ANNUAL REPORT ON SENTINEL AND SERIOUS UNTOWARD EVENTS

October 2019 – September 2020

HOSPITAL AUTHORITY
HONG KONG

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醫院管理局
HOSPITAL AUTHORITY

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Acknowledgement

This 13th 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 thirteen years ago, root causes of incidents were analysed and lessons learnt were shared for continuous learning. Our colleagues have also been formulating patient safety precautions and enhancing staff awareness to minimise 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

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Executive Summary

1. This annual report provides a summary of all Sentinel Events (SE) and Serious Untoward Events (SUE), comprising 24 SE and 50 SUE, reported between October 2019 and September 2020.

Sentinel Events

2. The 24 reported SE represented an incident rate of 1.1 per 1,000,000 episodes of patient attendances / discharges and deaths. Of these SE, 22 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* (15 cases); *death of an inpatient from suicide (including home leave)* (6 cases) and *surgery / interventional procedure involving the wrong patient or body part* (2 cases).

4. Of the 15 *retained instruments or other material after surgery / interventional procedure* cases, 6 were related to the counting of instruments / material and the other 9 involved broken instruments / material.

5. Of the 6 cases of *death of an inpatient from suicide (including home leave)*, 5 were inpatients and the remaining one was a missing patient. The overall assessment and management of these 6 cases was determined to be appropriate by the investigation panels.

6. The 6 reported cases of *death of an inpatient from suicide (including home leave)* represented a suicide rate of 0.5 per 100,000 inpatient admissions. For reference, the estimated inpatient suicide rates in general hospitals of the United States estimated the inpatient suicide rate among nonpsychiatric inpatients to be 0.03 per 100,000 nonpsychiatric admissions. Among psychiatric inpatients, the estimated rate is 3.2 per 100,000 psychiatric inpatient admissions.[1]

[1] Incidence and Method of Suicide in Hospitals in the United States. The Joint Commission Journal on Quality and Patient Safety, November 2018.

7. The 2 cases of *surgery / interventional procedure involving the wrong body part* occurred in the Operating Theatre.

8. The remaining one case of reported SE was *other adverse events resulting in permanent loss of function or death (excluding complications)*.

9. Among the 24 SE, 7 (comprising 6 cases of *death of an inpatient from suicide* and 1 case of *other adverse events resulting in permanent loss of function or death (excluding complications)*) resulted in mortality.

10. Of the remaining SE, 3 had major / moderate consequence and 14 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 50 SUE which could have led to death or permanent harm, 45 were *medication error* and 5 were *patient misidentification*.

13. The four most common *medication error cases* were prescription of an *anticoagulant* (11 cases), prescription of a *known drug allergy* (7 cases), involving a *dangerous drug* (4 cases) and involving *insulin* (4 cases). Of all the *known drug allergy* cases, 3 were related to non-steroidal anti-inflammatory drugs (NSAID), 1 was related to penicillin, 1 was related to paracetamol, 1 was related to anti-tetanus toxoid and 1 was related to holopon.

14. Of the 50 SUE, 8 had temporary major consequence, 7 had moderate consequence and 35 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 the 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 thirteen annual report provides a summary and analysis of the SE and SUE reported via the Advance Incident Reporting System (AIRS) between October 2019 and September 2020 (4Q19 - 3Q20). The aim of publishing this Annual Report is to share the lessons learnt from SE and SUE, with a view of 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
[Medication error]

Category 2 Patient misidentification which could have led to death or permanent harm
[Patient misidentification]

Sentinel Events Statistics

Yearly Trend

19. 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.

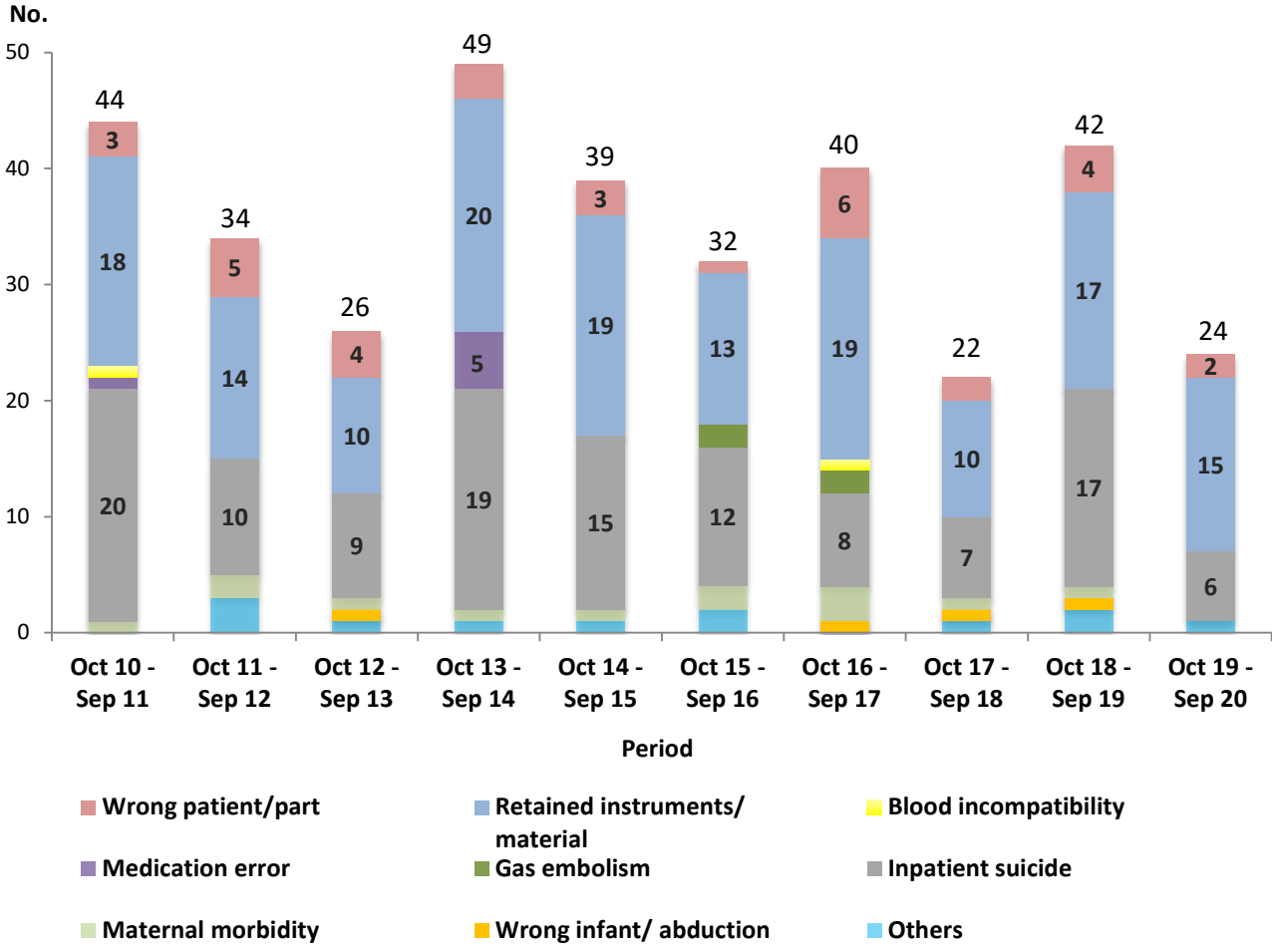

Figure 1: Yearly distribution of SE by category (last ten reporting years)

20. Since the Sentinel Event Policy was implemented in 2007, the annual number of episodes of patient attendances / discharges and deaths had increased from approximately 16 million in 2007 to 21.5 million in 2020. The SE incident rate per 1,000,000 episodes of patient attendances / discharges and deaths was 1.1 (Figure 2).

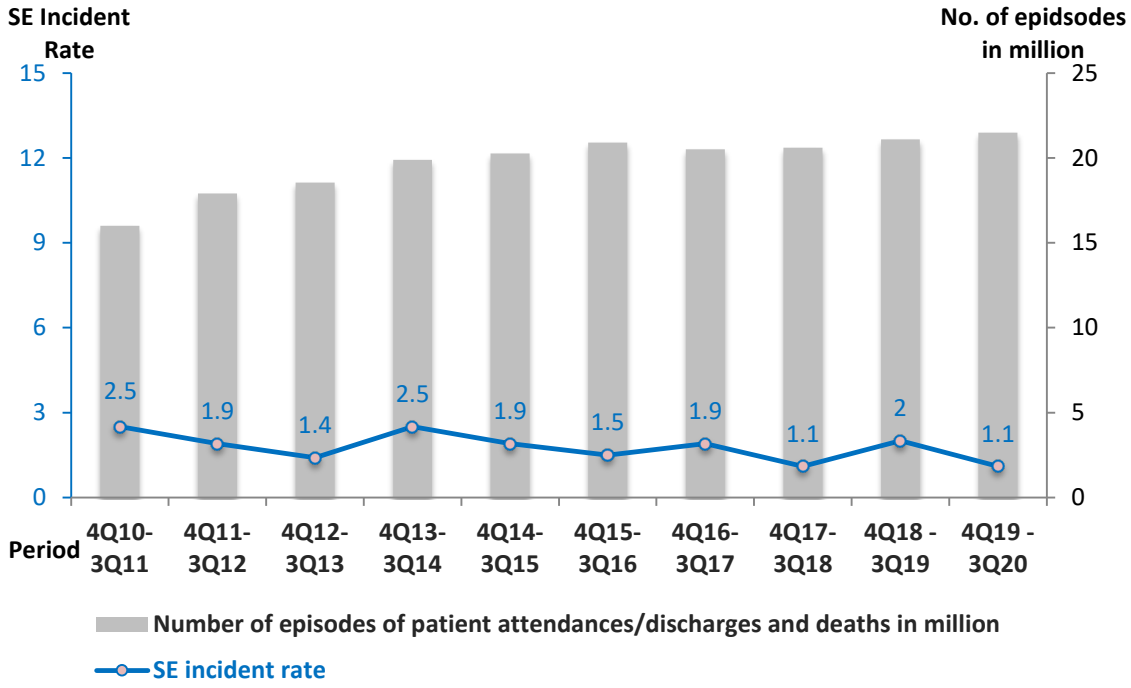

Figure 2: Yearly SE incident rates per million episodes of patient attendances/ discharges and deaths (last ten reporting years)

21. The yearly trend of top three SE of last ten reporting years and their figures are depicted in Figure 3 and Table 1 respectively. *Retained instruments / material*, *inpatient suicide* and *wrong patient / part* constituted most of the SE reported.

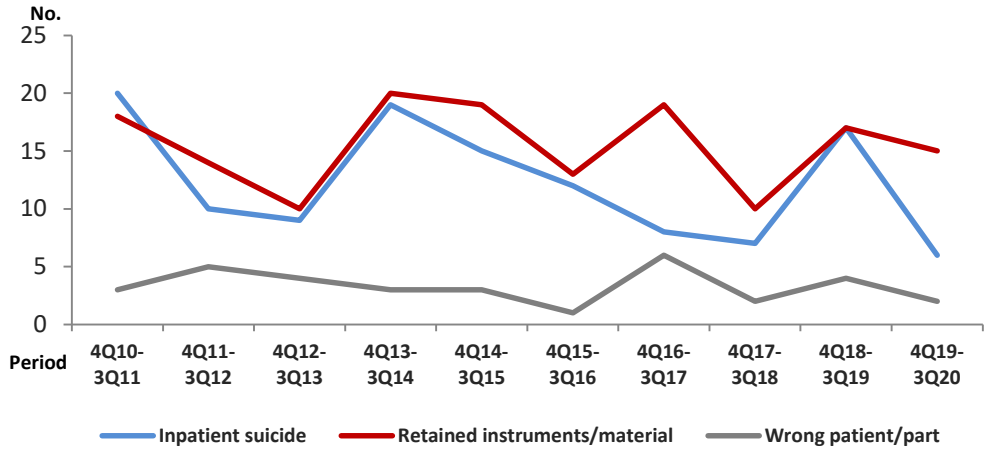

Figure 3: Yearly trend of top three SE (last ten reporting years)

Category	4Q10-3Q11	4Q11-3Q12	4Q12-3Q13	4Q13-3Q14	4Q14-3Q15	4Q15-3Q16	4Q16-3Q17	4Q17-3Q18	4Q18-3Q19	4Q19-3Q20
Retained instruments/ material	18	14	10	20	19	13	19	10	17	15
Inpatient suicide	20	10	9	19	15	12	8	7	17	6
Wrong patient/part	3	5	4	3	3	1	6	2	4	2
Maternal morbidity	1	2	1	1	1	2	3	1	1	0
Medication error	1	0	0	5	0	0	0	0	0	0
Gas embolism	0	0	0	0	0	2	2	0	0	0
Wrong infant/ abduction	0	0	1	0	0	0	1	1	1	0
Blood incompatibility	1	0	0	0	0	0	1	0	0	0
Others	0	3	1	1	1	2	0	1	2	1
Total	**44**	**34**	**26**	**49**	**39**	**32**	**40**	**22**	**42**	**24**

Table 1: Number of SE by category (last ten reporting years)

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. The yearly outcomes of SE of the last ten reporting years are depicted in Figure 4. The outcomes are categorised into minor or insignificant consequences (i.e. no injury sustained / minor injury), major / moderate consequences (i.e. temporary / significant morbidity) and extreme consequences (i.e. major permanent loss of function / disability or death). A description of the

consequences is illustrated in Annex II.

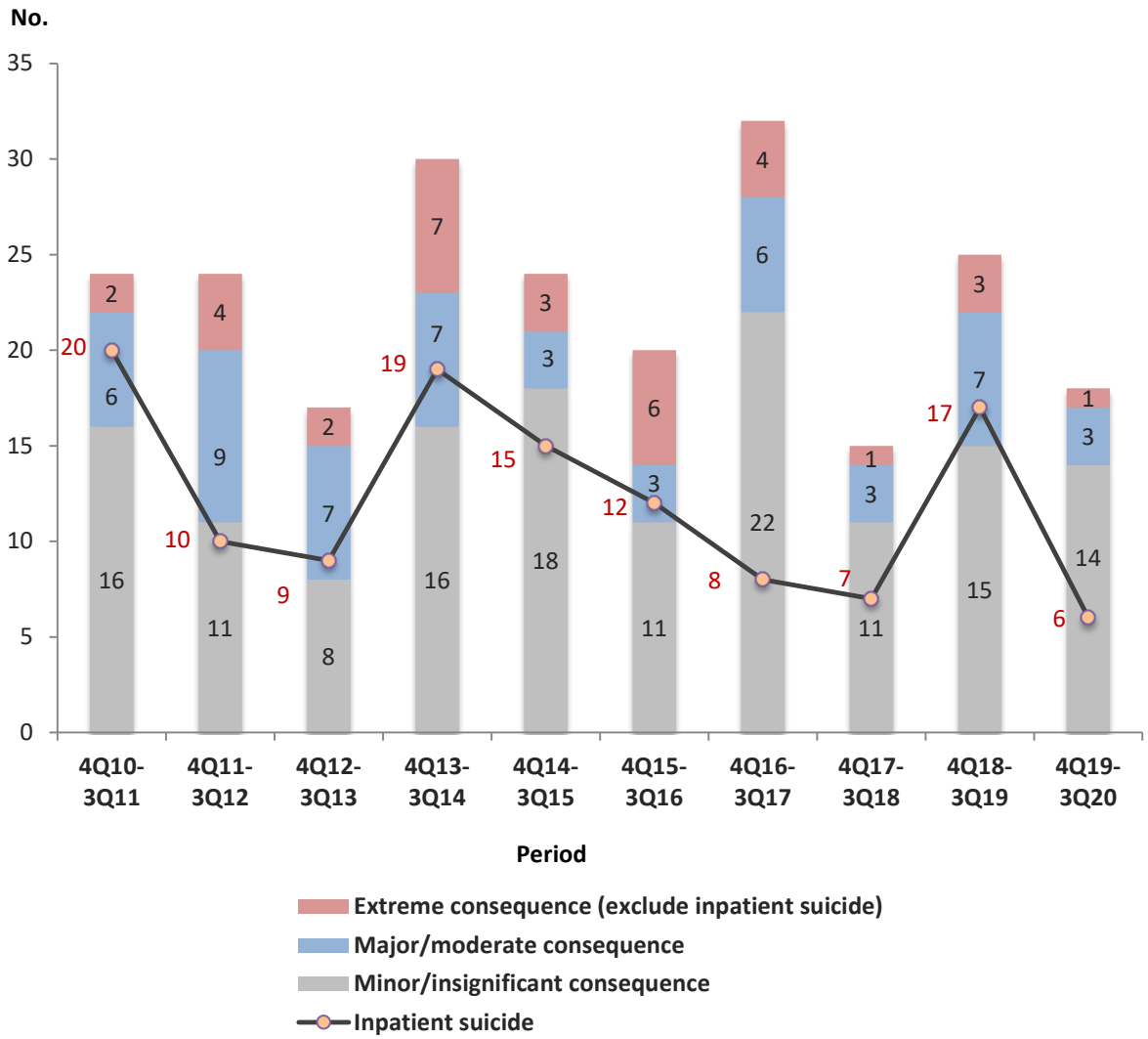

Figure 4: Yearly outcome of SE (last ten reporting years)

SE Reported in 4Q19 – 3Q20

24. The distribution of the 24 reported SE in 4Q19 – 3Q20 by category is shown in Figure 5. The three most commonly reported categories were *retained instruments / material* (15 cases); *inpatient suicide* (6 cases) and *wrong patient / part* (2 cases).

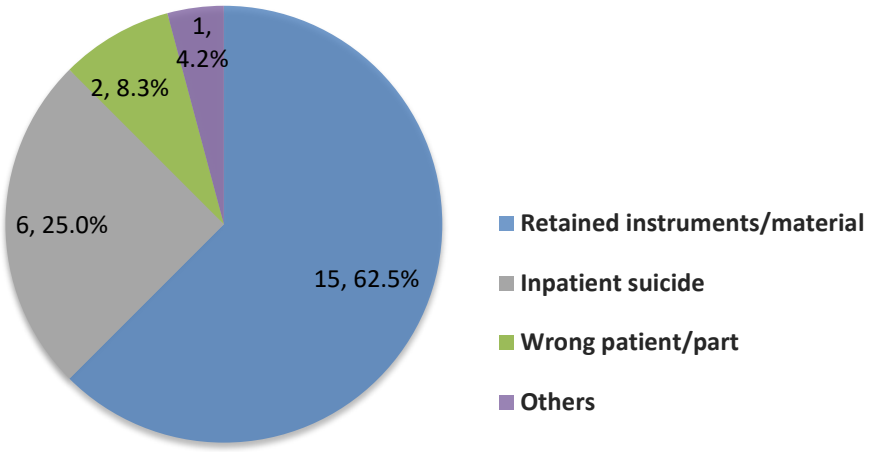

Figure 5: Distribution of SE by category

25. The quarterly distribution of 24 reported SE is illustrated in Figure 6.

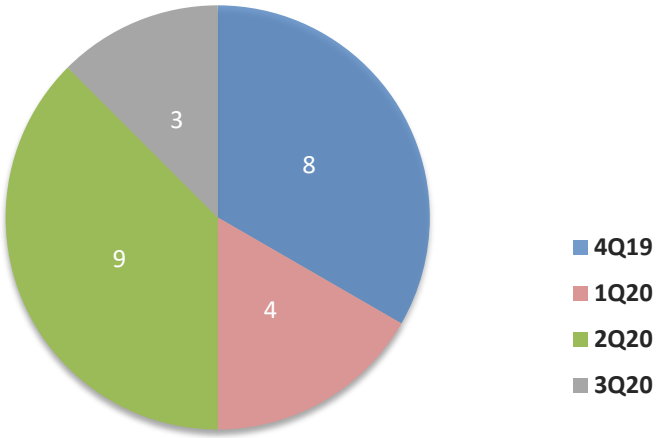

Figure 6: Quarterly distribution of SE

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	22	91.6%
Hospitals with a mix of acute and non-acute services and psychiatric service	1	4.2%
Acute Hospitals of Special Nature	1	4.2%

Table 2: Distribution of SE by hospital setting

27. Among the 24 SE cases, 7 had resulted in mortality (comprising of 6 *inpatient suicide* and 1 o*ther adverse events*). For the remaining SE cases, none had extreme consequences, 3 had major / moderate consequences and 14 had minor / insignificant consequences (Figure 7).

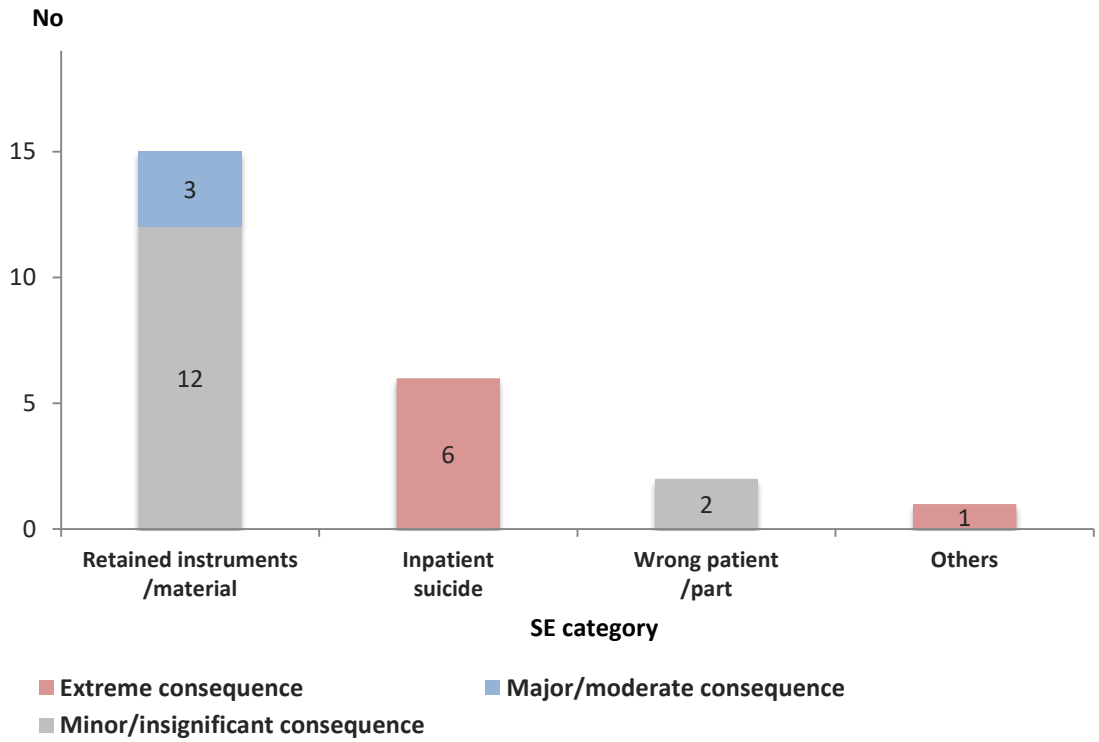

Figure 7: Outcome of SE by category

Retained instruments / material

28. Out of the 15 SE cases of *retained instruments / material*, 9 were broken instruments / material and the other 6 were related to the counting of instruments / material. Their quarterly distribution is shown in Figure 8.

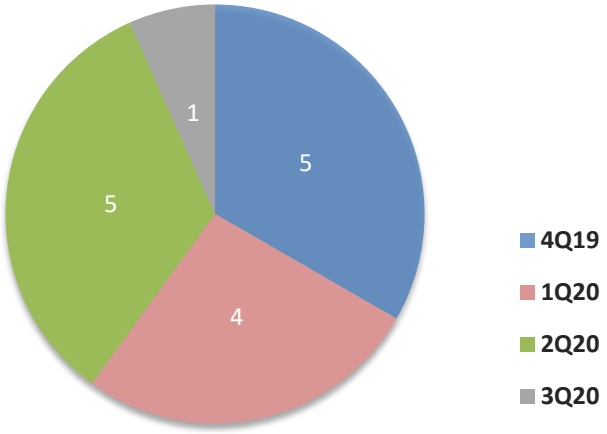

Figure 8: Quarterly distribution of retained instruments/material

29. The distribution of the nature of the 6 cases related to the counting of instruments / material is shown in Figure 9.

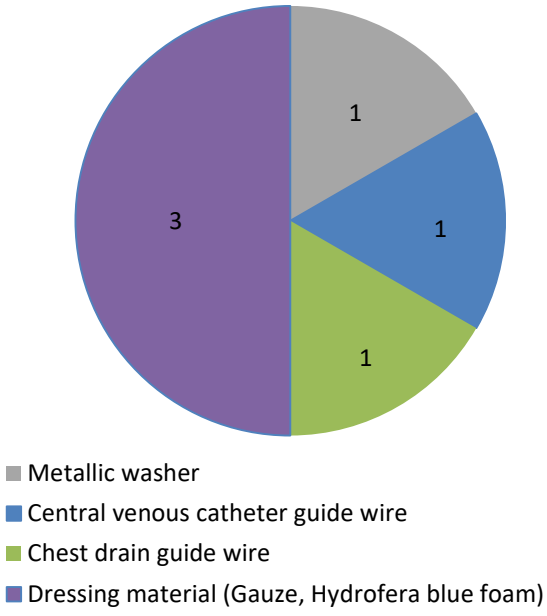

Figure 9: Nature of incidents related to the counting of instruments / material

Inpatient suicide

30. Figures 10 - 14 show the distribution of the 6 *inpatient suicide* cases by different categories during the reporting period.

31. Of the 6 *inpatient suicide* cases, all with malignancies or chronic disease were admitted to general wards (2 in oncology, 2 in surgery, and 2 in medicine).

32. 2 patients committed suicide by jumping from height. One was an inpatient and the other one was a missing patient. 3 inpatients committed suicide by hanging, one by hanging with scarf, one by hanging in an assisted bathroom, and the other one left the ward then found hanging at home. Another 1 inpatient committed suicide by suffocation by plastic bag. The inpatient suicide incident rate for the reporting period was 0.5 per 100,000 inpatient admissions.

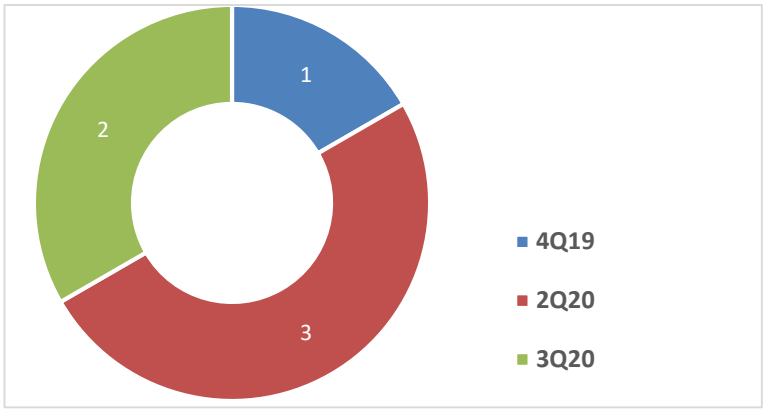

Figure 10: Quarterly distribution of inpatient suicide

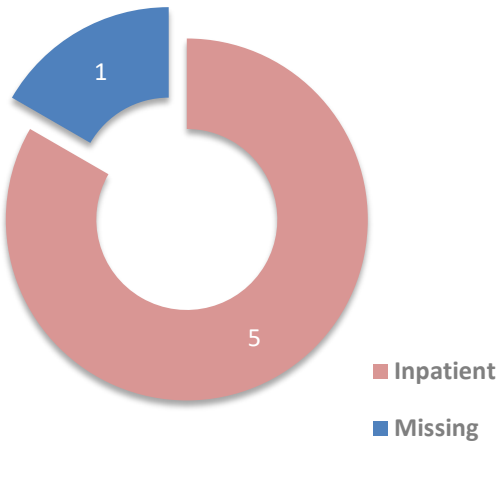

Figure 11: Location

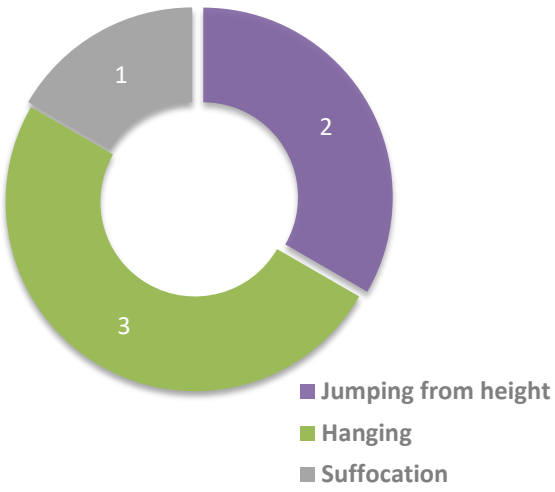

Figure 12: Method

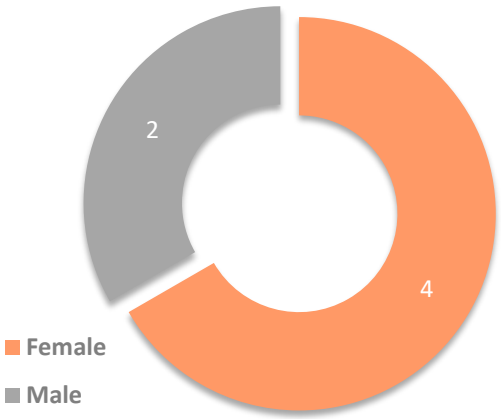

Figure 13: Gender

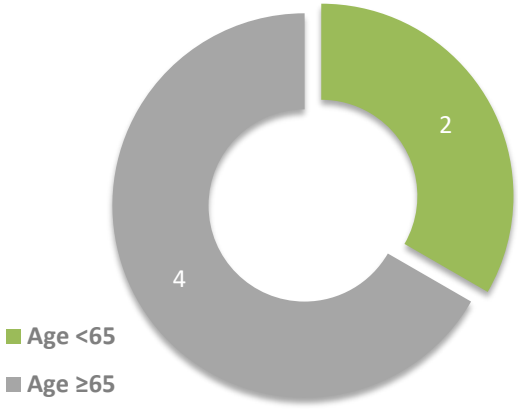

Figure 14: Age

Wrong patient / part

33. All 2 cases of *surgery / interventional procedure involving the wrong patient / part* occurred in the Operating Theatre.

International Sentinel Event Reporting

34. In the United States, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) reviewed 800 SE cases in 2018 and 844 in 2019.[2] The high number might be due to its much broader definition of SE. The number of reported SE recorded by Victoria, Australia was 121 in the period from July 2018 to June 2019 and the Department of Health, State Government of Western Australia (DH Western Australia) was 12 in 2019 – 2020.[3,4] The relative SE incident rates in Victoria and Western Australia were 4 per 100,000 patients and 19.7 per 1,000,000 inpatient episodes of care respectively.[5,6]

35. HA had a SE incident rate of 1.1 per 1,000,000 episodes of patient attendances / discharges and deaths. Since the different regions have, over the years, departed markedly in their definitions of SEs, we have not tabled the incident rates for comparison.

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 13 years is between 0.5 and 2.8 per 100,000 admissions. For reference, the estimated inpatient suicide rates in general hospitals of the United States estimated the inpatient suicide rate among nonpsychiatric inpatients to be 0.03 per 100,000 nonpsychiatric admissions. Among psychiatric inpatients, the estimated rate is 3.2 per 100,000 psychiatric inpatient admissions.[7]

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[2] The US Joint Commission, Summary Data of Sentinel Events Reviewed by The Joint Commission: as of September 7, 2020.

[3] Sentinel events annual report 2018-2019. Safer Care Victoria, State Government of Victoria, Australia.

[4] Your Safety in our Hands in Hospital - An Integrated Approach to Patient Safety Surveillance in WA Hospitals, Health Services and the Community: 2020. Department of Health, State Government of Western Australia, Australia.

[5] 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.)*

[6] Department of Health, State Government of Western Australia, Australia recorded 610,956 episodes of care in 2019/20 (Your Safety in our Hands in Hospital - An Integrated Approach to Patient Safety Surveillance in WA Hospitals, Health Services and the Community: 2020).

[7] Incidence and Method of Suicide in Hospitals in the United States. The Joint Commission Journal on Quality and Patient Safety, November 2018.

Serious Untoward Events Statistics

Yearly Trend

37. A total of 50 SUE were reported in 4Q19 – 3Q20. The yearly distribution of SUE by category since 2010 is depicted in Figure 15, with the total number of cases each year shown at the top of each bar.

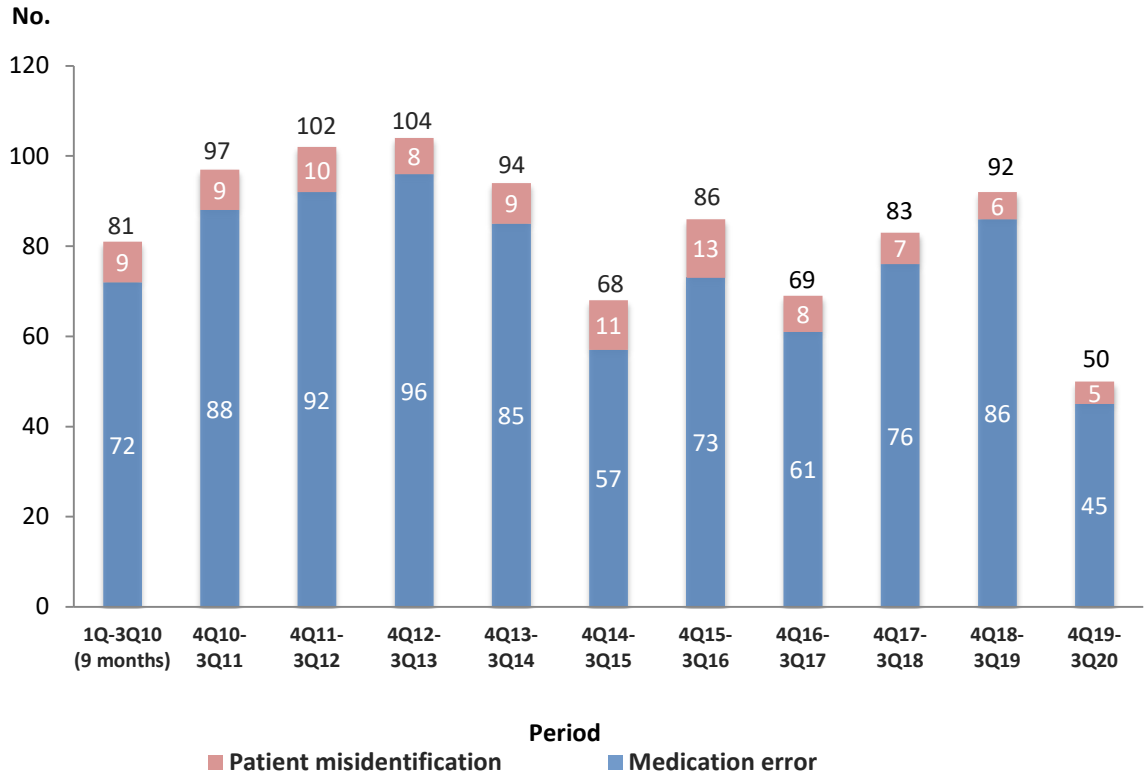

Figure 15: Yearly distribution of SUE by category

38. The yearly outcomes of SUE are depicted in Figure 16. The outcomes are categorised into minor or insignificant consequences, moderate consequences and temporary major consequences. A description of the consequences is illustrated in Annex II.

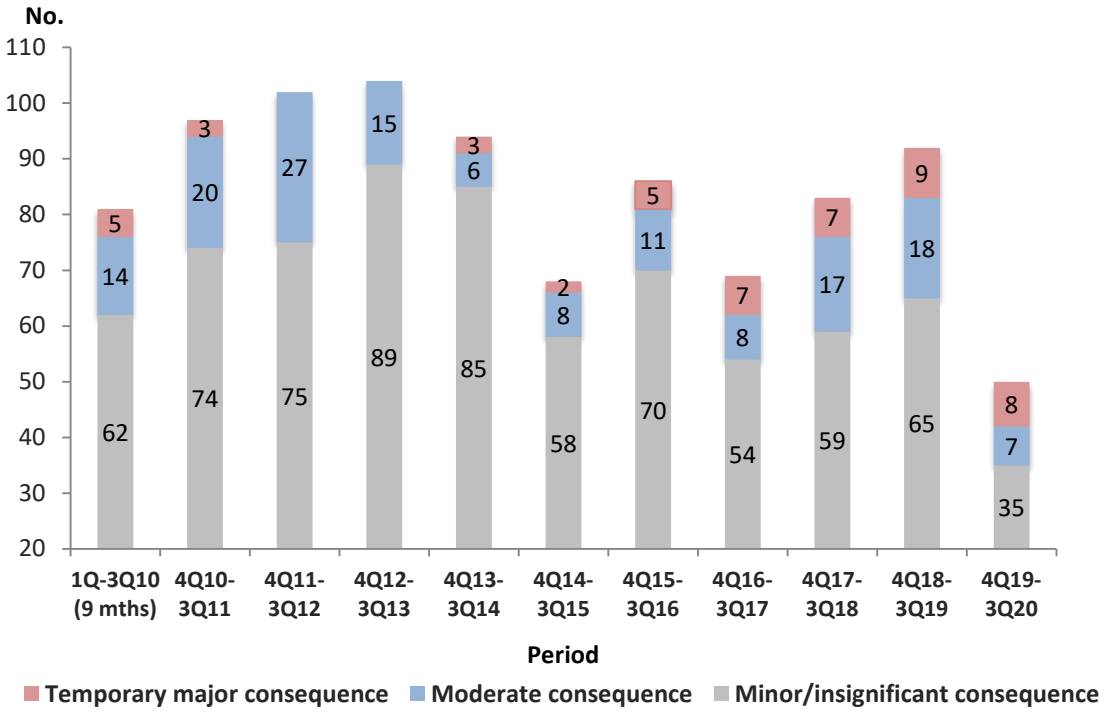

Figure 16: Yearly outcome of SUE

39. The yearly trend of the top three common nature of *medication error* is depicted in Figure 17. Other common drugs involved are insulin, chemotherapy, concentrated electrolytes, etc. A list of high alert medications is listed in Annex III.

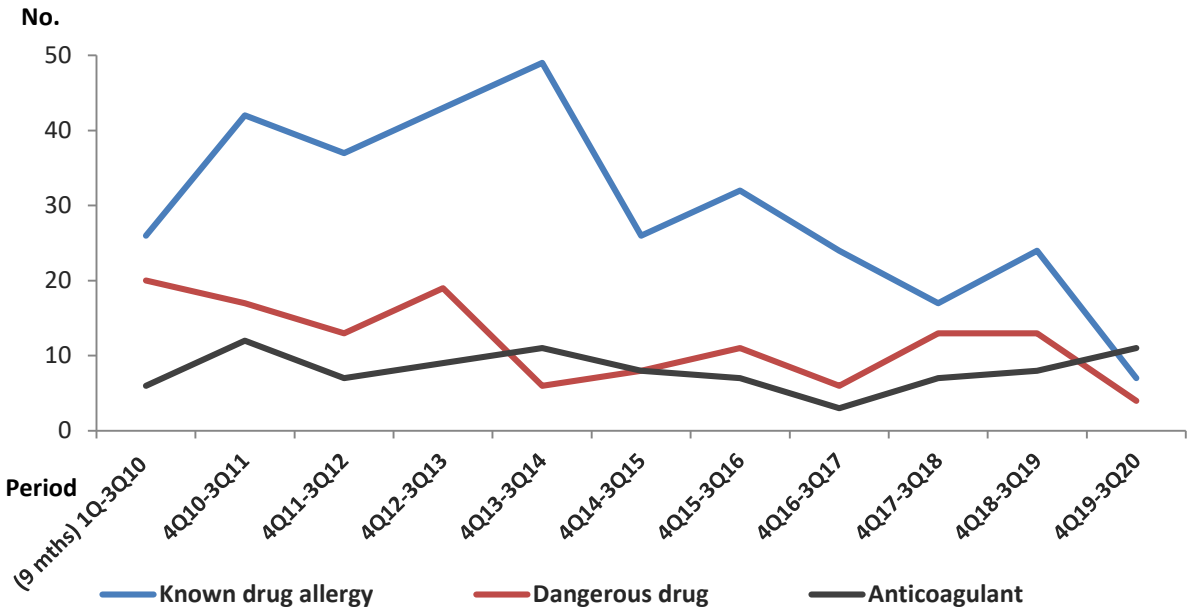

Figure 17: Yearly trend of top three common nature of medication involved in medication incidents

SUE Reported in 4Q19– 3Q20

40. The quarterly distribution of SUE reported is illustrated in Figure 18.

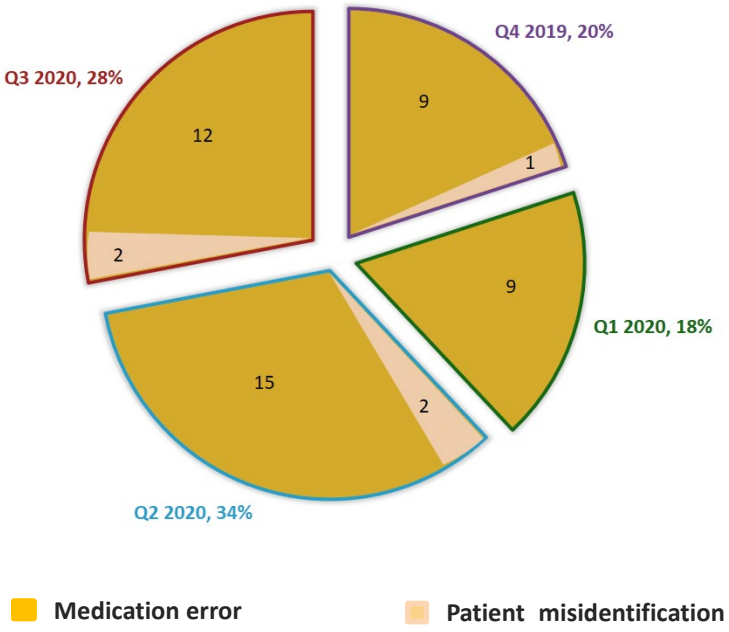

Figure 18: Quarterly distribution of SUE by category

41. Of the 50 SUE cases, 35 had minor / insignificant consequences, 7 had moderate consequences and 8 had temporary major consequences (Figure 19).

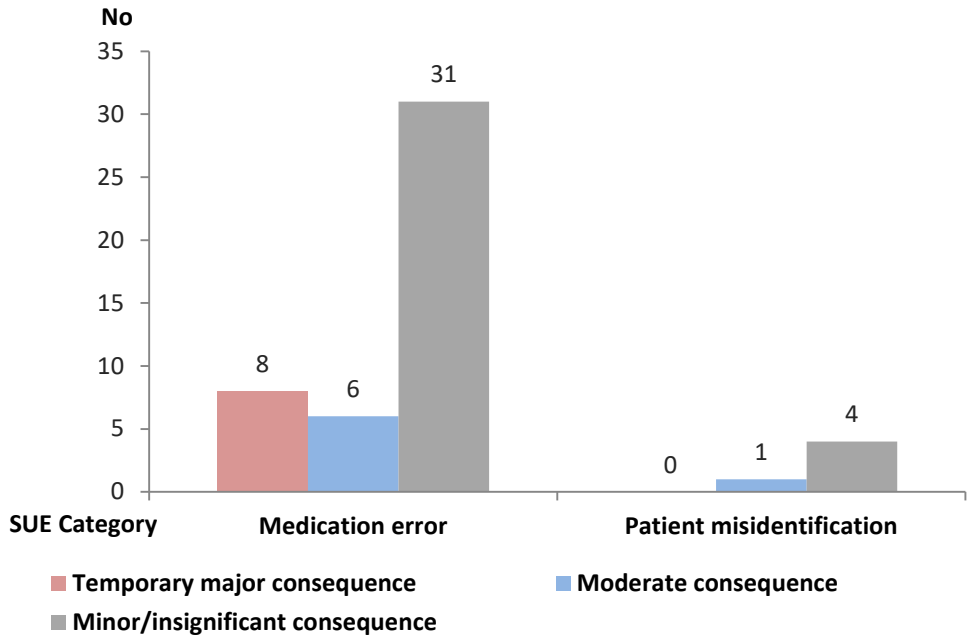

Figure 19: Outcome of SUE by category

Medication error

42. The nature of the four most common *medication errors* were prescriptions of *anticoagulant* (11 cases), *known drug allergy* (7 cases), *dangerous drug* (4 cases), and *Insulin* (4 cases). The distribution of drugs is shown in Figure 20. Drugs such as losartan and lignocaine were grouped under *other medications.*

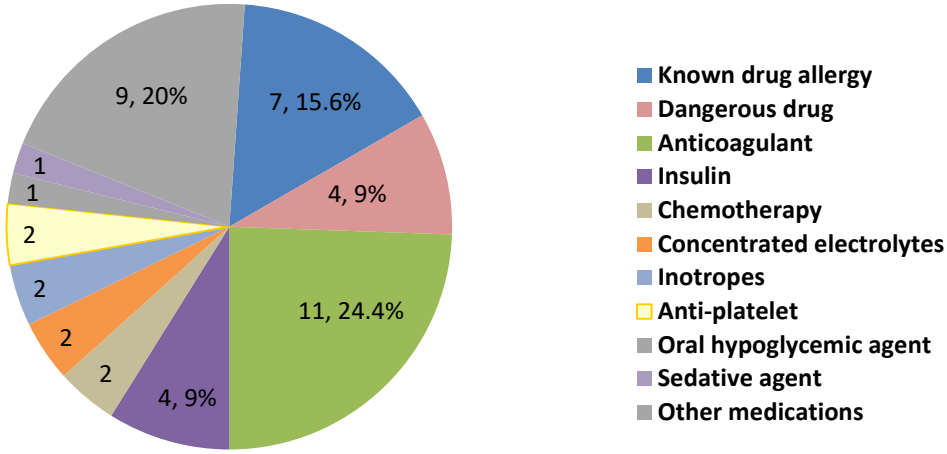

Figure 20: Distribution of medication error

43. Of the 7 *medication errors* related to *known drug allergy*, the five most commonly involved drugs were non-steroidal anti-inflammatory drugs (NSAID) (3 cases), penicillin-related (1 case), paracetamol-related (1 case), anti-tetanus toxoid (1 case), and holopon (1 case). Their distributions are shown in Figure 21.

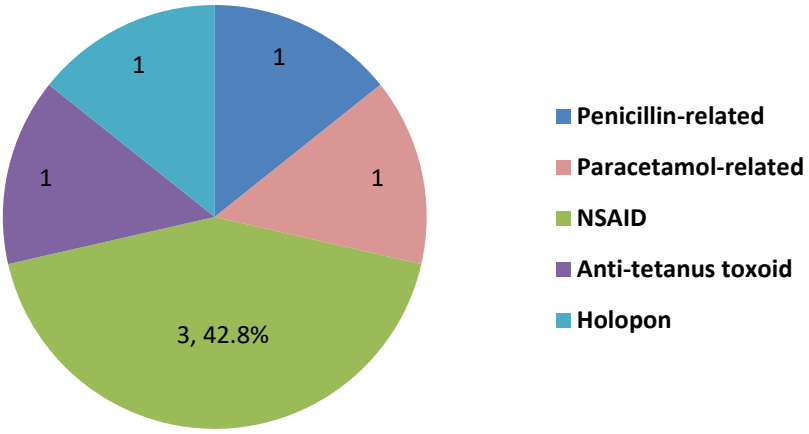

Figure 21: Distribution of drugs related to known drug allergy

44. Of the 7 *known drug allergy* cases, the two most common locations of occurrence were Accident & Emergency Department (AED) (4 cases) and ward (2

cases). The remaining case occurred in Specialist Out-patient Department (SOPD) (1 case). Their distributions are shown in Figure 22.

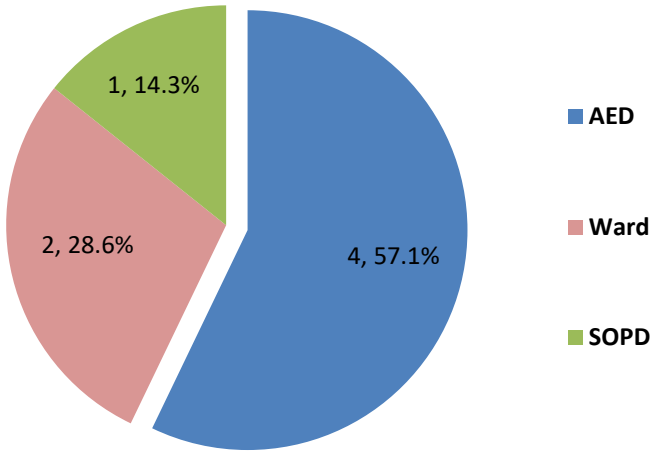

Figure 22: Location of occurrence of known drug allergy

45. Of the 7 *known drug allergy* cases, 6 had minor / insignificant consequences and 1 had moderate consequence.

Patient misidentification

46. There were 5 SUE which were due to *patient misidentification* reported. These included 3 cases of *patient misidentification* during drug administration, 1 during drug prescription and 1 due to referring to another patient's laboratory report. Their quarterly distribution is summarised in Table 3.

Patient misidentification scenarios	4Q19	1Q20	2Q20	3Q20
During drug prescription	0	0	0	1
During drug administration	1	0	2	0
Referring to another patient's laboratory report	0	0	0	1
Total	**1**	**0**	**2**	**2**

Table 3: Quarterly distribution of patient misidentification by scenarios

47. Of the 5 *patient misidentification* cases, only 1 patient had moderate consequence (Table 4). Their distribution is summarised in Table 4.

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

Table 4: 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 4Q19 – 3Q20 are analysed. They are classified into communication, knowledge / skills / competence, work environment / scheduling, patient factors, equipment and policies / procedures / guidelines, and safety mechanisms. HAHO will 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
Retained instruments / material – related to counting (6 cases)		
Policies / procedures / guidelines	The number of gauzes removed was not counterchecked. Countercheck of guide wire after procedure was not performed.	Reinforce counterchecking the number of gauzes removed, during wound inspection or wound dressing by nurses or doctors. Perform the "SIGN OUT" procedure and countercheck the number of instruments used together with “Pointing and Calling".
Communication	Inadequate communication between doctor and nurse.	Strengthen the communication between doctors and nurses. In particular, to engage nurses in wound inspection during doctor’s round.
Communication (clinical handover) / documentation	Lack of alignment in the transfer of wound packing information between inpatient, out-patient and community carers. Retrospective documentation of wound management after home visit, leading to incorrect wound packing record.	Establish an effective communication system on wound documentation and its related management with the next carer. Explore means to facilitate timely documentation of wound packing information.
Knowledge / skills /	Multiple pieces of Raytec gauzes were used for packing due to	Leave the tail end of packing materials above the skin level of the

competence / procedures	complexity of the wound condition.	wound if possible.
Retained instruments / material – broken instruments (9 cases)		
Policies / procedures / guidelines	Upon removal of the coiled nasogastric tube (NGT), there was no checking of the integrity, especially the presence of the tip of the tube. Lack of consistent practice for documentation of NGT removal.	Strengthen the practice of checking integrity, especially the presence of the tip of the NGT upon removal. Align the practice of documentation for NGT insertion and removal, with compliance monitored.
Knowledge / skills / competence / communication	Inadequacy of a robust mechanism in handling consignment single-used, new, on-loan / on trial instruments to be used for operation, in terms of staff familiarisation with and confidence in checking the newly introduced instrument, and prior notification of using it before operation to the team.	Strengthen the existing mechanism in handling consignment single-used, new, on loan / on trial instruments to be used for operation. Enhance communication between the operating team on specific instruments to be used for operation, e.g. by making remarks on the booking list via the Operating Theatre Management System.
Wrong patient / part (2 cases)		
Knowledge / skills / competence	There was no cue on the correct operative site after a time lag between "TIME OUT" and the entry of ureteric orifice.	Conduct second "TIME OUT" on checking correct side of operation before entry of internal orifice in ureteroscopy.
Policies / procedures / guidelines	"SIGN IN" and "TIME OUT" were performed, but there was no mechanism to perform "TIME OUT" before nerve block.	Formulate and implement mechanism for conducting "TIME OUT" before regional anaesthetic procedures.
Communication	Staff in operating room did not speak up and clarify despite having doubts.	Reinforce all staff to seek clarification whenever in doubt and cultivate speak-up culture.

Lessons Learnt from SEs

49. *Surgery / interventional procedure involving wrong body part* - Wrong Side Ureteroscopy and Dilation

Key contributing factors:

i. There was no cue on the correct operative site after a time lag between "TIME OUT" and the entry of ureteric orifice.

ii. The presence of co-existing pathology at RIGHT ureteric stricture.

Recommendation:

i. Conduct second "TIME OUT" on checking correct side of operation before entry of internal orifice in ureteroscopy.

50. *Surgery / interventional procedure involving wrong body part* – Brachial Plexus Nerve Block was Performed on RIGHT instead of LEFT Side of Patient

Key contributing factors:

i. "SIGN IN" and "TIME OUT" were performed, but there was no mechanism to perform "TIME OUT" before nerve block.

ii. Correct site was not checked and confirmed before the nerve block procedure and staff was misled by the visual cues of patient's posture and position of equipment.

iii. Staff in operating room did not speak up and clarify despite having doubts.

Recommendations:

i. Formulate and implement mechanism for conducting "TIME OUT" before regional anaesthetic procedures.

ii. Reinforce all staff to seek clarification whenever in doubt and cultivate speak-up culture.

51. *Retained instruments / material* - Central Venous Catheter (CVC) Guide Wire

Key contributing factors:

i. No standardisation of counting all materials used before disposal.

ii. No standardisaton of procedure set used. A disposable dressing set was used instead of a suture set.

iii. Unclear role delineation of an assistant.

Recommendation:

i. Develop a departmental protocol for CVC insertion to standardise the procedure steps and role delineation of each team member.

52. *Retained instruments / material* – Sheath of Guide Wire

Key contributing factors:

i. Not aware of the consequence of cutting the guide wire and not noticing the guide wire sheath was detached after the procedure.

ii. Repeated failure of insertion induced anxiety and posted time pressure to the operator, leading to a lapse of concentration.

Recommendations:

i. Guide wire must not be cut during the insertion of central venous catheter. It is recommended to change to a new set if needed.

ii. Alert staff about possible outcome if guide wire was cut, and arouse their awareness when checking the guide wire after procedures.

53. *Other adverse events resulting in permanent loss of function or death (excluding complications)* – Misplaced Nasogastric Tube (NGT)

Key contributing factors:

i. Cognitive bias in reading the chest X-ray for NGT verification.

ii. Nasogastric tube aspirate at pH=4 gave a false sense of security that the nasogastric tube was in stomach.

Recommendations:

i. Provide training to clinicians on reading chest X-ray for NGT verification so as to lessen cognitive bias.

ii. Review on the progress to obtain NGT aspirate for pH verification.

54. Having analysed the SEs reported in 4Q19 – 3Q20, we feel there needs to be a strong focus on the prevention of retained instruments / material after surgical or interventional procedures given the proportion of this category of

incidents constitutes 62.5% of all reported sentinel events. Another area of concern is the continuing occurrence of SEs related to surgery or interventional procedures involving the wrong patient or body part and we need to continue to reinforce compliance with surgical and procedure safety guidelines.

Analysis of Serious Untoward Events

55. Since medication errors related to anticoagulant (24.4%) and known drug allergy (15.6%) constituted the two most common categories of all the SUE reported in 4Q19 – 3Q20, recommendations from these cases are summarised below.

56. *Medication errors related to anticoagulant*

Recommendations:

i. Explore possibility of system checking when Warfarin is prescribed at wrong frequency.

ii. To modify the post Warfarin titration label for effective transmission of information.

iii. Reinforce the use of Warfarin booklet.

iv. Promote the use of "Condition" function when prescribing in IPMOE.

v. To standardise prescription practice for high alert medication.

vi. Educate and reinforce the correct use of "Defer" and "Omit" functions in IPMOE. Use "Defer" when the dose will be given later, and "Omit" when the dose will not be given.

vii. Promulgate the practice of counterchecking anticoagulant prescription by prescribing doctor in SOPD.

57. *Known drug allergy*

Recommendations:

i. To introduce electronic system for drug prescriptions to assure drug allergy history checking during prescription process.

ii. To review the workflow in AED in order to ensure patient's allergy history verification and drug prescription are done simultaneously.

iii. Change the workflow of prescribing anti-tetanus toxoid in AED, so that the allergy status of drugs can be checked by the Medication Order Entry (MOE) system.

iv. Continue to educate medical professionals on the differences between "free text entry" and "structured entry" of drug allergy information shown in IPMOE system.

58. *Insulin* constituted 9% of all reported medication errors. In one of the SUE cases involving wrong dose, actrapid 24 units, 3 times per day was prescribed instead of 2 units to the patient.

Key contributing factors:

i. Transcription error due to illegible handwriting.

ii. Assumptions and insufficient awareness of high dosage of insulin without further clarification.

Recommendations:

i. Beware of high dose of short acting insulin in the vetting process and pay special attention to the concurrent use of long acting and short acting insulin.

ii. Encourage speak up culture when the red flag was identified.

59. Among five cases of patient misidentification, two cases were related to the administration of insulin to wrong patient. One of the cases involved the administration of actrapid to a patient with normal blood glucose level and nursed in the bed next to a patient who was newly diagnosed diabetes mellitus.

Key contributing factors:

i. Both patients have similar diagnoses and stayed in the same cubicle.

ii. The nurse had low situational awareness for possible wrong patient identification, and did not use the UPI device to scan the wristband.

Recommendations:

i. Mentors should be assigned to coach the nurse to promote risk awareness and perception.

ii. Departmental nursing audit on administration of medications should be conducted regularly.

60. The number of medication items dispensed in HA per year was 44.3 million in the first 9 months of 2020 compared to 65.7 million for the whole of 2019. The rate of number of medication incidents reported (including medication incidents classified as SUEs) per 1 million medication items dispensed was 22.9 for the first 9 months of 2020 compared to 26.0 for 2019. From 2011 to 2018 this rate was above 28. This drop coincides with the gradual introduction of "In-Patient Medication Order Entry System" (IPMOE) in HA since 2013.

Risk Reduction Measures

Whilst this year has seen an unprecedented disruption to service delivery as well as the capacity for managers to drive improvement projects due to COVID-19, clinicians and quality and safety teams have still been able to continue with a few projects to improve patient safety. Some highlights are described below.

Surgical Safety Practice

It was identified that over the past few years, there have been a number of Sentinel Events that were due to retained instruments or materials. A Surgical Counting Working Group was formed during this year, a partnership between the Nursing Services Department and the Patient Safety & Risk Management team, to identify the common issues associated with these incidents, and develop improvement initiatives to address them.

The incidents were largely classified into two categories, inside operating theatre, and outside. Within the operating theatre, to assist with the counting and documentation process, a Surgical Instrument Tracking System is under development with introduction of an electronic count sheet.

The group also identified that outside of the operating theatre, the unintentional retention of gauze in wounds needed to be an area of focus. Work has commenced with nursing staff to standardise wound packing records, and to explore development of a dedicated nursing notes function in mobile devices. In the long term, enhancement on existing Clinical Management System (CMS) IT solution would be explored to develop a universal CMS Wound and Packing Module.

Prevention of Retained Guide Wire

The e-learning course, “Safety precautions in Central Venous Catheter (CVC) Insertion” has been introduced to the HA’s e-Learning Centre (eLC) this year. The educational videos can be accessed by staff through the eLC platform.

Figure 23: Educational video in HA's e-learning platform

Prevention of Inpatient Suicide

There was on-going discussion regarding the installation of shower hose in non-assisted baths for convenience of staff and patients, but with some risk mitigation. Various risk mitigation options have been suggested and are currently undergoing review, including the use of collapsible shower hoses, reduced length of the hose, etc.

Even if shower hoses are ultimately accepted in non-assisted baths as a baseline, some Clusters will choose to adopt more stringent measures, for example by placing the shower hose under lock and key.

Medication Safety

IPMOE implementation

The implementation of Inpatient Medication Order Entry System (IPMOE) has been completed at Buddhist Hospital and Wong Tai Sin Hospital, with Kowloon Hospital, Hong Kong Eye Hospital and Our Lady of Maryknoll Hospital currently in progress. The IPMOE system has also extended its applicability, including in chemotherapy settings (Princess Margaret Hospital and Tuen Mun Hospital), and

A&E settings (Caritas Medical Center, Pok Oi Hospital and Pamele Youde Nethersole Eastern Hospital).

Enhancement in IPMOE

Enhancements were also made along the way to help our clinical staff with medication management. These include the new therapeutic class on "Therapeutic duplication checking in IPMOE", the new icon legend for Home Leave record, "assign schedule" feature for prefilled "weekly/monthly" schedule recurrence pattern according to prescription regimen.

Anticoagulants and antithrombotic agents

More recently, a number of incidents pertaining to the use of oral anticoagulants have been reported. A working group has been formed to identify the underlying root causes that contribute to these medication incidents. It is being conjointly led by the Medication Safety Committee, Office of the Chief Pharmacist, Health Informatics and Patient Safety & Risk Management team. The working group is working to incorporate the use of artificial intelligence techniques to complement medication management by our clinical staff.

Learning and Sharing

In view of COVID-19, the usual way of learning and sharing of sentinel and serious untoward events by face to face staff forums have been ceased. HAHO Patient Safety and Risk Management Department (PSRM) prepared and disseminated training materials to Clusters for sharing.

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. Electronic platforms had also been used to promote and disseminate information on patient safety issues.

The Way Forward

There are a number of initiatives that have commenced, or are being contemplated for development in 2021. Below are some key projects.

Anticoagulants and Antithrombotic Agents Medications Safety

The projects to improve use of anticoagulants will continue. The Working Group shall review the current workflow for suitable risk mitigation measures and explore with clinical users on auto flagging of anticoagulants and antithrombotic agents to facilitate staff's checking of patient drug history in the prevailing care process.

IPMOE

IPMOE implementation will further expand to convalescent and rehabilitation hospitals and with further service extension to chemotherapy, Intensive Care Unit and Accident and Emergency Department.

Prevention of Inpatient Suicide

The facility requirements of risk reduction measures in bathrooms will be finalised.

Surgical Safety

There will be development of education material with a particular focus on anaesthetic procedures.

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 to 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: Wrong Side Ureteroscopy and Dilation

A patient with pelviureteric junction stricture underwent an elective LEFT ureteroscopy and dilatation. Consent was obtained at the outpatient clinic. After the patient was admitted, site marking was performed at the LEFT back. It was checked at the operating theatre reception area. "SIGN IN" and "TIME OUT" were performed. The doctor inserted the ureteroscope to the RIGHT ureter. As there were concurrent RIGHT distal ureter stricture and hydronephrosis of RIGHT kidney, RIGHT ureteroscopy and dilatation was performed. The doctor noted that the RIGHT instead of the intended LEFT side was performed after the procedure. The on-call specialist was consulted and decided to proceed to LEFT ureteroscopy and dilatation. It was documented on the operation record that bilateral procedures were performed and open disclosure was done.

Key contributing factors:

1. There was no cue on the correct operative site after a time lag between "TIME OUT" and the entry of ureteric orifice.
2. The presence of co-existing pathology at RIGHT ureteric stricture.

Recommendation:

Conduct second "TIME OUT" on checking correct side of operation before entry of internal orifice in ureteroscopy.

Case 2: Brachial Plexus Nerve Block was Performed on RIGHT instead of LEFT Side of Patient

A patient with fractured LEFT distal radius was arranged for open reduction and internal fixation operation. An arrow was marked on patient's LEFT dorsum as surgical site marking. Before

operation, the skin preparation trolley and ultrasound machine were placed on patient's LEFT side. Blood pressure cuff was set on patient's RIGHT arm. Intravenous (IV) cannulation was set on RIGHT hand. "SIGN IN" was performed. The blanket covering patient's LEFT arm was flipped, and the marking on LEFT hand was checked.

Before performing nerve block, the drip stand was moved to the patient's LEFT side, and the skin preparation trolley was moved to the RIGHT side. Nerve block injection was given with ultrasound guided on patient's RIGHT brachial plexus (supraclavicular approach). After the nerve block procedure, it was noticed the IV cannula was set on patient's RIGHT hand. Upon removal of the LEFT upper limb blanket, it was found that the LEFT distal radius was bandaged.

After discussion with the patient, the patient preferred regional anaesthesia to general anaesthesia. LEFT brachial plexus nerve block was performed uneventfully.

Key contributing factors:

1. "SIGN IN" and "TIME OUT" were performed, but there was no mechanism to perform "TIME OUT" before nerve block.
2. Correct site was not checked and confirmed before the nerve block procedure and staff was misled by the visual cues of patient's posture and position of equipment.
3. Staff in operating room did not speak up and clarify despite having doubts.

Recommendations:

1. Formulate and implement mechanism for conducting "TIME OUT" before regional anaesthetic procedures.
2. Reinforce all staff to seek clarification whenever in doubt and cultivate speak-up culture.

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

Broken Instruments / Material

Case 1: Segment of Nasogastric Tube

An old age home (OAH) resident with a history of stroke required nasogastric tube feeding and was supported by the Community Nursing Service. During this time, there were multiple admissions and Accident and Emergency Department (AED) attendances to more than one hospital.

One day, the patient was brought to the AED on suspicion of swallowing a piece of gauze in the OAH. The silicone nasogastric tube was removed to facilitate assessment. The tip was checked and documented to be intact. Subsequent abdominal X-ray revealed a linear opacity at the stomach region. Oesophagogastroduodenoscopy was performed and a segment of nasogastric tube was found in the stomach.

Conclusion:

1. The specific cause and occasion in which the nasogastric tube was broken and retained could not be ascertained.
2. As the patient was also taken care of at the OAH, the feeding tubes might not be solely provided by the hospital.
3. According to the information solicited, the checking of completeness of the removed nasogastric tube is a usual practice.

Suggestion:

Enhance documentation, including the completeness of removed nasogastric tube.

Case 2: Segment of Suction Tube

A patient was intubated for status asthmaticus and cardiac arrest. A closed suction system connected to the endotracheal tube (ETT) was used. When the ETT was being shortened to minimise the dead space of the ventilatory circuit, the suction catheter inside was not fully retracted. After reconnecting the ETT to the adaptor, the plastic sheath of the closed suction system was noted to be inflated with air. A product defect was assumed and it was replaced with a new system.

Two days later, bronchoscopy was performed during bedside tracheostomy. A tubular foreign body was seen at the RIGHT lower lobe of lung which was comparable with the catheter tip of the closed suction system.

Key contributing factors:

1. The suction catheter was not totally retracted into the closed suction system before shortening the ETT.
2. When the plastic sheath of the closed suction system was inflated, it was assumed to be a product defect without further investigation. The chance of discovering the cutting of the suction catheter was missed.

Recommendations:

1. Revisit the current department practice of cutting the ETT. A good practice is to detach the ETT adaptor from the ETT before cutting the ETT, so that the suction catheter tip could be revealed if it is not retracted completely back to the closed suction system.
2. Share the incident with clinical departments which may need to cut the ETT and to conduct training.
3. Enhance product defect handling through education.

Case 3: 1.5cm Tip of Drill Bit

A patient with acute traumatic closed fracture of LEFT olecranon was scheduled for open reduction and internal fixation under regional anaesthesia. The on-loan instrument set "Olecranon elbow plating system" was delivered to the hospital in the afternoon of the day before operation. "SIGN IN" and "TIME OUT" were performed.

During the operation, the surgeon decided to use "figure-of-8 wiring" for fixation. The first attempt to create bone tunnel using a long drill bit from the on-loan set was unsuccessful. K-wire with K-wire driver and drill sleeve were used to create a new hole and the figure-of-8 wiring was applied uneventfully.

After surgery, an approximately 1.5cm of the used drill bit tip was found broken during reprocessing. Intra-operative X-rays were reviewed again and the broken tip was found inside the bone.
*** The broken drill bit and the figure-of-8 wiring overlapped, making it not easily identifiable during intra-operative X-ray screening.*

It was decided not to reoperate for removal of drill bit after discussion with patient.

Key contributing factors:

1. The operating team was unfamiliar with the on-loan instruments.
2. Ineffective communication on using another type of instrument for the operation.

Recommendations:

1. Build safety culture for surgeons and nurses to check and verbalise integrity of instruments after use, especially for easily broken items.
2. Get the operating team familiar with the instrument set(s) the day before the operation.

Case 4: 0.5x2mm Metallic Foreign Body

A patient underwent anterior cruciate ligament reconstruction and meniscal repair of LEFT knee. "SIGN IN" and "TIME OUT" were performed. A consignment single-use instrument (Mini Suture Passer) was requested during operation without prior notification or briefing with the team. The operation was uneventful.

The instruments' integrity was checked and confirmed before and after use. A routine post-operative X-ray revealed a radio-opaque foreign body in the LEFT knee. Another operation for removal of foreign body was performed after discussion with patient. A broken metal chip (sized 0.5x2mm) from the inner upper jaw of the issue clamp was retrieved.

Key contributing factor:

Inadequacy of a robust mechanism in handling consignment single-used, new, on-loan / on trial instruments to be used for operation, in terms of staff familiarization with and confidence in checking the newly introduced instrument, and prior notification of using it before operation to the team.

Recommendations:

1. Strengthen the existing mechanism in handling consignment single-used, new, on loan / on trial instruments to be used for operation.
2. Enhance communication between the operating team on specific instruments to be used for operation, e.g. by making remarks on the booking list via the Operating Theatre Management System.

Case 5: Sheath of Guide Wire

A 62-day-old baby with biliary atresia underwent Kasai operation. A peripherally inserted central catheter (PICC) was inserted under anaesthesia before operation. The procedure was performed

under ultrasound guidance. The first attempt at RIGHT arm was not successful.

The second attempt at RIGHT ankle was aborted due to unsmooth guide wire insertion. The anaesthetist cut away the distal 2 cm of the guide wire due to contamination during insertion. During the third attempt at the LEFT ankle, the anaesthetist cut away the J-tip because it was deformed. The PICC was inserted successfully.

The nurse checked the total length of the 3 segments of guide wire at the end of procedure. It was comparable with the original length of the guide wire and the surface was smooth. A post-operative abdominal X-ray revealed a radio-opaque line inside the PICC.

Multidisciplinary teams were consulted and the PICC with the foreign body (FB) were completely removed under image intensifier guidance. The FB was confirmed to be the external sheath of the PICC guide wire without its internal core. The baby's condition remained stable afterward.

Key contributing factors:

1. Not aware of the consequence of cutting the guide wire and not noticing the guide wire sheath was detached after the procedure.
2. Repeated failure of insertion induced anxiety and posted time pressure to the operator, leading to a lapse of concentration.

Recommendations:

1. Guide wire must not be cut during the insertion of central venous catheter. It is recommended to change to a new set if needed.
2. Alert staff about possible outcome if guide wire was cut, and arouse their awareness when checking the guide wire after procedures.

Case 6: Drill Bit Fragment

A patient underwent LEFT total hip replacement operation. A 2.5mm drill bit was used to create two holes in patient's greater trochanter. Completeness was checked and no abnormality was detected after use and during instrument counting. A 0.5cm drill bit tip fragment was found missing during instruments reprocessing. Post-operative X-ray revealed retained drill bit fragment. The patient agreed with the treatment plan for serial X-ray monitoring.

Key contributing factors:

1. Time pressure during the counting process, as more than 1,000 items were involved.

2. High risk of instrument breakage due to a fine drill bit (2.5mm in diameter) on impact with bones and prostheses.
3. The damage pattern of the drill bit.

Recommendations:

1. Identify critical instruments used during the operation and adjust the checking threshold. In case of any doubt, involve surgeon to perform double checking.
2. Explore the feasibility of limited or single usage of fine drill bits.
3. Enhance awareness towards the wear and tear of instruments through experience sharing.

Case 7: Segment of Silicone Nasogastric Tube

A patient with multiple chronic illness required feeding via a nasogastric tube (NGT). One day, the NGT was found coiled in the patient's month. The feeding was stopped and the coiled NGT was removed by an assistant nurse.

A new NGT was inserted without documentation on the NGT removal and insertion. Feeding was resumed after confirming the placement by X-ray. About one month later, the NGT was found coiled in patient's mouth again. The NGT was removed, reinserted and documented. Post-procedure X-ray revealed an abnormal opacity, and the NGT was then removed with X-ray taken. The same radio-opaque line was shown in the X-ray image.

Oesophago-gastro-duodenoscopy was performed, and a 35cm long broken silicone NGT segment was found and removed. An Entriflex feeding tube was inserted for feeding. All previous X-ray images were reviewed, and it was found in one of the images a vague double radio-opaque line under the diaphragm. However, without the context of possible retained NGT, the broken segment was difficult to be identified.

Key contributing factors:

1. The NGT was frequently found coiled in the patient's mouth; the patient also munched any content inside her oral cavity increasing the chance of breaking the NGT.
2. Upon removal of the coiled NGT, there was no checking of the integrity, especially the presence of the tip of the tube.
3. Lack of consistent practice for documentation of NGT removal.

Recommendations:

1. Strengthen the practice of checking integrity, especially the presence of the tip of the

NGT upon removal.

2. Align the practice of documentation for NGT insertion and removal, with compliance monitored.

Case 8: Metallic Fragment

A patent with fractured LEFT calcaneum underwent open reduction and fixation operation with locking plate to the LEFT tarsal bone. Number of surgical items and its integrity were confirmed in the pre- & post-procedure safety check. The operation was uneventful and the patient was discharged on the next day. X-ray taken in post-procedure week 8 revealed a 1.5mm metallic fragment inside the patient's calcaneum. Upon retrospective review of all previous X-ray images, the fragment was shown since the completion of operation, including the intra-operative images.

Key contributing factors:

1. Unsuspected tiny metallic fragment (around 1.5mm in size) from surgical instrument or implant left behind during operation.
2. Visualization of X-ray image was obscured by the presence of C-arm cursor.

Recommendations:

1. Consider removing the C-arm cursor on the X-ray image during operation.
2. Consider adopting good practice of viewing the final X-ray images in both standard mode ('bones in white') and inverted mode ('bones in black') for the analysis and interpretation of images at the end of operation.

Case 9: Broken Tip of Stone Retrieval Device

A patient underwent RIGHT ureteroscopy and laser lithotripsy for RIGHT upper ureteric stone. A Stone Cone retrieval coil device was used for preventing ureteric stone fragments migration during laser lithotripsy. The scrub nurse encountered resistance while withdrawing the device. The surgeon tried to straighten the device for removal.

The device was finally withdrawn together with the ureteroscope. The surgeon proceeded with double-J catheter insertion and the position was confirmed by intra-operative imaging. NO significant residual stone fragment was detected.

It was found that the end of the retrieved Stone Cone was blackened (burnt-like) with unsmooth surface during the final counting. The surgeon inspected and commented that the device might be damaged by the scattering of the laser beam. Post-operative image revealed the retention of a Stone Cone fragment at the RIGHT distal ureter. The retained fragment (~6cm) was retrieved

completely by another operation.

Key contributing factors:

1. Low situational awareness on the potential risk of broken and retained part of device while encountering difficulty in withdrawing the device.
2. Unaware that the device had a ball-shaped tip, thus did not notice that part of the device was missing intraoperatively after use and during final counting.

Recommendations:

1. Develop the "Tips and Tricks" of managing complex ureteric stone diseases with emphasis on encountering difficulties during operation.
2. Provide training to the operation team on the critical components of surgical consumables to facilitate the checking of the instrument integrity.

Incorrect Counting of Instruments / Material

Case 1: Raytec Gauze

A patient with bilateral loin abscesses underwent an incision and drainage operation. 5 pieces of single-line long Raytec gauzes were packed at each side of the loin abscess wounds and it was documented. On post-operative day one, the case doctor inspected the wounds during the morning round. The Raytec gauzes were loosened but were not removed. The case nurse did not clarify with the case doctor if all the dressing materials were disposed of after wound inspection. The number of gauzes removed was not documented. Wound dressing was performed and continued in the remaining hospital stay.

After discharge, patient received daily wound dressing at the general outpatient clinic. During specialist outpatient clinic follow-up, in view of increased swelling over the wound scar, the patient was admitted for incision and drainage. A single-line long Raytec gauze was found in the LEFT loin abscess wound. In that hospital, single-line Raytec gauzes are used only in the operating theatre while double-line short Raytec gauzes are used in the wards.

Key contributing factors:

1. The number of gauzes removed was not counterchecked.
2. Inadequate communication between doctor and nurse.
3. Multiple pieces of Raytec gauzes were used for packing due to complexity of the wound condition.

Recommendations:

1. Reinforce on counterchecking the number of gauzes removed, during wound inspection or wound dressing by nurses or doctors.
2. Strengthen the communication between doctors and nurses. In particular, to engage nurses in wound inspection during doctor's round.
3. Leave the tail end of packing materials above the skin level of the wound if possible.

Case 2: Dressing Material

A metastatic breast cancer patient had a sacral wound, and wound packing was performed by an outreach team. During this time, there were two admissions to two different hospitals. After the last admission, the outreach team continued to provide wound care for about 2 months, adopting the one-in-one-out principle for packing, and left a visible tail of packing out of the wound at all times.

The packing materials were cut and stored in a sterile bottle at the patient's home for packing use. The family members were told not to perform wound dressing themselves. The patient was hospitalized for pneumonia. The outreach team handed over the case via the phone and documented the condition in the HA Clinical Management System. Neither the wound packing nor any visible tail was noted during simple wound dressing on admission.

On the next day, during wound nurse assessment, an extra piece of retained wound packing material was noted, on top of the wound packing provided by the outreach team.

Conclusion:

1. The cause of the retained wound packing material could not be identified. Wound handling by the family could not be excluded.
2. It was a small wound with large undermining cavity. The wound packing might not be easily identified.

Recommendations:

1. Remind carers not to perform wound packing themselves.
2. Explore improvement measures with wound nurses on the management of difficult wounds handled by outreach teams.

Case 3: Metallic Washer

A patient sustained an ankle fracture and underwent an open reduction and internal fixation operation a year ago. The implants used, including two parallel K-wires, a figure-of-eight wire over

cortical screw and a washer, were documented in the operation record.

The patient was arranged to have the implants removed a year later. After admission, the patient's operation was advanced to be the first case on the OT list. The doctor reviewed the patient's pre-operative lower limb X-rays before the operation and did not notice the washer. The pre-operative X-rays were displayed in the theatre and were referred to during the operation.

There was a discussion to arrange intra-operative X-ray screening amongst the team but it was finally deemed not necessary. Post-operative X-ray was performed, and a retained 3.5mm washer was identified. After discussion with the patient, the patient opted for another operation to have it removed.

Key contributing factors:

1. The team was not aware that the implants fixed in the patient's ankle included a washer. The 3.5mm washer was not commonly used in this kind of fracture as well.
2. The use of intra-operative X-ray screening was discussed among the team but was finally declined.
3. The washer was covered by soft tissue, obscuring the surgical field.

Recommendations:

1. Mandate the practice of intra-operative X-ray screening for all removal of implants operations.
2. Reinforce thorough pre-operative planning for removal of implant operations, including review of previous operation record and pre-operative X-rays.

Case 4: Dressing Material

A patient was referred to the Community Nursing Service (CNS) for sacral sore care since December 2017. The patient's wound outlet was getting smaller with deep tunnels and increased amount of exudate. Hydrofera blue foam was used for packing and was changed daily with a 3 cm tail fixed on the buttock skin.

In January 2020, the patient was admitted due to worsening wound condition. The wound packing information could not be retrieved upon admission. The foam was not noted or removed during sacral wound dressing. Patient was discharged home and wound care by CNS resumed.

In March 2020, the patient was readmitted as there was no improvement. During wound irrigation, a piece of 7 cm Hydrofera blue foam was flushed out from wound. After reviewing the

record, the flushed-out foam was comparable with the one packed in January 2020.

Key contributing factors:

1. Lack of alignment in the transfer of wound packing information between inpatient, out-patient and community carers.
2. Retrospective documentation of wound management after home visit, leading to incorrect wound packing record.

Recommendations:

1. Establish an effective communication system on wound documentation and its related management with the next carer.
2. Explore means to facilitate timely documentation of wound packing information.

Case 5: Central Venous Catheter (CVC) Guide Wire

A patient required intubation and resuscitation. A CVC was inserted for inotropes. After 2 attempts of insertion, the attending doctor confirmed the placement of CVC by withdrawing blood from two of 3 catheter lumens.

At the same time, the patient developed an electrocardiogram change and adrenaline was administered. The assistant nurse helped to confirm the patency of the third lumen by flushing 0.9% sodium chloride solution. Another nurse asked whether the guide wire had been removed. It was found that a guide wire was placed inside the sharps box and a question was raised as to whether it was the one just used.

Meanwhile, an urgent chest X-ray was taken. A retained CVC guide wire was identified while reviewing the X-ray. The guide wire was removed by interventional radiology.

Key contributing factors:

1. No standardization of counting all materials used before disposal.
2. No standardization of procedure set used. A disposable dressing set was used instead of a suture set.
3. Unclear role delineation of an assistant.

Recommendation:

Develop a departmental protocol for CVC insertion to standardize the procedure steps and role delineation of each team member.

Case 6: A Chest Drain Set Guide Wire

Bedside chest drain insertion was performed for a patient with pleural effusion. A chest drain set was used and the procedure was performed uneventfully. Post procedure chest X-ray revealed a retained guide wire.

The guide wire should have been withdrawn with the chest tube inserter (inner sheath) together in one piece after placement of the chest drain tube was confirmed. However, only the chest tube inserter was removed and the guide wire was left in-situ without being noticed.

Another chest drain insertion procedure was performed with the retained guide wire removed. The guide wire was checked and confirmed intact.

Key contributing factors:

1. The doctor had time constraints to attend the scheduled out-patient consultation session.
2. Guide wire and chest tube inserter were presumed to be removed together in one piece.
3. Countercheck of guide wire after procedure was not performed.

Recommendations:

1. Concentrate on performing and assisting the procedure especially during critical steps.
2. Perform the "SIGN OUT" procedure and countercheck the number of instruments used together with “Pointing and Calling".
3. Conduct regular training on chest drain insertion for doctors and nurses.

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

The overall assessment and management of these 6 cases was determined to be appropriate by investigation panel. The 6 *inpatient suicide* cases are summarised below:

Inpatient

Case 1

A lymphoma patient who had progressive disease for more than 6 years was admitted for neutropenic fever. The patient had mental health illness and suicidal ideations in the past. On admission, the patient was assessed to be not at risk of suicide. As the patient was unable to close the RIGHT eye, multiple investigations including computed tomography scan and fine needle aspiration cytology were performed. Multiple teams from Ear, Nose and Throat, Oncology and Dietetics were consulted. On the 8th day after admission, the patient was planned for discharge two days later after completion of antibiotics. That same afternoon, the patient was found to have left the ward after receiving a phone call. Ward staff were not informed. 2 hours later, the police informed the hospital that the patient was found to have jumped from height.

Case 2

A patient with adenocarcinoma of the lung with multiple metastases was admitted for shortness of breath. DNACPR was signed on admission. Suicidal screening on admission showed that patient was not at risk of suicide. On day 2 after admission, patient's bedside curtain was found half drawn. It was noted that the patient hanged with a scarf tightened to the monkey pull. Patient succumbed despite resuscitation.

Case 3

A patient with depression and recently diagnosed colorectal cancer with liver metastasis was admitted for suspected subacute intestinal obstruction. Suicidal screening on admission showed that patient was not at risk of suicide. On day 3 after admission, patient went shopping at convenience store and did not return after 1.5 hours. Hospital search for the patient was in vain. Relatives were contacted. The case was reported to the Police. Subsequently, patient was found hanging at home and was certified dead at the Accident & Emergency Department.

Case 4

A patient with Stage III olfactory neuroblastoma after receiving concurrent chemoradiotherapy was assigned to an isolation room for neutropenic fever. Suicidal screening on admission showed that patient was not at risk of suicide. On that night, patient was found not in bed. Patient's toilet door was closed but not locked. Patient sat on the floor in the shower area with a shower hose around the neck. The shower curtain was found to be collapsed. Patient was unconscious and was transferred to bed. Resuscitation was initiated. Patient remained in asystole and was certified dead subsequently.

Contributing factors:

1. The unanticipated change in mental state of the patient leading to unpredictable suicidal impulse.
2. Patient concealed suicidal idea and plan which caused difficulty to detect suicidal risk.
3. Presence of environmental risk in patient bathroom.

Recommendations:

1. Speed up the process of environmental modification based on relevant guidelines on hospital security design.
2. Enhance the communication with family members on patient's suicidal warning signs or unusual expression/ instruction.

Case 5

A patient with history of sigmoid colon cancer received operation in 2018 and declined adjuvant chemotherapy. The patient was later diagnosed with inoperable recurrent colon cancer and was referred for hospice care.

The patient had abdominal pain, vomiting and no bowel opening, and was admitted via Accident and Emergency Department (AED) for intestinal obstruction. Upon pain team's assessment for cancer pain management, it was noted that the patient had low mood with flirting self-harm ideas but denied actual self-harm act and wished for euthanasia by sleeping pills. Pain killers were prescribed and given to the patient as scheduled. The patient was referred to the Clinical Psychologist.

Clinical Psychologist and palliative care nurse assessed the patient. They noted that the mood of the patient was calm with adjustment reactions and the patient was not actively suicidal. The patient and care-givers were referred to the Medical Social Worker to provide social and psycho-spiritual support.

On day 15 after admission, the patient tolerated congee diet and planned to be discharged on the next day. The patient complained of LEFT parotid swelling and pain at night and pain killer was given. In the middle of night, it was noted that the patient's head was surrounded by a vomit bag. Resuscitation was performed immediately. The patient was certified dead despite resuscitation.

Missing patient

Case 6

A patient with persistent cough and haziness noted in chest X-ray was admitted for investigation. Patient was not at risk of suicide upon suicidal risk assessment on admission. Multiple investigations were performed. In view of persistent symptoms, differential diagnosis of atypical pneumonia was considered. 3 days after admission, the patient was found to be missing. The patient's friend reported that the patient was certified dead on arrival to the Accident and Emergency Department (AED) of another hospital for suspected jumping from height.

Finding:

The patient was reported to be emotionally calm and cooperative throughout the hospital stay. No suicidal risk factors were documented nor reported.

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

Case 1: Misplaced Nasogastric Tube

An alcohol dependence syndrome patient who was receiving thiamine treatment and rehabilitation had desaturation after breakfast one day. The patient was transferred to another hospital for the management of aspiration pneumonia. Speech therapist recommended non-oral feeding in view of dysphagia and risk of aspiration after assessment.

Milk feeding commenced after the nasogastric tube (NGT) was inserted and its position was checked. The patient pulled out the NGT twice and new ones were re-inserted. As aspirate could not be obtained for acidity testing after the third NGT re-insertion, chest X-ray (CXR) was taken and it was perceived that the NGT was in-situ and feeding could be resumed.

Before milk feeding was given that night and early morning the next day, aspirates could be obtained from the NGT and both were acidic (pH=4). Patient developed cardiac arrest later that morning. After 10 minutes of resuscitation, spontaneous circulation was returned. The CXR taken after the third NGT re-insertion was reviewed, and the NGT was found to be misplaced to the LEFT lung. Patient succumbed two days later despite maximal support.

Key contributing factors:

1. Cognitive bias in reading the CXR for NGT verification.
2. Nasogastric tube aspirate at pH=4 gave a false sense of security that the nasogastric tube was in stomach.

Recommendations:

1. Provide training to clinicians on reading CXR for NGT verification so as to lessen cognitive bias.
2. Review on the process to obtain NGT aspirate for pH verification.

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