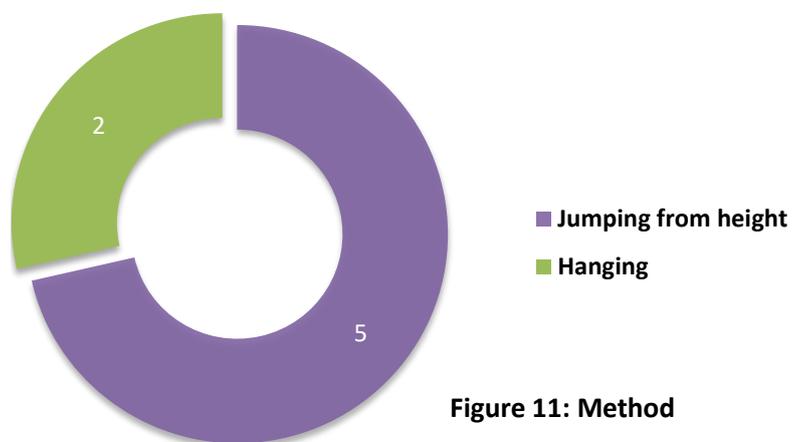


Figure 11: Method

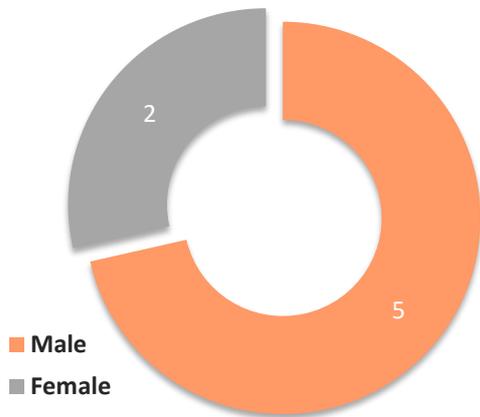


Figure 12: Gender

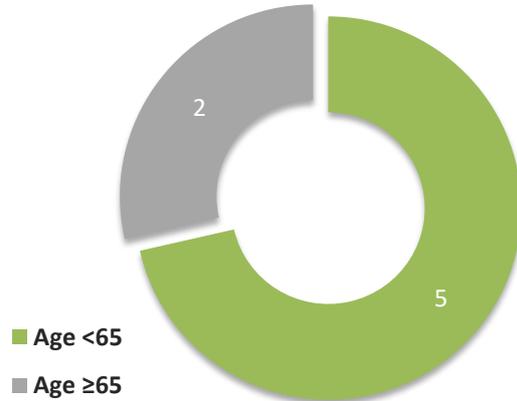


Figure 13: Age

Wrong patient / part

32. Of the 2 cases of *surgery / interventional procedure involving the wrong patient / part*, 1 occurred in a procedural room and 1 occurred in an interventional suite.

International Sentinel Event Reporting

33. In the United States, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) reviewed 824 SE cases in 2016 and 805 in 2017.¹ The high number might be due to its much broader definition of SE. Australia, on the other hand, adopted a closer definition of SE to HA. The number of reported SE recorded by Victoria, Australia (DH Victoria) was 72 in the period from July 2016 to June 2017 and the Department of Health, State Government of Western Australia (DH Western Australia) was 11 in 2017 – 2018.^{2, 3} Notwithstanding their low figures, the relative SE incident rates in DH Victoria and DH Western Australia were 4 per 100,000 patients and 18.3 per 1,000,000 inpatient episodes of care respectively.^{4,5}

34. HA had a SE incident rate of 1.1 per 1,000,000 episodes of patient attendances / discharges and deaths. For reference, incident rates extracted according to different regions and their own definitions of SEs are listed in Table 3 below.

	HA, Hong Kong (4Q17 – 3Q18)	DH Victoria, Australia (3Q16 – 2Q17) ⁴	DH Western Australia, Australia (3Q17 – 2Q18) ⁵
Number of SE / patient episodes or care to inpatient	1.1 in 1,000,000 patient episodes	Reporting rate of 4 in 100,000 patients	18.3 in 1,000,000 episodes of care to inpatients

Table 3: SE incident rates in HA, DH Western Australia and DH Victoria

¹ The US Joint Commission, Summary Data of Sentinel Events Reviewed by The Joint Commission: as of January 23, 2018.

² Sentinel events annual report 2016-2017. Safer Care Victoria, State Government of Victoria, Australia.

³ Your Safety in our Hands in Hospital - An Integrated Approach to Patient Safety Surveillance in WA Hospitals, Health Services and the Community: 2018. Department of Health, State Government of Western Australia, Australia.

⁴ In Victoria in 2016-2017, four patients in every 100,000 were impacted by a sentinel event. (*The latest figure in Sentinel events annual report 2016-2017. Safer Care Victoria, State Government of Victoria, Australia.*)

⁵ Department of Health, State Government of Western Australia, Australia recorded 600,735 hospital separations in 2017/18 (Your Safety in our Hands in Hospital - An Integrated Approach to Patient Safety Surveillance in WA Hospitals, Health Services and the Community: 2018).

35. Table 4 listed the most common types of SE reported in HA as compared with DH Victoria and DH Western Australia. Similar to HA, “inpatient suicide” and “retained instruments / material” were two of the most commonly reported SE in Victoria, Australia. “Retained instruments / material” is also one of the most commonly reported SE in Western Australia.

HA, Hong Kong (4Q17 – 3Q18)	DH Victoria, Australia (3Q16 – 2Q17)	DH Western Australia, Australia (3Q17 – 2Q18)
Retained instruments / material after surgery / interventional procedure (10 cases, 45.5%)	Other catastrophic (49 cases, 68%)	Medication error resulting in death of a patient (4 cases, 36%)
Death of an inpatient from suicide (including home leave) (7 cases, 31.8%)	Suicide of a patient in an inpatient unit (7 cases, 10%)	Retained instruments or other material after surgery requiring re-opening or further surgical procedure (3 cases, 27%)
Surgery / interventional procedure involving the wrong patient or body part (2 cases, 9.1%)	Retained instruments or other material after surgery requiring re-operation or further surgical procedure (7 cases, 10%)	Infant discharged to wrong family or infant abduction (2 cases, 18%)
	Maternal death associated with pregnancy, birth and the puerperium (3 cases, 4%)	

Table 4: The most common types of SE reported in HA, DH Western Australia and DH Victoria

36. Inpatient suicide rates varied substantially worldwide and depended on the type of hospital and estimation methods. The inpatient suicide rate at HA over the past 11 years is between 0.6 and 2.8 per 100,000 admissions. For reference, different studies estimated the range to be 5 – 15 per 100,000 admissions in general hospitals in the United States.⁶

⁶ S. Shapiro, H. Waltzer. Successful suicides and serious attempts in a general hospital over a 15-year period. *General Hospital Psychiatry*, 2 (1980), pp. 118–126.

Serious Untoward Events Statistics

Yearly Trend

37. A total of 83 SUE were reported in 4Q17 – 3Q18, making up an accumulated total of 784 SUE reported to date. The yearly distribution of SUE by category since 2010 is depicted in Figure 14, with the total number of cases each year shown at the top of each bar.

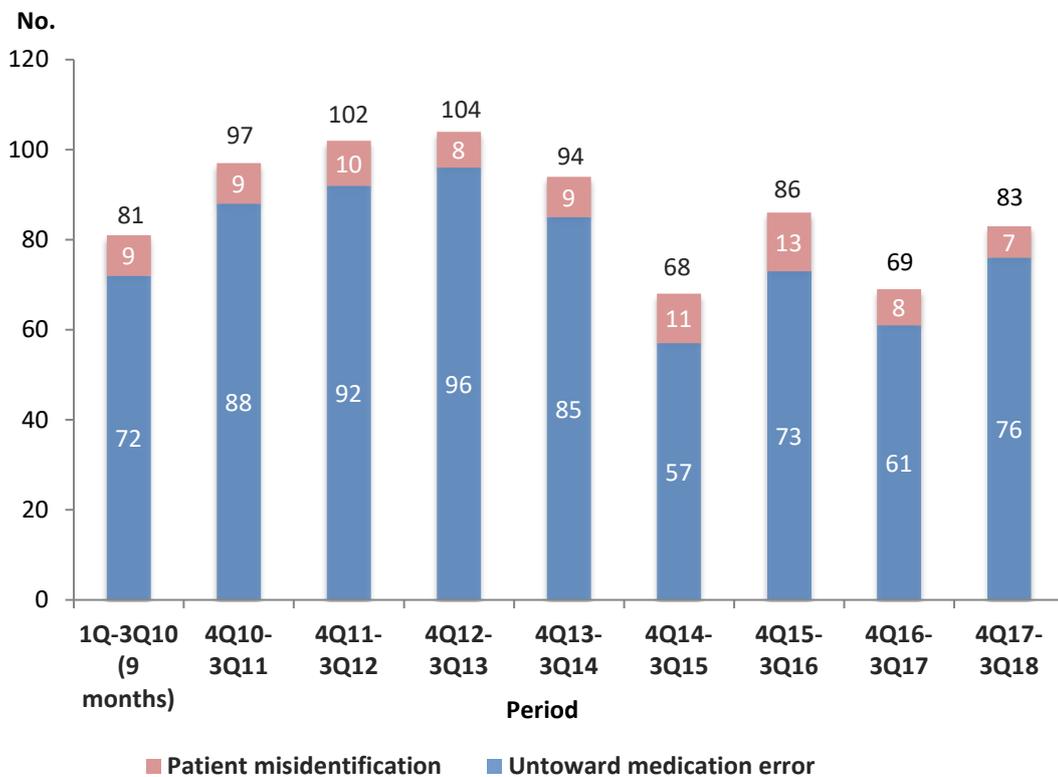


Figure 14: Yearly distribution of SUE by category

38. Up to now, 626 (80%) SUE cases had minor or insignificant consequences, 126 (16%) cases had moderate consequences and 32 (4%) cases had temporary major consequences (Figure 15). A description of the consequences is illustrated in Annex II.

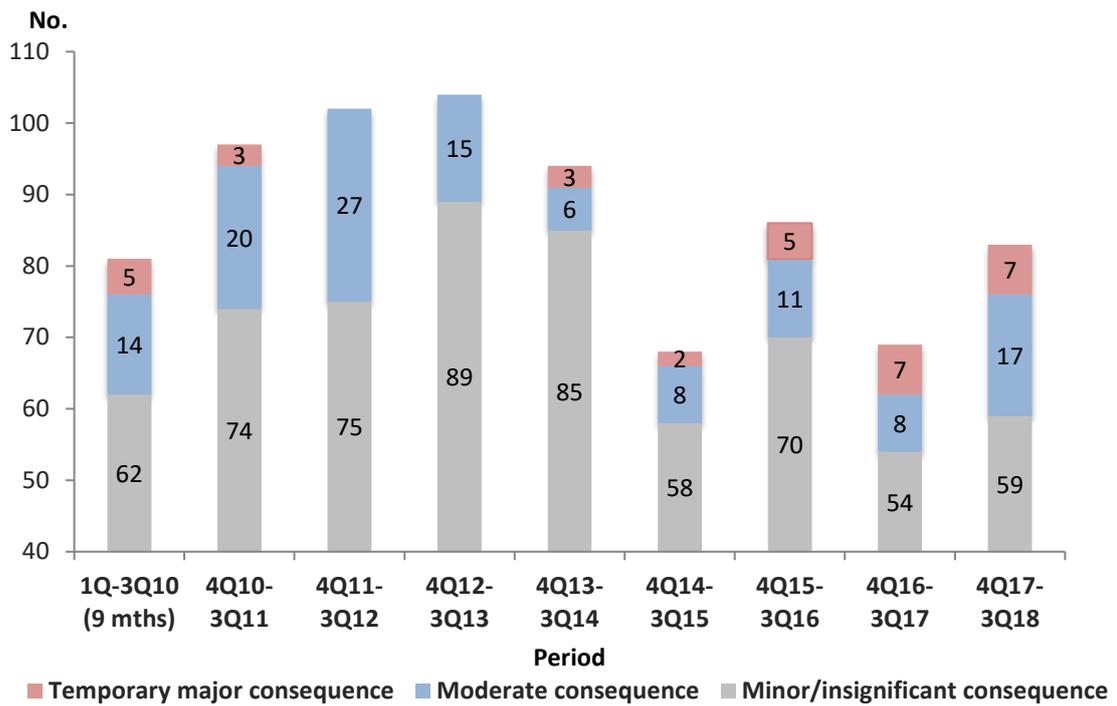


Figure 15: Yearly outcome of SUE

39. The yearly trend of the top three common nature of *untoward medication error* is depicted in Figure 16. Other common drugs involved are insulin, inotropes, concentrated electrolytes etc. A list of high alert medications is listed in Annex III.

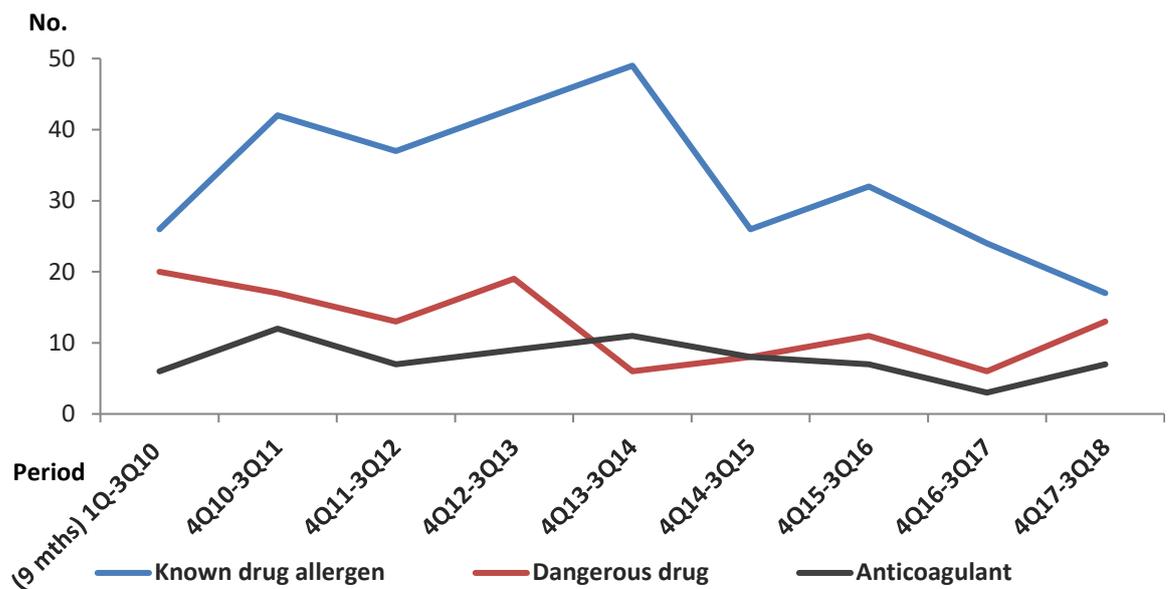


Figure 16: Yearly trend of top three common nature of medication involved in untoward medication incidents

SUE Reported in 4Q17 – 3Q18

40. The quarterly distribution of SUE reported is illustrated in Figure 17.

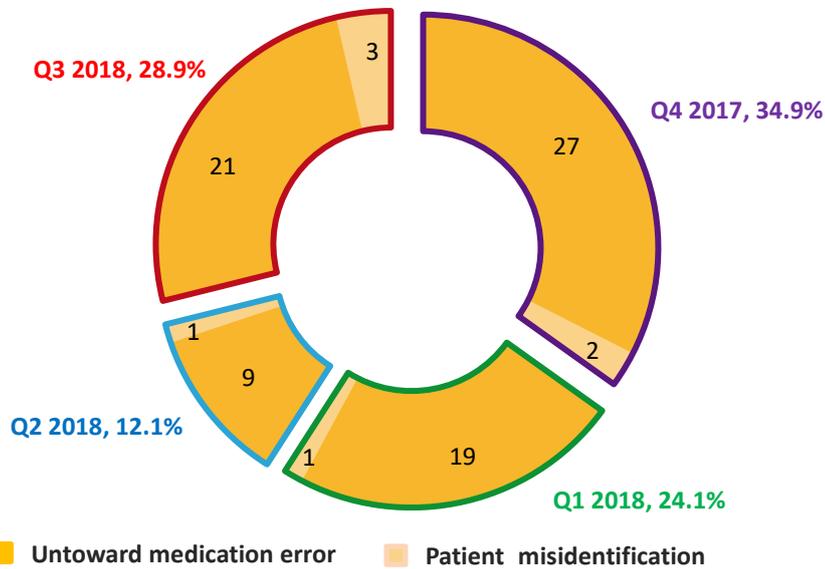


Figure 17: Quarterly distribution of SUE by category

41. Of the 83 SUE cases, 59 had minor / insignificant consequences, 17 had moderate consequences and 7 had temporary major consequences (Figure 18).

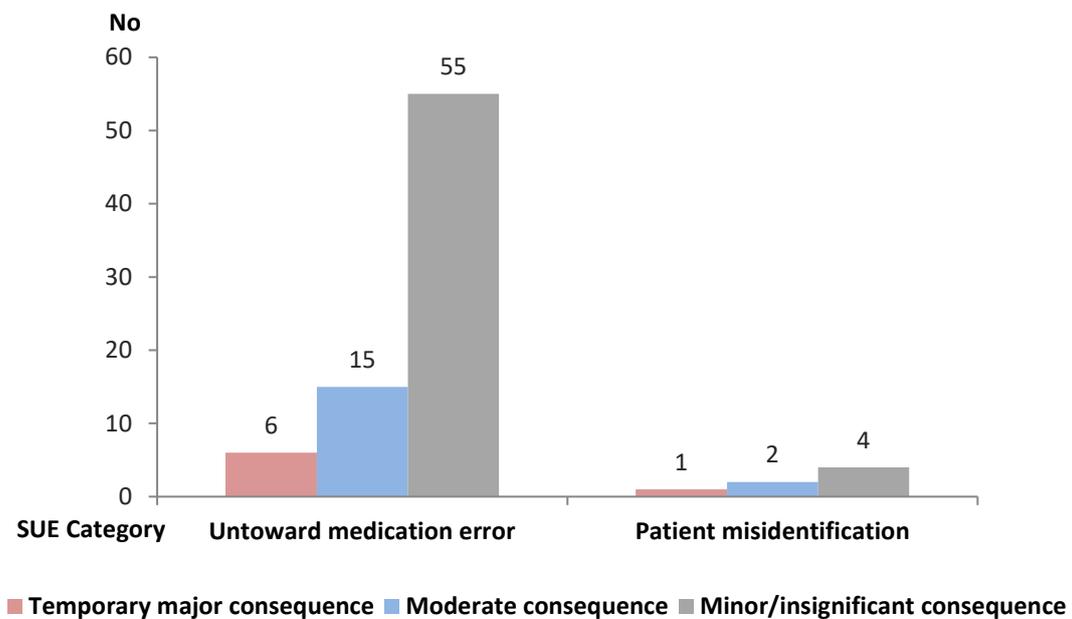


Figure 18: Outcome of SUE by category

Untoward medication error

42. The nature of the four most common *untoward medication errors* were prescriptions of *known drug allergen* (17 cases), *dangerous drug* (13 cases), *anticoagulant* (7 cases) and *Insulin* (5 cases). The distribution of drugs is shown in Figure 19. Drugs such as vancomycin and syntocinon were grouped under *other medications*.

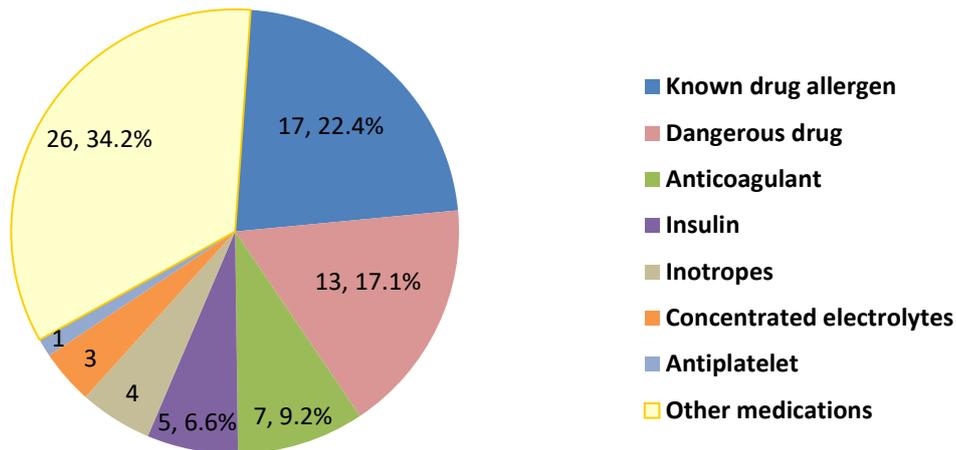


Figure 19: Distribution of untoward medication error

43. Of the 17 *untoward medication errors* related to *known drug allergen*, the five most commonly involved drugs were paracetamol-related (3 cases), non-steroidal anti-inflammatory drugs (NSAID) (3 cases), penicillin-related (2 cases), lignocaine (2 cases) and quinolones (2 cases). These five drug groups constituted 71% of the total *known drug allergen* incidents. Their distributions are shown in Figure 20.

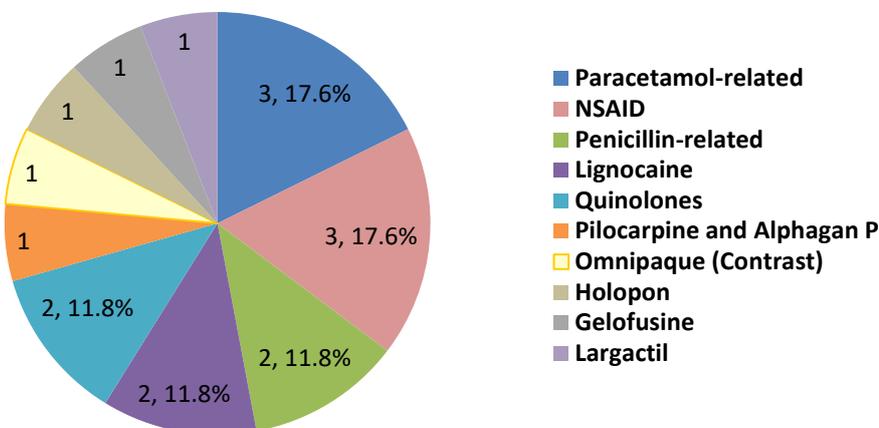


Figure 20: Distribution of drugs related to known drug allergen

44. Of the 17 *known drug allergen* cases, the two most common locations of occurrence were ward (10 cases) and Accident & Emergency Department (AED) (4 cases). These two locations constituted 82% of the total *known drug allergen* cases. Their distributions are shown in Figure 21.

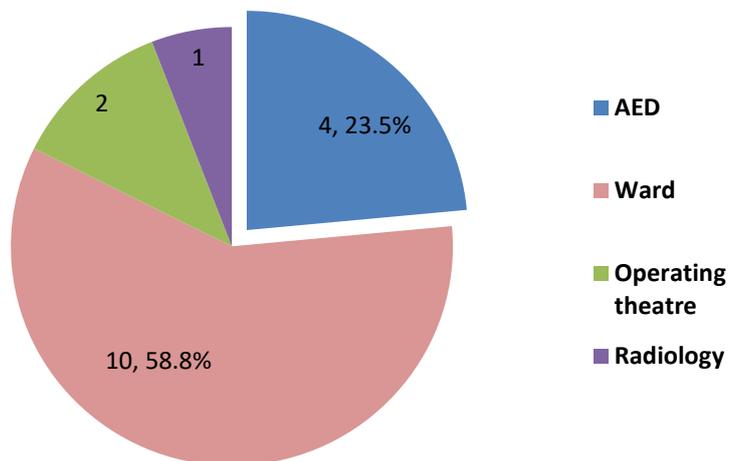


Figure 21: Location of occurrence of known drug allergen

45. Of the 17 *known drug allergen* cases, 16 had minor / insignificant consequences and 1 had moderate consequences.

Patient misidentification

46. There were 7 SUE reported which were due to *patient misidentification*. These included 4 cases of *patient misidentification* during drug administration, 1 during drug prescription and 2 due to misfiling patient's laboratory report. Their quarterly distribution is summarised in Table 5.

Patient misidentification scenarios	4Q17	1Q18	2Q18	3Q18
During drug prescription	1	0	0	0
During drug administration	0	0	1	3
Misfiling patient's laboratory report	1	1	0	0
Total	2	1	1	3

Table 5: Quarterly distribution of patient misidentification by scenarios

47. Of the 7 *patient misidentification* cases, only 1 patient had temporary major consequence (Table 6). Their distribution is summarised in Table 6.

Patient misidentification scenarios	Minor/ Insignificant Consequence	Moderate Consequence	Temporary Major Consequence
During drug prescription	0	1	0
During drug administration	3	0	1
Misfiling patient's laboratory report	1	1	0
Total	4	2	1

Table 6: Consequences of patient misidentification

Analysis of Sentinel Events

48. In this chapter, the common contributing factors and recommendations revealed by the RCA panels (including recommendations which had been implemented or were being followed up by clusters / hospitals to prevent further recurrence) for each category of SE reported in 4Q17 – 3Q18 are analysed. They are classified into communication, knowledge / skills / competence, work environment / scheduling, patient factors, equipment and policies / procedures / guidelines, and safety mechanisms. HAHO would continue to work with clusters and hospitals to improve and redesign systems or work processes to enhance patient safety. A brief description of individual SE can be found in Annex IV.

Factors	Common Contributing Factors	Recommendations
<i>Retained instruments / material – related to counting of guide wires (3 cases)</i>		
Knowledge / skills / competence	Unfamiliarity with the technique of the procedure and lack of awareness of the critical steps of procedure to prevent retained guide wire.	Review the training material on the removal of ventricular drains.
Policies / procedures / guidelines	Failure to comply with the post-procedural checking guidelines to counter-check the completeness of the catheter after removal.	<p>Reinforce the importance of staff compliance to conduct post-procedure checking including strict compliance with the “Bedside Procedure Safety Checklist”.</p> <p>Update the existing department procedural document on catheter insertion, highlighting on post procedural guide wire checking.</p> <p>Consider adding a critical checking step to ensure removal of guide wire before ending the procedure (for example, handing of guide wire to nurse before issuing the suture needle).</p> <p>Enhance the training of the critical steps involved in the insertion of Central Venous Catheter (CVC)s.</p>

Retained instruments / material – other cases related to counting (4 cases)		
Knowledge / skills / competence	Using same type of dressing material (long gauze roll) for both wound packing and cover dressing.	Reinforce and align the practice of using different materials for wound packing and cover dressing.
	Leaving a 'visible tail' of packed gauze roll 'over' the wound instead of 'peri-wound surrounding skin' by the involved surgeons.	Reinforce and align the practice of leaving a 'visible tail' of packed gauze roll over the 'peri-wound surrounding skin'.
	Failure to hold the ultrasound probe cover firmly during the whole scanning procedure.	Reinforce and align the practice of mandatory counting and integrity checking prior to disposal of the probe cover after the procedure should there be need to use more than ONE probe cover.
Policies / procedures / guidelines	Failure to count ultrasound probe covers before disposal.	Reinforce and align the practice of using only ONE probe cover for transvaginal ultrasound examination, and checking its integrity prior to disposal after the procedure.
	Failure to check the integrity and completeness of the injection set before and after the TAP block procedure.	Reinforce the practice to check for integrity and completeness before and after using the instrument in the patient.
Communication	Unclear number of items returned by surgeon and failure to check the injection parts during counting.	Review the current practice in documenting the number of items included in a set of instrument / consumables. Review the Operating Theatre Counting Record design.
Wrong patient / part (2 cases)		
Knowledge / skills / competence	Inadequate concept about procedural safety among the team.	Increase education on procedural safety concepts among the team.
Policies / procedures / guidelines	No structured booking system for interventional procedural rooms.	Establish a structured booking system for interventional procedural rooms.
	Unsatisfactory process in obtaining consent.	Ensure correct patient identification in obtaining consent and in the procedure.

	Failure to counter-check the correct site / side against the procedure request form and the consent form amongst the operating team members.	Reinforce the practice to perform the site / side marking for percutaneous nephrolithotomy (PCN) procedure if laterality is involved.
	Performing "SIGN IN" and "TIME OUT" procedures simultaneously.	Reinforce the practice to conduct "TIME OUT" for confirmation of correct site / side close in time to the start of the procedure.

Learning from SEs

49. *Broken materials (metal debris)*

Learning points:

- i. Enhance staff awareness to add applicable measures (e.g. gauze) in preventing the metal debris from being left in the operative site, especially where there is a potential risk of creating metal debris.
- ii. Review the intra-operative images cautiously before end of operation to purposefully look for retained debris, from various angles if possible, in case it might overlap with bony structures or implant.

50. *Wrong infant / abduction* – A patient left the hospital with her newborn baby without notifying ward staff.

Key contributing factors:

- i. Suboptimal communication among staff and patient / family during the discharge process: staff did not remind the patient on steps to check her and her baby's identification before leaving.
- ii. Limitation of the baby tagging system: the baby tag alarming system was not activated when the mother left the ward with the baby as the tag was covered.
- iii. Lack of two way access control system.

Recommendations:

- i. Display updated notices at eye catching areas to remind parents /

relatives not to take their children out of the ward without permission from the ward nursing staff.

- ii. Explore better baby tagging systems available in the market.
- iii. Install two-way access control system.
- iv. Deploy a staff / security staff at the ward entrance during visiting hours / peak hours as considered appropriate to allow authorized access / exit only.
- v. Consider to use "Permission-to-leave" card if indicated.

51. *Other adverse events resulting in permanent loss of function or death (excluding complications)* Barium enema was administered to the wrong body orifice of a patient as a result of the enema tip being incorrectly inserted.

The panel has made the following conclusion:

- i. During the insertion of the enema tip, the radiographer did not clearly see the patient's perineum. Visual checking was not performed after insertion either. The radiographer should identify the patient's anus before and immediately after inserting the enema tip to prevent similar incidents from happening again.
- ii. The inflated retention cuff (or balloon) of the enema tip caused injuries to the vagina and forced the barium into the uterine cavity and the fallopian tubes.
- iii. The incident was a rare one according to medical literature.

Recommendations:

Review and revise the workflow of barium enema examination to ensure:

- i. The correct positioning of the enema tip in the anus is visually reconfirmed by another professional staff immediately after enema tip insertion;

- ii. An assessment is conducted on the benefits of inflating the retention cuff of the enema tip against the risks and needs of individual patients; and
- iii. The retention cuff is inflated only after confirmation of the correct position of the enema tip by a doctor.

Analysis of Serious Untoward Events

52. Since *known drug allergen* (22.4%) and *dangerous drugs* (17.1%) constituted the two most common categories of all the SUE reported in 4Q17 – 3Q18, learning points from these cases are summarized below. Due to an increase in incidents involving intravenously administered drugs learning points from those cases are also summarised below.

53. *Known Drug Allergy*

Learning Points:

- i. Check and clarify unfamiliar medications before prescription and administration.
- ii. For drug trade names, look up content of drug and enter structured drug allergy information into Clinical Management System (CMS) to enable intelligent checking by the system. For example, Dologesic and Paragram contain paracetamol.
- iii. Reinforce the practice to check patient's allergy status by referring to the CMS or printout.
- iv. The system cannot perform cross checking on allergy history entered as "free text". Avoid "free text" allergy entries where possible.

54. *Untoward medication errors related to dangerous drugs*

Learning Points:

- i. Reinforce practice to perform independent checking before drug administration and adhering to the "Five Rights" checking principle: "Right Drug, Right Dose, Right Patient, Right Route and Right Time".
- ii. Familiarise staff with the different packaging and formats of dangerous drugs. For example, ketamine comes in 50mg/ml and

10mg/ml concentrations.

55. *Untoward medication errors related to dangerous drugs* Overdose of Morphine infusion in an 8 days old baby boy

Key contributing factors:

- i. Staff was not familiar with the dosage of Morphine.
- ii. Staff was not aware of different sheets of “Resuscitation Medication Reference Chart” for paediatric patients with different body weights.
- iii. Warning signs were not explicitly displayed in the computer screen to alert staff for selecting the wrong templates.

Recommendations:

- i. Remind and ensure all staff to cross check all elements including dosage and drip rate when using the “Resuscitation Medication Reference Chart”.
- ii. Strengthen mechanism to safe guard the use of “Resuscitation Medication Reference Chart”. Re-design the reference chart in order to prevent the use of wrong templates (of wrong body weights).
- iii. Strengthen education and orientation programmes on the use of the reference chart. Display updated notices at eye catching areas to remind parents / relatives not to take their children out of the ward without permission from the ward nursing staff.

56. *Untoward medication errors related to intravenously administered drugs*

Learning Points:

- i. Trace back the infusion line to confirm correct infusion fluid to correct infusion site.
- ii. Independent double-checking: check displayed setting of the infusion device against the prescription before commencing the

drug infusion.

- iii. Label the intravenous access lines if there is more than one line.
- iv. Reinforce staff education on the importance of following nursing standards by checking infusion rate against “Medication Administration Record” (MAR), and provide refresher training on intravenous (IV) infusion especially with the use of infusion pump.

Risk Reduction Measures

Various risk reduction measures have been implemented to enhance patient safety. Highlights of these measures are described below.

Prevention of Retained Guide Wire

A taskforce was set up to perform literature and local data review and make recommendations for reducing central venous catheter (CVC) guide wire retention. We have explored alternative products on the market for the insertion of CVC and an educational video emphasizing the critical step in preventing CVC guide wire retention is being produced and will be ready in 1Q 2019.

Raising Awareness of Surgical Safety

A revised “Surgical / interventional / bedside safety policies” has taken effect since 1 July 2018 and promulgated via various different platforms, such as incident sharing forums, Coordinating Committee (COC)s and Specialty Advisory Groups. Risk mitigation strategies relating to the removal of surgical instruments and materials to prevent the retention of debris include:

- i. Checking the completeness of surgical instrument / material upon removal.
- ii. Documenting the details of removed surgical instruments and materials.
- iii. Performing imaging if there is suspected retention of fragments/segments of removed items.

Enhancing Baby Tagging System

We have explored an alternative baby tagging system which gives off an alert when no signal is received. The new baby tagging system will be piloted in Hong Kong Children Hospital in 4Q 2019.

New Structured Allergen Groups in CMS

Four allergen groups including “Quinolones”, “Phenothiazines”, “Aminoglycosides” and “Macrolides” were newly added into the Clinical Management System (CMS) alert function in April 2018. On an ongoing basis, we continue with the process of discouraging the use of “free-text” allergy records and the implementation of In-patient Medication Order Entry (IPMOE) system from acute to convalescent/ rehabilitation hospitals.

Raising Awareness of the Risk of Medication Errors in the Administration of Intravenous (IV) Drugs

Risk mitigation strategies for the prevention of medication errors in IV drugs were shared through HA Risk Alert newsletters and Patient Safety Forums. Current drug infusion pumps were reviewed and smart pumps were introduced to a number of wards which were using phased out old models.

Learning and Sharing

In 2017/18, HAHO Patient Safety and Risk Management Department (PSRM) had conducted 14 staff forums for almost 2,365 colleagues. Participants of these forums included hospital leaders, patient safety managers, doctors, nurses and others. Participants' responses were collected for future program planning and development.

Important learning points of incidents were also shared in different Coordinating Committees (COC), Central Committees (CC), Specialties Advisory Groups (SAG), Safety Committees (SC) and other working groups. A total of 30 sharing sessions had been conducted in the year. Electronic platform had also been used to promote and disseminate information on patient safety issues.

The Way Forward

Review of Clinical Incident Management

To follow-up on the recommendations from the Review Panel on the SE/SUE Policy, HA had set up respective Task Forces to review the management of clinical incidents. In 2017/18, we have enhanced the user-friendliness of AIRS in order to facilitate incidents reporting; drafted and implemented “Open Disclosure Policy for Clinical Incidents” in HA. We will continue to review and update the “Clinical Incident Management Manual” including delineating roles and responsibilities of stakeholders, aligning the practices of open disclosure and incorporating the public disclosure framework into the clinical incident management process.

In 2019, we will be rolling out a training programme to cluster staff and a new online Healthcare Service Management Training (HSMT) module on open disclosure. The aim is to develop in-house staff into trainers so they can in turn train staff at the cluster level.

Risk Reduction Measures

Missed findings on chest X-rays

An investigation panel has been setup by HAHO to look at recent clinical incidents involving missed findings on chest X-rays. The panel will review the current workflow, documentation of chest X-ray findings and current training provided to junior doctors. The panel will then make recommendations targeted at reducing the risk of missed findings on chest X-rays.

In-Patient Medication Order Entry System

The In-Patient Medication Order Entry (IPMOE) system has been rolled out to all acute hospitals in the past year. In the coming year, the Group Internal Audit (GIA) team will conduct a post implementation review on the impact of IPMOE system at those acute hospitals. HA will begin rolling out IPMOE to convalescent and rehabilitative hospitals in 2019.

Management of important histopathology and radiology reports/film

To address episodes of delay in management of important histopathology and radiology reports/film (mainly malignancy) where positive test results were not communicated in a timely manner, HA had set up a Task Force on Handover of Important Investigation Results. As an interim solution recommended by the task force recommendation, an Important Result Reminder (IRR) feature was added to the Clinical Management System (CMS). As of 31 Dec 2018, IRR has been rolled out to 11 hospitals and the system will be made available to all HA hospitals in 2019. Concurrently, HA is working on long term solutions including a closed loop communications module which will be added to CMS IV.

ANNEXES

Annex I

HA SENTINEL AND SERIOUS UNTOWARD EVENT POLICY (July 2015)

- 1. Purpose**

The Sentinel and Serious Untoward Event Policy defines the process for identification, reporting, investigation and management of Sentinel Events (SE) 「醫療風險警示事件」 and Serious Untoward Events (SUE) 「重要風險事件」 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 labor 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 a 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, (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 Report System (AIRS) within 24 hours of their identification to
 - Provide an initial factual account; and
 - 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 Hospital 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 panel at 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 Report (to public) and follow-up visits.
 - 5.4.3 The HAHO would visit respective hospitals for the implementation of improvement measures.

Supplementary Notes to Sentinel Event

If an incident involves a criminal act, a deliberately unsafe act, substance abuse, or deliberate patient harm or abuse, the incident should not be scrutinized by the Sentinel Event Policy.

Definition of common terms of Sentinel Event

1. **Surgery / interventional procedure**

Any procedures, regardless of setting in which it is performed, that involves any of the following:

- Creation of surgical wound on skin or mucous membranes.
- Making a cut or a hole to gain access to the inside of a patient's body.
- Inserting an instrument or object into a body orifice.
- Use electromagnetic radiation for treatment.

It includes fine needle aspiration, biopsy, excision and cryotherapy for lesions, radiology interventional procedures, anesthetic block and vaginal birth or Caesarean delivery.

2. **Permanent loss of function**

It means sensory, motor, physiologic, or intellectual impairment not present on admission requiring continued treatment or lifestyle change. When "permanent loss of function" cannot be immediately determined, applicability of the policy is not established until either the patient is discharged with continued major loss of function, or two weeks have elapsed with persistent major loss of function, whichever occurs first.

Reportable Sentinel Event

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

Any surgery/interventional procedure performed on an unintended patient or unintended body part.

The event can be detected at any time after the surgery / interventional procedure begins which is the point of surgical incision, tissue puncture or the insertion of instrument into tissue, cavities or organs.

Not to be included

- Unsuccessful procedure as a result of unknown/unexpected anatomy of the patient.
- Changes in plan during surgery with discovery of pathology in close proximity to the intended place where risk of a second surgery or procedure outweighs benefit of patient consultation or unusual physical configuration (e.g. adhesion, spine level/extra vertebrae).
- Blood taking, parenteral administration of drug, and use of otoscope without any intervention.

2. **Retained instruments or other material after surgery / interventional procedure**

Unintended retention of a foreign object in a patient after a surgical / invasive procedure ends. It also includes items were inserted into patient's body during a surgery / interventional procedure and not removed as planned. The size of the retained foreign object and the potential for harm from the retained foreign object, or whether the object is removed after discovery is irrelevant to its designation as a Sentinel Event.

'Instrument or other material' includes any items (such as swabs, needles, wound packing material, sponges, catheters, instruments and guide wires) left unintended.

'Surgery / interventional procedure' ends after all incisions have been closed in their entirety, and / or all devices, such as probes or instruments, that are not intended to be left in the body have been removed, even if the patient is still in the operation theatre or interventional suite under anesthesia.

Not to be included

- Objects that are intentionally (i.e. by conscious decision) left in place during the surgery / interventional procedure.

- Objects are known to be missing prior to the completion of the surgery or interventional procedure and may be within the patient (e.g. screw fragments, drill bits) but where further action to locate and / or retrieve would be impossible or carry greater risk than retention.

3. ABO incompatibility blood transfusion

Administration of blood or blood product(s) having ABO incompatibilities, regardless of whether it results in transfusion reaction or other complications.

Not to be included

- Clinically indicated transfusion of ABO incompatible blood or blood product.

4. Medication error resulting in major permanent loss of function or death

Medication error includes error in the prescribing, dispensing, or administration of a medicine resulting in permanent loss of function or death. It includes, but not limited to, an error involving the wrong drug, the wrong dose, the wrong patient, the wrong time, the wrong rate, the wrong preparation, or the wrong route of administration.

Not to be included

- Death or permanent loss of function associated with allergies that could not be reasonably known or discerned in advance of the event.
- Variance in clinical practice on drug selection, dose and route of administration agreed by professional.

5. Intravascular gas embolism resulting in death or neurological damage

Death or neurological damage as a result of intravascular air embolism introduced during intravascular infusion / bolus administration or through a hemodialysis circuit.

Not to be included

- The introduction of air emboli: via surgical site (particularly Ear, Nose and Throat surgery and neurosurgery), during foam sclerotherapy and during the insertion of a central venous catheter.
- Where the introduction of the air embolism is deliberately by the patient.

6. Death of an in-patient from suicide (including home leave)

Death from suicide of in-patient committed any time after in-patient admission and before discharge, including home leave.

Not to be included

- Deaths resulting from self-inflicted injuries that committed before admission.
- Deaths from suicide committed while waiting for admission to the hospital.
- Suicidal death of a patient attending an out-patient service (such as Out-patient Department, Accident and Emergency Department).
- Unsuccessful suicide attempts.

7. Maternal death or serious morbidity associated with labor or delivery

It includes death or serious morbidity of a woman during or following childbirth from any cause related to or aggravated by labour, delivery or its management. It also includes obstetric complications resulting in death or serious morbidity. Serious morbidity means permanent loss of function.

'Associated with' means that it is reasonable to initially consider that the incident was related to the course of care. Further investigation and / or root cause analysis of the event may be needed to confirm or refute the presumed relationship but this should not delay reporting of event.

8. Infant discharged to wrong family or infant abduction

An in-patient aged 12 months or below is discharged to a wrong family or taken away from the hospital ward without prior notice to the hospital.

9. Other adverse events resulting in permanent loss of function or death

An injury related to medical management, in contrast to the natural course of patient's illness or underlying condition or known complications of treatment, resulting in permanent loss of function and death.

Medical management includes all aspects of care including diagnosis and treatment, and the systems and equipment used to deliver care.

Not to be included

- Event relating to the natural course of the individual's illness or underlying condition or to known complications of treatment.
- A death or loss of function following a discharge against medical advice (DAMA).
- Hospital-acquired infection(s).

Final decision-making around individual events is for HAHO consultation with cluster SDs.

Annex II

DESCRIPTION OF CONSEQUENCES

Sentinel Events

Category of Consequence	Severity Index of Incident	Description
Minor/ Insignificant	1	Incident occurred (reached patient) but no injury sustained Monitoring may be required No investigation or treatment required
	2	Minor injury Monitoring, investigation or minor treatment required No change in vital signs
Major/ Moderate	3	Temporary morbidity Monitoring, investigation or simple treatment required Some changes in vital signs
	4	Significant morbidity Transfer to a higher care level, emergency treatment, surgical intervention or antidote required Significant changes in vital signs
Extreme	5	Major permanent loss of function or disability
	6	Death

Serious Untoward Events

Category of Consequence	Severity Index of Incident	Description
Minor/ Insignificant	1	Incident occurred (reached patient) but no injury sustained Monitoring may be required No investigation or treatment required
	2	Minor injury Monitoring, investigation or minor treatment required No change in vital signs
Moderate	3	Temporary morbidity Monitoring, investigation or simple treatment required Some changes in vital signs
Temporary Major	4	Significant morbidity Transfer to a higher care level, emergency treatment, surgical intervention or antidote required Significant changes in vital signs

Annex III

HIGH ALERT MEDICATIONS LIST

The table below contains a list of high alert medications extracted from the “HAHO Safety Solutions on High Alert Medications” paper published by the Medication Safety Committee in November 2017.

	Categories of Medications
1.	Concentrated electrolytes
2.	Chemotherapeutic agents (parenteral and oral)
3.	Drugs commonly associated with drug allergies (e.g. penicillin, aspirin, NSAIDs)
4.	Vasopressors and inotropes
5.	Anticoagulants (parenteral and oral)
6.	Neuromuscular blocking agents (e.g. atracurium, rocuronium)
7.	Oral hypoglycaemics
8.	Insulins
9.	Narcotics (e.g. fentanyl) and opioids

Annex IV

INDIVIDUAL SENTINEL EVENTS

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

Case 1: Haemodialysis (HD) catheter inserted into wrong patient

Patient A with history of renal impairment, was admitted to Intensive Care Unit (ICU) for respiratory failure. Patient A received continuous renal replacement therapy (CRRT) for deteriorating renal function previously but had no immediate need for renal dialysis for the time being.

Patient B was admitted for haemoptysis, then developed acute on chronic renal impairment, requiring CRRT in ICU. Patient B was indicated for haemodialysis (HD) catheter insertion.

Due to miscommunication, patient A instead of patient B was brought into the renal minor operating theatre (OT) for HD catheter insertion. In the renal minor OT, an electronic Informed Consent Form under patient B's profile was generated from the clinical management system (CMS). Patient A instead of patient B was asked to sign on the consent form. HD catheter was inserted at the RIGHT internal jugular vein of patient A. When checking post-procedural documents, the error was noted. The catheter in patient A was not removed in view of impaired and deteriorating renal conditions. An HD catheter was inserted for patient B for haemodialysis.

Key contributing factors:

1. No structured booking system for interventional procedures in renal minor OT.
2. Inadequate concept about procedural safety among the team.
3. Unsatisfactory process in obtaining consent.

Recommendations:

1. Establish a structured booking system in renal minor OT.
2. Boost up the procedural safety concepts among the team.
3. Ensure correct patient identification in obtaining consent and in the procedure.

Case 2: Wrong side diagnostic puncture for percutaneous nephrostomy (PCN) insertion

A patient was admitted for acute kidney injury and anuria, computed tomography revealed bilateral ureteric stones and hydronephrosis. A bilateral double-J catheter insertion was scheduled for the patient. In the operating theatre, a double-J catheter was inserted into the RIGHT ureter successfully but failed to insert into the LEFT ureter. The radiologist was contacted for urgent LEFT side PCN and patient consent was obtained. Back in the ward, the nurse went through the checking process and completed the “pre-interventional / bedside procedures safety checklist”. There was NO side marking.

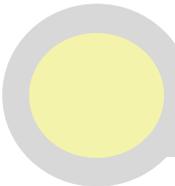
In the Department of Diagnostic & Imaging Radiology, the ward nurse handed over the case to the radiographer, including checking patient’s identity, procedure (LEFT side PCN) against the procedure request form & the consent form. The patient lay in a prone position and was covered with blankets and bed sheets. The radiologist and the radiographer conducted “TIME OUT” but did not countercheck the planned side against the request form. The radiologist performed pre-procedure ultrasonography (USG) on the RIGHT flank region and made a mark (RIGHT) on the USG scan, using a needle cap to make 2 markings for locating the puncture site. After skin preparation, diagnostic punctured was performed on the RIGHT side. The radiographer discovered the wrong-sided diagnostic puncture when recording the USG images.

Key contributing factors:

1. Failure to counter-check the correct site / side against the procedure request form and the consent form amongst the operating team members.
2. Performed “SIGN IN” and “TIME OUT” procedures simultaneously.

Recommendations:

1. Perform the site / side marking for PCN procedure if laterality is involved.
2. Conduct “TIME OUT” for confirmation of correct site / side closely with the start of the procedure.
3. Revise the department’s “Interventional Radiology Procedure Safety Checklist”.



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

Broken Instruments / Material

Case 1: A 0.9 x 0.4mm foreign body found at the medial side of the patient's RIGHT patella

A patient was admitted for RIGHT patella fracture. Open reduction and internal fixation (ORIF) of the RIGHT patella was done. 18G stainless steel wire was used for fixation. During the operation, readjustment and cutting of the wire was required. Difficulties were encountered on cutting the wire. Intraoperative X-ray upon completion of the procedure did not show any evidence of foreign body. Subsequent post-operative X-ray showed a 0.9x0.4mm foreign body over the medial side of the RIGHT patella. The situation was openly disclosed to the patient. It was decided not to remove the foreign body.

It was concluded by the Panel that:

Since the procedure and instruments used in the operation were appropriate, no specific recommendations could be made.

Case 2: Retained metal debris at patient's RIGHT hip

A patient was admitted for RIGHT hip fracture. Proximal femoral nail anti-rotation (PFNA) was performed. Difficulty was encountered during proximal locking blade insertion despite slight hammering. The locking blade was removed, integrity checked, reattached and reinserted with slight hammering. An intra-operative X-ray was taken to confirm fracture alignment and implant positioning. Radio-opacity was seen lateral to the nail which was subsequently confirmed by X-ray and computed tomography (CT) imaging. The clinical decision of not retrieving the metal debris was made and the patient's situation was monitored closely.

Recommendation:

1. Review the intra-operative images cautiously before end of operation to purposefully look for retained debris, from various angles if possible, in case it might overlap with bony structures or implant.

Case 3: Metallic fragments

A patient was admitted for slip and fall with closed fracture of right patella. Open reduction and

internal fixation with K wires, cerclage and tension band wires was performed. The length of the K wire was trimmed twice during the operation. Intra-operative X-ray screening was performed but the metallic fragments on the X-ray were not noticed. Post-operative X-ray was taken on the next day and again, the metallic fragments shown on the X-ray were not noticed. The post-operative X-ray was reviewed by another doctor on day six and metallic fragments inside the wound were noticed.

Key contributing factors:

1. Required a second attempt to refine the length of fixed K-wire.
2. Limited resolution of intraoperative C-arm X-ray screening.

Recommendation:

1. Enhance staff awareness to add applicable measures (e.g. gauze) in preventing the metal debris from being left in the operative site, especially where there is a potential risk of creating metal debris.

Incorrect Counting of Instruments / Material

Case 1: Retained guide wire after double lumen catheter insertion

A patient with cervical cord transverse myelitis was prescribed plasmapheresis as her disease did not respond to pulse steroid therapy. Double lumen catheter insertion was required for plasmapheresis. During catheter insertion, pre-procedural checking and TIME OUT were performed. During post-procedural checking, the guide wire was not found. However, the box for 'Guide wire is removed' was ticked in the post-procedural checklist. On the next day, a retained guide wire was noted on the chest X-ray. The guide wire was removed intact under image guidance.

Key contributing factors:

1. Failure to comply with the post-procedural checking guidelines.
2. Double lumen catheter insertion was not a frequently performed procedure in the ward where some involved team members were not familiar with the procedure.

Recommendations:

1. Enforce strict compliance with the "Bedside Procedure Safety Checklist".
2. Update the existing department procedural document on catheter insertion,

highlighting on post procedural guide wire checking.

3. Consider adding a critical checking step to ensure removal of guide wire before ending the procedure (e.g. handing of guide wire to nurses before issuing the suture needle).
4. Enhance staff training on Central Venous Catheter insertion.

Case 2: One piece of gauze roll was found retained in the patient's wound cavity

A patient was admitted for RIGHT thigh abscess and RIGHT knee septic arthritis. Emergency arthrotomy and incision and drainage (I&D) of RIGHT thigh abscess were performed. "Packing of 2 gauze rolls" was documented in the wound assessment record and in the operation record. A 'visible tail' of each long gauze roll was placed 'over' the wound surface instead of 'peri-wound surrounding skin'. A third gauze roll (same type and size as the packing gauze) was used as the cover dressing of the wound. One day after the operation, wound dressing was performed. The cover dressing (gauze roll) was removed from the wound cavity. It was perceived as one of the originally packed gauze roll. Another gauze roll was removed. It was perceived that 2 gauze rolls had been removed. A new long gauze roll was packed and was documented as "1 gauze roll packed". Daily wound dressing was performed on post-operative day 2 to 5. One gauze roll was removed with one new gauze roll packed each time. On day 6 after operation, wound debridement was performed and a retained gauze roll was found inside the wound.

Key contributing factors:

1. Used same type of dressing material (long gauze roll) for both wound packing and cover dressing.
2. Adopted the practice of leaving a 'visible tail' of packed gauze roll 'over' the wound instead of 'peri-wound surrounding skin' by the involved surgeons.

Recommendations:

1. Use different materials for wound packing and cover dressing.
2. Reinforce and align the practice of leaving a 'visible tail' of packed gauze roll over the 'peri-wound surrounding skin'.

Case 3: A metallic foreign body

A patient had history of ruptured anterior communicating artery aneurysm with operation in 2009 with good recovery. She received lower segment caesarean section (LSCS) for her second baby in December 2016. A suspected foreign body in the LEFT side of the abdomen was shown on the computed tomography (CT) scan taken in December 2017 for recurrent abdominal

discomfort. Abdominal X-ray showed a thin elongated metallic opacity at the LEFT lower quadrant of abdomen. An operation to remove the foreign body was performed. A needle hub of the puncture set which was used for transverse abdominis plane (TAP) block procedure during wound closure for previous LSCS was retrieved intact. The patient recovered well and was discharged on the next day of operation.

Key contributing factors:

1. The operating team was not aware that the needle hub was dislodged during the TAP block procedure.
2. Failure to check the integrity and completeness of the injection set before and after the TAP block procedure.
3. Unclear number of items returned by surgeon and failure to check the injection parts during counting.

Recommendations:

1. Reinforce the practice to check for integrity and completeness before and after using the instrument in the patient.
2. Review the current practice in documenting the number of items included in a set of instrument / consumables.
3. Review the "Operating Theatre Counting Record" design.

Case 4: Retained probe cover after trans-vaginal ultrasound

A patient was admitted for heavy vaginal bleeding and lower abdominal pain after miscarriage. Trans-vaginal ultrasound was conducted. As usual practice, 2 probe covers were used to cover the ultrasound probe for scanning. After completion of scanning, the probe was retrieved from the vagina and the used probe cover was removed from the probe and disposed without counting. The patient was discharged after the examination but returned to the department later. A probe cover was brought back by the patient who claimed that it was dislodged from her vagina. Speculum examination was performed to confirm that there were no foreign bodies.

Key contributing factors:

1. Failure to count removed probe covers removed from the ultrasound probe before disposal.
2. Failure to hold the probe cover firmly during the whole scanning procedure.

Recommendations:

1. Adopt the practice of using only ONE probe cover for transvaginal ultrasound examination, and checking its integrity prior to disposal after the procedure.
2. Adopt the practice of mandatory counting and integrity checking prior to disposal of the probe cover after the procedure should there be need to use more than ONE probe cover.

Case 5 & 6: Retained guide wire after insertion of central venous catheter (CVC)

Patient A with carcinoma of anus underwent local excision. The patient's condition was deteriorating. Ultrasonographic guidance of CVC insertion was performed for difficult peripheral access. After multiple attempts, CVC was inserted at the LEFT femoral vein successfully. Both attending doctor and nurse did not perform post-procedure checking nor complete the "Safety Checklist for Bedside Procedures" (Safety Checklist). 4 hours after the procedure, another nurse noticed that the Safety Checklist was not completed. The Safety Checklist was completed without verification. 6 hours after the procedure, retained guide wire was suspected while reviewing the X-ray image. The guide wire was removed intact.

Patient B was admitted to paediatric intensive care unit (PICU) for status epilepticus. The CVC was inserted at the RIGHT femoral vein for fluid and total parenteral nutrition infusion. No difficulty was encountered during flushing of CVC lumens. The infusion fluid was connected to the catheter lumen and infusion was commenced using the infusion device. The doctor disposed of the used consumables without counterchecking with nurse. The Safety Checklist was not used throughout the procedure. Post procedure chest X-ray revealed a retained guide wire. The CVC with the guide wire was removed uneventfully.

Key contributing factors:

1. Unfamiliarity with the technique of the procedure and lack of awareness of the critical steps of procedure to prevent retained guide wire.
2. Failure to comply with the safety checking procedure to counter-check whether the guide wire was removed after catheter insertion.

Recommendations:

1. Enhance the training of the critical steps involved in the insertion of CVC.
2. Reinforce the practice on critical step check, especially on whether the guide wire was removed, such as seek confirmation of 'guide wire out'.
3. Reinforce the importance of staff compliance to conduct post-procedure checking.
4. Review the department's bedside procedure safety checklist for CVC insertion, and to emphasize on counting guide wires.

Case 7: Retained ventricular catheter

In a patient with history of recurrent brain tumor and multiple excision surgeries, a ventricular catheter was noted in the follow-up magnetic resonance imaging for tumor progression monitoring. After reviewing the images, it was suspected that a ventricular catheter was retained after removal of the external ventricular drain. The patient was informed that the catheter is a biomedical compatible product with low risk of infection. The patient agreed to the plan for removing the catheter during the next operation. A craniotomy for excision of the recurrent brain tumor was performed 4 months later. The old ventricular catheter was retrieved and replaced with a new catheter for drainage of cerebrospinal fluid.

Key contributing factors:

1. Not checking the completeness of the ventricular catheter after removal.
2. Lack of knowledge and experience in the removal of ventricular drains.
3. Suboptimal supervision as the concerned staff had only joined the unit for a week.

Recommendations:

1. Conduct cross checking on the removed catheter.
2. Review the training material on the removal of ventricular drains.
3. Enhance the training on removing ventricular catheters which includes checking the completeness of the drains after removal.
4. Strengthen supervision of new staff



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

The overall assessment and management of these 7 cases was determined to be appropriate by investigation panel. The seven *inpatient suicide* cases are summarised below:

Home leave patient

Case 1

A patient with a history of paranoid schizophrenia and multiple previous hospitalisations was admitted for psychosis. After symptoms improved, rehabilitation and occupational therapy training was arranged for him. No suicidal or violent ideas were noticed. At a multi-disciplinary recovery meeting two months prior to the incident, he was granted as-needed day leave with staff for rehabilitation activities and personal affairs. On the two days preceding the incident, the patient went on two separate day leaves with staff for rehabilitation activities. On the day of the event, patient went on day-leave with a family member in the morning for personal affairs after assessment of the patient was completed. Two hours later, the family member informed ward staff that the patient had jumped from height at home.

Case 2

A patient with a history of psychotic depression with delusion was admitted for anxiety after discharge and for further rehab. She was found to be calm, settled and denied suicidal thoughts. Her suicidal risk assessment result was "low risk". Multiple home leaves were granted to facilitate patient's reintegration into the community. The patient took five home leaves accompanied by her husband and took one further home leave on her own. The patient was noted to have pleasant experiences and patient requested a further day of home leave by herself. During the second home leave, patient hung herself at home.

Case 3

A patient was admitted for pleural effusion and ankle edema. The patient had no previous history of suicidal attempt or ideation, had not expressed any self-harm behavior and appeared emotionally stable. Malignancy was suspected and explained to the family. The family requested not to disclose the condition to patient immediately, and planned to explain the condition to the patient later. Diagnostic tapping and PET-CT scan was ordered for the patient.

Diagnostic pleural tapping was performed and no evidence of malignancy was found. The patient underwent a PET-CT scan but results were not available until after the event. On day 9 of hospitalisation, the family requested home leaves for the weekend and holiday. The next day, the patient went on home leave with relatives. Ward staff was informed that the patient committed suicide by jumping from height the day after.

Case 4

A patient with history of adjustment disorder and lung cancer with metastasis, was admitted for the relief of symptoms brought on by superior vena cava obstruction. The patient's breathlessness and pain had improved after receiving treatment. The patient was emotionally calm with no suicidal ideation. On the day of the event, the patient left the ward with his wife on home leave. On that evening, the patient committed suicide by jumping from height.

Inpatient

Case 5

A male patient, over 65 years of age, was admitted for fever and low back pain after a fall. The patient was physically dependent with underlying medical disease and double incontinence. On admission, he was emotionally stable with no suicidal intent detected. Antibiotics were given for upper airway tract infection and urinary tract infection. Physiotherapy, occupational therapy were arranged for activities of daily living (ADL) training and walking exercise. The patient's mental condition was stable during the hospital stay. On day 9 after admission, the patient was found hanging by a feeding bib from the hospital bed lifting pole. Resuscitation was performed and the patient was transferred to intensive care unit (ICU) for continuation of care. Computed tomography (CT) showed diffuse hypoxic brain injury. The patient succumbed 7 days after hanging.

Recommendation:

Explore alternative design of feeding bib to eliminate the considerable risk imposed by the two long straps.

Case 6: Patient absconded from the hospital and found dead outside the hospital

A patient with known psychiatric diagnosis of delusional disorder was admitted to psychiatric ward for increased paranoid ideas. The patient was noted to have significant improvements after one week of management and was allowed to attend the training in the psychiatric occupational therapy (OT) department. Two weeks later, during an occupational therapy

session, the patient suddenly dashed out of the toilet and ran towards the main entrance of the OT department. The accompanying supporting staff shouted for help. The patient broke the digital door lock and ran out of the hospital. A local hospital-wide search was performed and the police was contacted. Later in the afternoon, the patient was found hanging on a scaffolding of a residential building near the hospital. The patient was certified dead at the accident and emergency department.

Key contributing factors

1. Unanticipated change in mental state of patient might have led to sudden abscondence impulse.
2. The unlocked door at the OT department was not able to prevent the patient from absconding.

Recommendation

Install access control at OT department entrance doors for tighter control of ward / clinical areas exits while taking into account of fire safety in order to prevent patients from absconding.

Case 7: Inpatient committed suicide by jumping from height in a premises near the hospital

A patient with history of colon cancer with multiple metastasis was receiving palliative therapy. During one admission for palliative therapy, no suicidal risk was identified and the patient was emotionally stable. The nature and the stage of the disease were explained to the patient and the treatment plan was discussed. On the day of the event, the patient's condition was stable with calm mood. The patient requested home leave, but was declined in view of the need to give intravenous fluid replacement. The patient left the ward without notifying ward staff and jumped from height in a premises near the hospital.



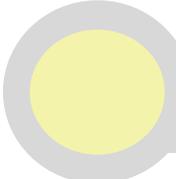
Category 7: Maternal death or serious morbidity associated with labour or delivery)

A pregnant woman developed cardiac arrest during induced labour

The patient who had been receiving regular antenatal check-ups was diagnosed with oligohydramnios and proteinuria, was admitted for induction of labour at 38 weeks of gestation due to suspected pre-eclampsia and signs of oligohydramnios. Induction of labour was performed in the morning using prostaglandin per vagina and monitoring of patient and fetus was normal. Later that evening, the woman suddenly developed a seizure of short duration and the medical staff immediately examined and monitored her condition. The patient developed cardiac arrest a few minutes later. Cardiopulmonary Resuscitation was initiated and the patient was intubated. An emergency bedside caesarean section was then performed. The delivered baby was then resuscitated by the Paediatric team and transferred to the Neonatal Intensive Care Unit for further care and monitoring. The patient had a return of spontaneous circulation, but then developed another episode of cardiac arrest followed by Post-Partum Haemorrhage (PPH), which was complicated by Disseminated Intravascular Coagulation (DIC), resulting in uncontrolled bleeding. Massive blood transfusion and multiple doses of coagulant medications were given. The patient underwent several emergency procedures to control the bleeding but succumbed in the early hours of the following day. The baby was discharged on day 18.

The RCA panel came to the following conclusions:

1. The decision to induce labour at 38 weeks was supported and reasonable.
2. The sudden deterioration of patient condition was unpredictable but promptly recognized and acted upon accordingly.
3. There was prompt support from multi-disciplinary teams.
4. An emergency cesarean section was timely performed and the baby was delivered. The baby was discharged from hospital 18 days after birth.
5. The woman developed post-partum hemorrhage about one hour after the cardiac arrest. According to her clinical condition, the cause resembled an amniotic fluid embolism resulting in DIC and uterine atony. The multi-disciplinary clinical teams had already provided various resuscitative treatments, blood transfusion and medications.
6. Probable differential diagnosis including amniotic fluid embolism had been considered by clinical team. They had endeavored to provide all possible resuscitation and treatments



Category 8: Infant discharged to wrong family or infant abduction

Patient left the hospital with her newborn baby without notifying ward staff

A patient was admitted for premature rupture of membrane. Emergency lower segment Caesarean section (LSCS) was performed. The patient and her baby girl was allowed to be discharged 3 days later. During the morning shift, a midwife provided the discharge documents with education on follow-up plan to the patient. The patient informed ward staff that a social worker would accompany her to the sheltered home. During afternoon shift an hour later, another midwife found that the patient and her baby were not in bed and missing from the ward. A local search was conducted. The patient was contacted by phone successfully and was advised to come back from the sheltered home with her baby for completion of the discharge process. Later that evening, the patient and her baby returned to ward and the baby tag alarming system was activated. Both the patient and her baby were later discharged.

Key contributing factors:

1. Suboptimal communication among staff and patient / family during the discharge process:
 - Staff did not remind the patient on steps to check her and her baby's identification before leaving.
2. Limitation of the baby tagging system:
 - The baby tag alarming system was not activated when the mother left the ward with the baby as the tag was covered.
3. Lack of two way access control system.

Recommendations:

1. Display updated notices at eye catching areas to remind parents / relatives not to take their children out of the ward without permission from the ward nursing staff.
2. Explore better baby tagging systems available in the market.
3. Install two-way access control system.
4. Deploy a staff / security staff at the ward entrance during visiting hours / peak hours as considered appropriate to allow authorized access / exit only.
5. Consider to use "Permission-to-leave" card if indicated.



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

A patient who had vaginal laceration after Barium enema examination

An elderly female patient was scheduled to undergo a barium enema examination. A radiographer tried to insert the enema tip into the patient's anus but had improperly inserted it into the patient's vagina. The radiographer did not perform visual check. The balloon (retention cuff) of the enema tip was inflated to avoid leakage of barium during the examination. After instillation of barium into the catheter, the radiologist noticed, in the X-ray images, the presence of barium inside the patient's pelvis, suspecting that enema tip was improperly inserted into the vagina. The radiologist immediately stopped the examination and asked a radiographer to check the position of the enema tip. The radiographer removed the enema tip after discovering that it was inserted into the vagina. The radiologist then examined the patient and found blood stained barium contrast in the patient's perineum. The patient was escorted to the accident and emergency department for assessment immediately. An urgent computed tomography scan was arranged. The result showed that there was barium in her vagina, uterine cavity and bilateral fallopian tubes, and there were also possible signs of vaginal tear. The patient was transferred to the intensive care unit and a joint assessment was conducted by a Surgeon, a Gynaecologist and an Intensivist. An emergency laparotomy was performed during which the laceration of the vagina was sutured, the residual barium was removed and a bilateral salpingectomy was performed in order to avoid the risk of peritonitis. The patient was stable after the operation. She made satisfactory recovery and was discharged home 20 days later.

The RCA panel came to the following conclusions:

1. During the insertion of the enema tip, the radiographer did not clearly see the patient's perineum. Visual checking was not performed after insertion. The radiographer should identify the patient's anus before and immediately after inserting the enema tip to prevent similar incidents from happening again.
2. The inflated balloon of the enema tip caused injuries to the vagina and forced the barium into the uterine cavity and the fallopian tubes.
3. The incident is rare according to medical literature.

Recommendations:

Review and revise the workflow of barium enema examination to ensure:

- a. the correct positioning of the enema tip in the anus is visually reconfirmed by another professional staff immediately after enema tip insertion;
- b. an assessment is conducted on the benefits of inflating the retention cuff of the enema tip against the risks and needs of individual patients; and
- c. the retention cuff is inflated only after confirmation of the correct positioning of the enema tip by a doctor.

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