ANNUAL REPORT ON SENTINEL AND SERIOUS UNTOWARD EVENTS

October 2020 – September 2021

HOSPITAL AUTHORITY
HONG KONG

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醫院管理局
HOSPITAL AUTHORITY

ACKNOWLEDGMENT

The 14th Annual Report on Sentinel and Serious Untoward Events reflects the continuous efforts of Hospital Authority (HA) in improving patient safety and quality healthcare delivery. In compliance with the Sentinel & Serious Untoward Event Policy since 2007, root causes of incidents were reviewed with learning points identified for sharing and continuous learning. In line with this, improvement or incident preventive measures were developed and implemented by local and cluster colleagues to enhance staff awareness in minimizing occurrence of similar events. Their hard work and dedication are clearly noted and very much appreciated.

Our sincere gratitude is also extended to all colleagues who have participated in incident reporting and investigation. They have provided invaluable advice and insight to further enhance our healthcare system. Thank you.

Patient Safety and Risk Management Department

Quality and Safety Division

CONTENTS

1. EXECUTIVE SUMMARY

This annual report provides a summary of all Sentinel Events (SE) and Serious Untoward Events (SUE), comprising 28 SE and 94 SUE, reported between October 2020 and September 2021.

Sentinel Events

The 28 reported SE represented an incident rate of 1.4 per 1,000,000 episodes of patient attendances / discharges and deaths. Of these SE, 27 (96%) occurred in acute general hospitals with 24-hour Accident and Emergency (A&E) services.

The top three categories of SE were *retained instruments or other material after surgery / interventional procedure* (12 cases); *death of an inpatient from suicide (including home leave)* (7 cases) and *surgery / interventional procedure involving the wrong patient or body part* (4 cases).

Of the 12 *retained instruments or other material after surgery / interventional procedure* cases, 8 were related to the counting of instruments / material and the other 4 involved broken instruments / material.

The seven reported cases (i.e. five inpatients, one on home leave and one missing patient) of *inpatient suicide* represented a suicide rate of 0.4 per 100,000 inpatient admissions. The overall assessment and management as noted by the investigation panel were considered appropriate.

Of the four cases of *surgery / interventional procedure involving the wrong body part, three cases* occurred in Operating Theatre.

The remaining three reported SE were *other adverse events resulting in permanent loss of function or death (excluding complications) (aka other adverse event)*.

Among the 28 SE, 10 cases (7 *inpatient suicide, one medication incident, one maternal event and* one *other adverse events*) resulted in mortality.

Of the remaining SE, 12 had minor / insignificant consequence and 6 had major / moderate consequence.

The common contributing factors of SE are as follows:

1. Communication, knowledge / skills / competence
2. Work environment / scheduling
3. Patient factors
4. Equipment
5. Policies / procedures / guidelines
6. Safety mechanisms

Recommendations were made to address these factors.

Serious Untoward Events

Of the 94 SUE which could have led to death or permanent harm, 84 were *medication error* and 10 were *patient misidentification*.

The four most common *medication error cases* were prescription of a *known drug allergy* (18 cases), involving *dangerous drug* (12 cases), *anticoagulant* (10 cases), and *insulin* (10 cases). Of all the *known drug allergy* cases, 12 were related to non-steroidal anti-inflammatory drugs (NSAID), one was related to penicillin, the others were related to penicillin (1), paracetamol (1), quinolone (1), lignocaine (1), metoclopramide (1), and pantoloc (1).

Of the 94 SUE, eight had temporary major consequence, 13 had moderate consequence and 73 had minor / insignificant consequence.

2. INTRODUCTION

The Sentinel Event (SE) Policy was implemented in 2007, while 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.

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.

This 14th annual report provides a summary and analysis of the SE and SUE reported via the Advance Incident Reporting System (AIRS) between October 2020 and September 2021 (4Q20 - 3Q21). 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.

To facilitate understanding of the scope and definition of SE and SUE, the following abbreviated captions for SE and SUE categories 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]

3. SENTINEL EVENTS (SE) STATISTICS

3.1 SE Trend (2011-12 to 2020-21)*

3.1.1 Overview

The annual number of episodes of patient attendances / discharges and deaths, and the SE incident rate per 1,000,000 episodes of patient attendances / discharges in 2019-20 and 2020-21 were comparable (Figure 1). The total number of SE in the past 10 years is also appended in Figure 2 for reference.

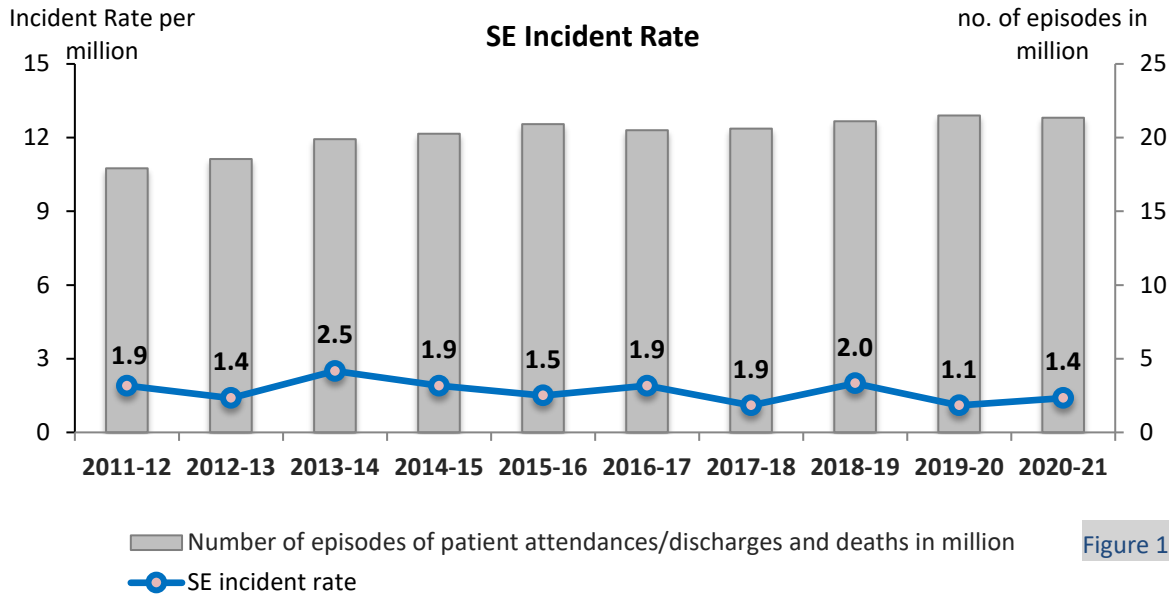

Figure 1

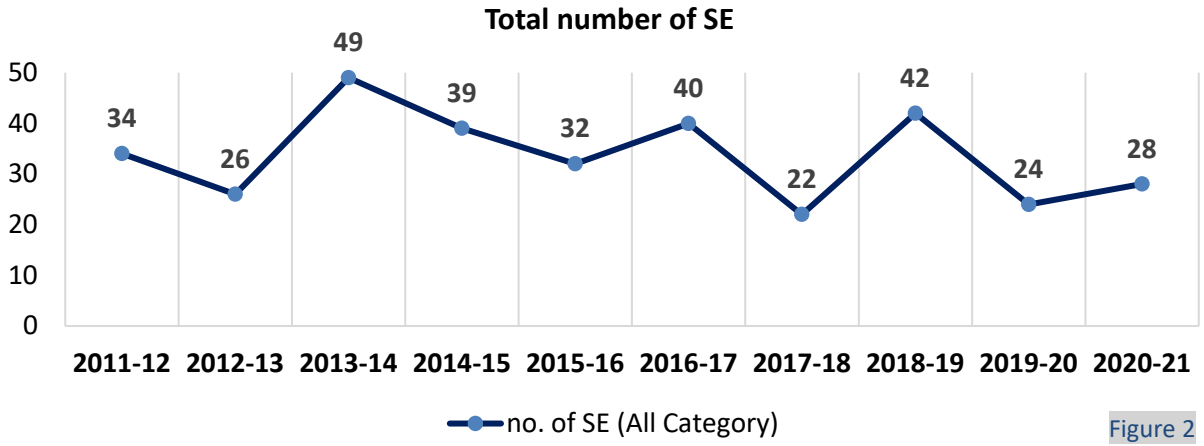

Figure 2

* Statistic from October to September of respective year

3.1.2 SE Category

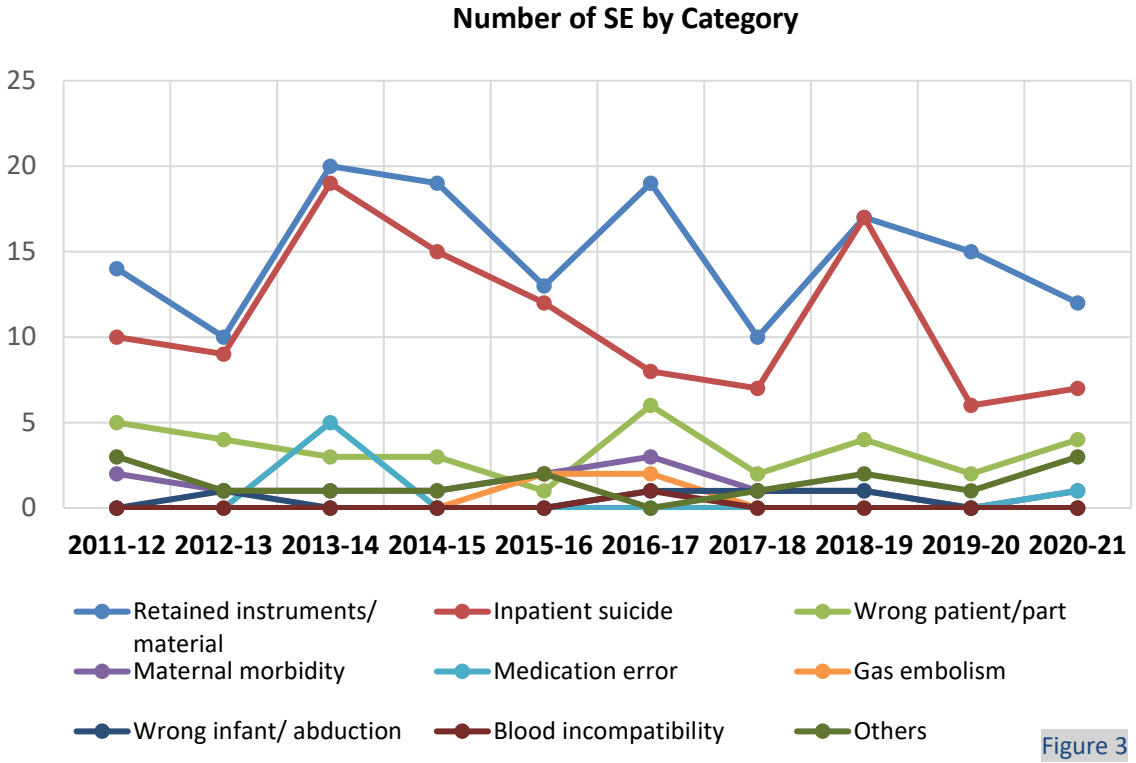

Figure 3

Number of SE by Category

SE Category / Period	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
Retained instruments/ material	14	10	20	19	13	19	10	17	15	12
Inpatient suicide	10	9	19	15	12	8	7	17	6	7
Wrong patient/part	5	4	3	3	1	6	2	4	2	4
Maternal morbidity	2	1	1	1	2	3	1	1	0	1
Medication error	0	0	5	0	0	0	0	0	0	1
Gas embolism	0	0	0	0	2	2	0	0	0	0
Wrong infant/abduction	0	1	0	0	0	1	1	1	0	0
Blood incompatibility	0	0	0	0	0	1	0	0	0	0
Others	3	1	1	1	2	0	1	2	1	3
Total	**34**	**26**	**49**	**39**	**32**	**40**	**22**	**42**	**24**	**28**

Table 1

In the past three years, retained instruments / material, inpatient suicide (including home leave) and wrong patient / part had remained the top three most frequently reported SE (Figure 3 and Table 1).

* Statistic from October to September of respective year

3.1.3 SE Outcome

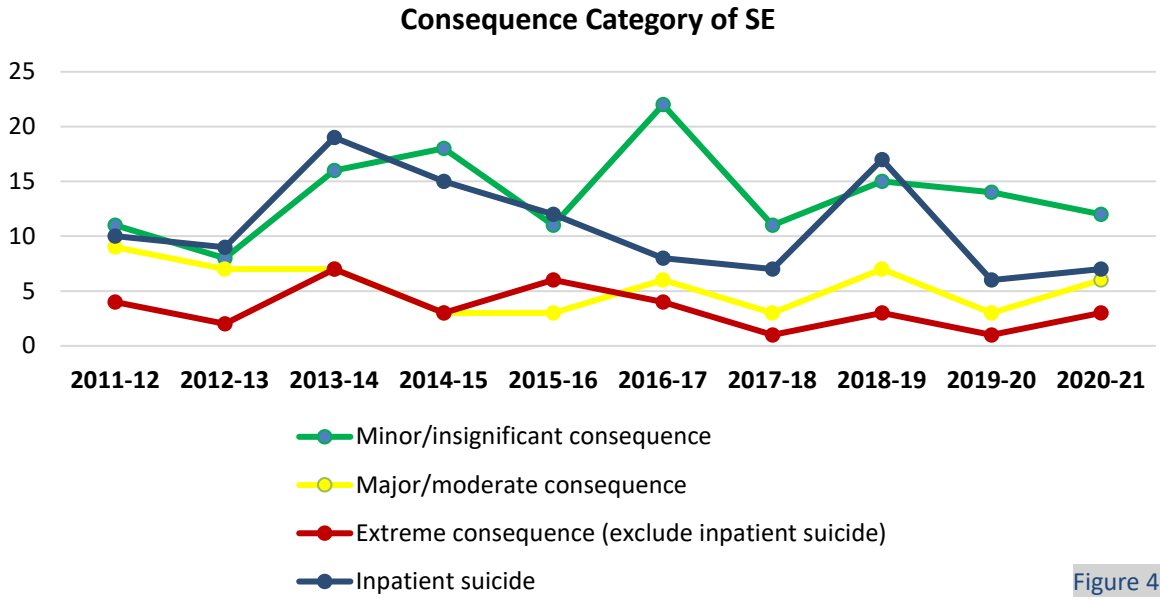

Figure 4

Number of SE by Consequence Category

SE Category / Period	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
Minor/insignificant consequence	11	8	16	18	11	22	11	15	14	12
Major/moderate consequence	9	7	7	3	3	6	3	7	3	6
Extreme consequence (exclude inpatient suicide)	4	2	7	3	6	4	1	3	1	3
Inpatient suicide	10	9	19	15	12	8	7	17	6	7
Total	**34**	**26**	**49**	**39**	**32**	**40**	**22**	**42**	**24**	**28**

Table 2

The outcomes of SE are grouped into minor or insignificant consequences (i.e. no/ minor injury sustained), major / moderate consequences (i.e. temporary/significant morbidity) and extreme consequences (i.e. major permanent loss of function/ disability or death) (Figure 4 and Table 2). A description of the consequences is illustrated in Annex II.

* Statistic from October to September of respective year

3.2 SE Report (4Q 2020 to 3Q 2021)

3.2.1 Overview

Below charts illustrate the quarterly distribution of SE (Figure 5), distribution by category (Figure 6) and by hospital setting (Figure 7). Among the remaining 21 SE (excluding 7 inpatient suicide), 86% (n=18) of cases had insignificant consequences, or major / moderate consequences (Figure 8).

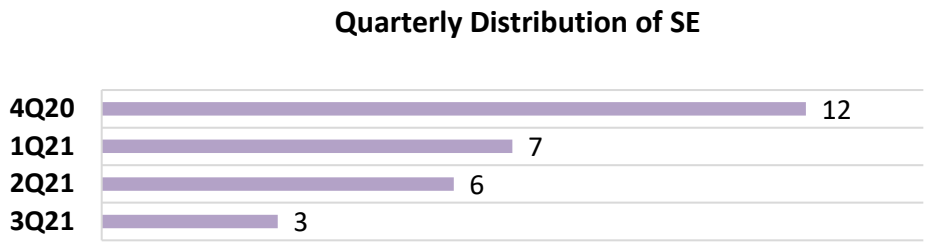

Figure 5

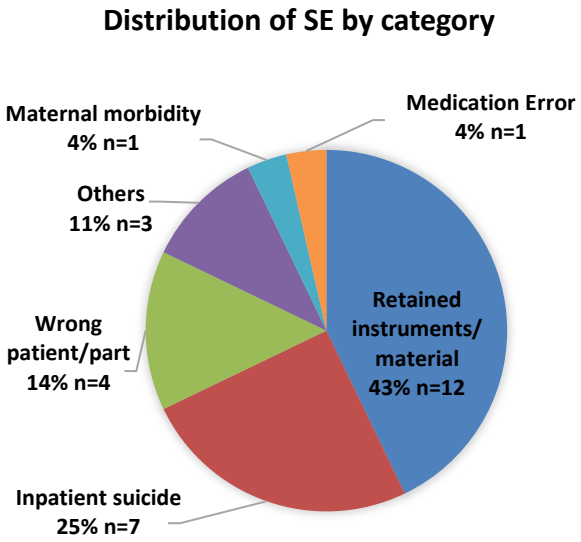

Figure 6

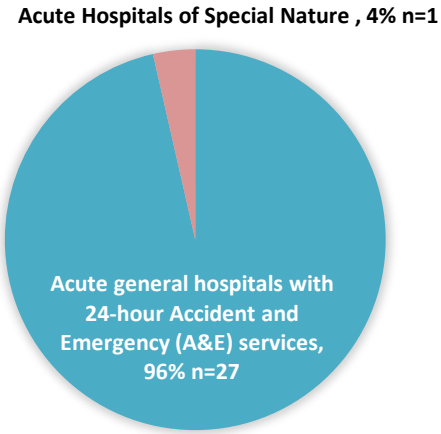

Figure 7

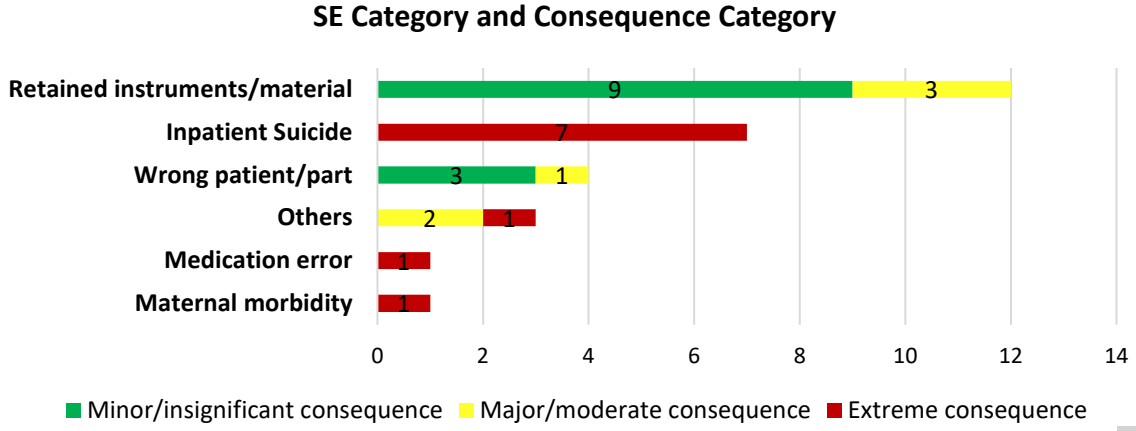

Figure 8

3.2.2 Category: Retained Instruments / Material

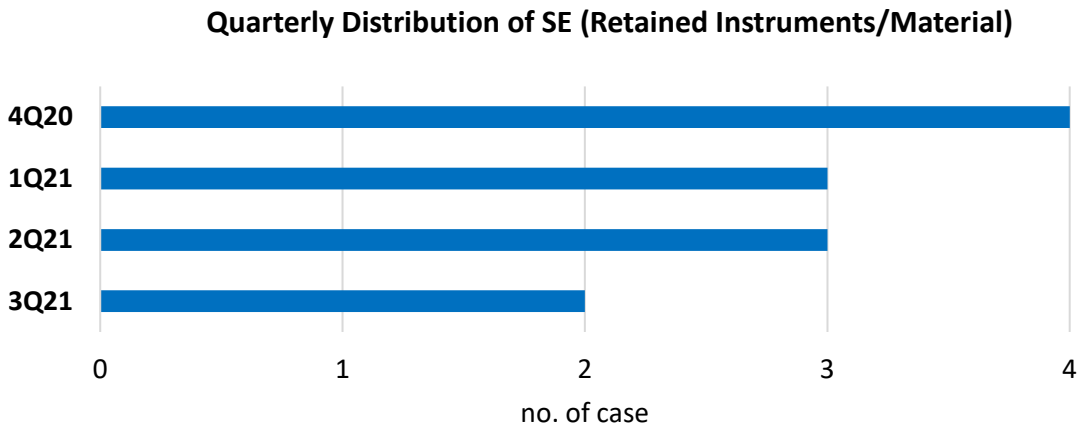

Figure 9

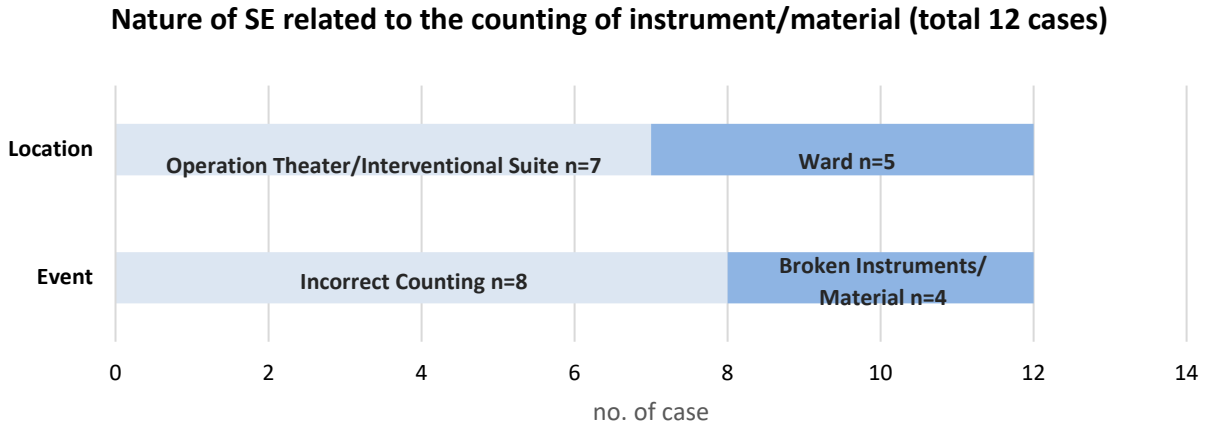

Figure 10

Among 12 SE cases of *retained instruments/material*, greater proportion occurred in operating theatre/interventional suite, or involved counting (Figure 10). The type of instrument/material is summarized in Table 3:

Type of Instrument/Material	Number
Catheter / Drain	2
Endobag	2
Gauze Material	3
Guidewire/ Broken segment of Guidewire	3
Segment of Vessel Closure device	2
Total	12

Table 3

3.2.3 Category: Inpatient Suicide

Of the seven cases of inpatient suicide (Figure 11 and 12), two cases occurred in oncology/palliative ward, three cases in medical and two cases in surgical ward. The inpatient suicide incident rate for the reporting period was 0.4 per 100,000 inpatient admissions.

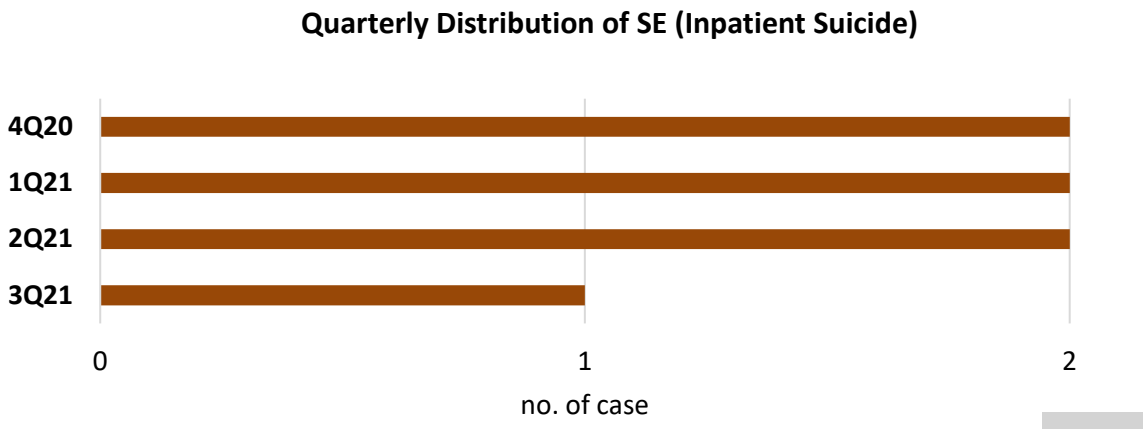

Figure 11

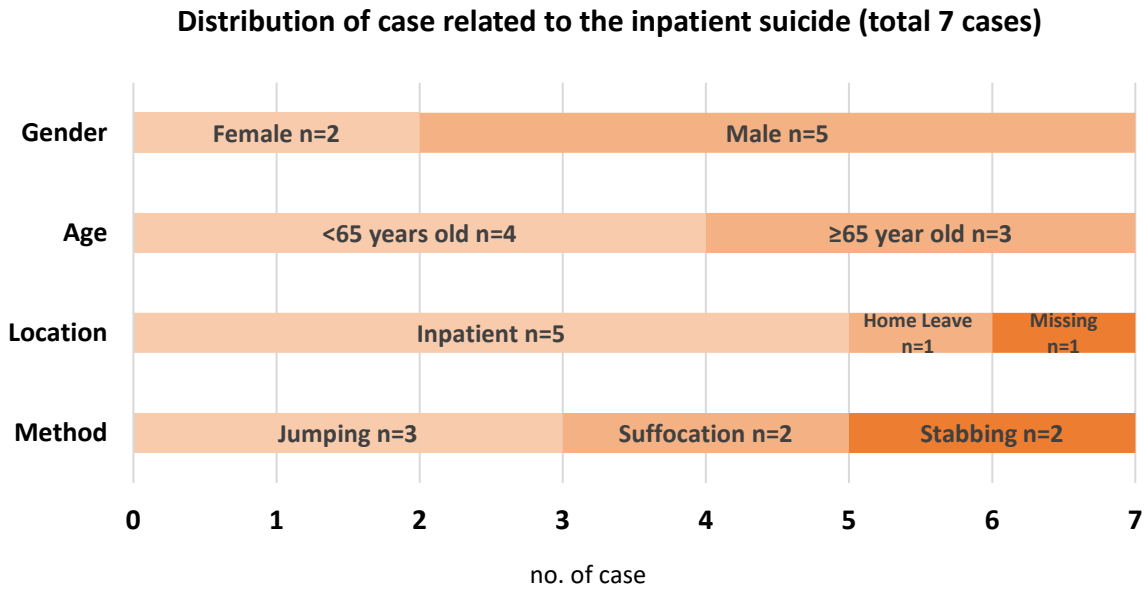

Figure 12

3.2.4 Category: Wrong Patient / Body Part

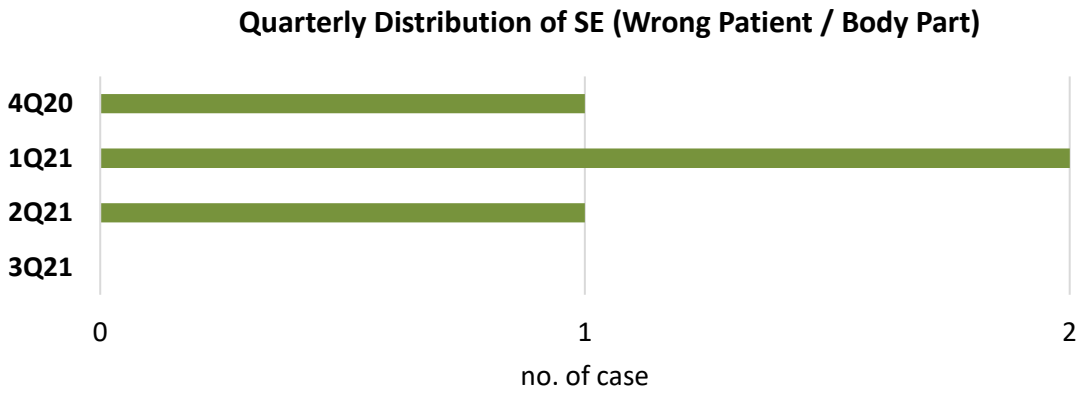

Figure 13

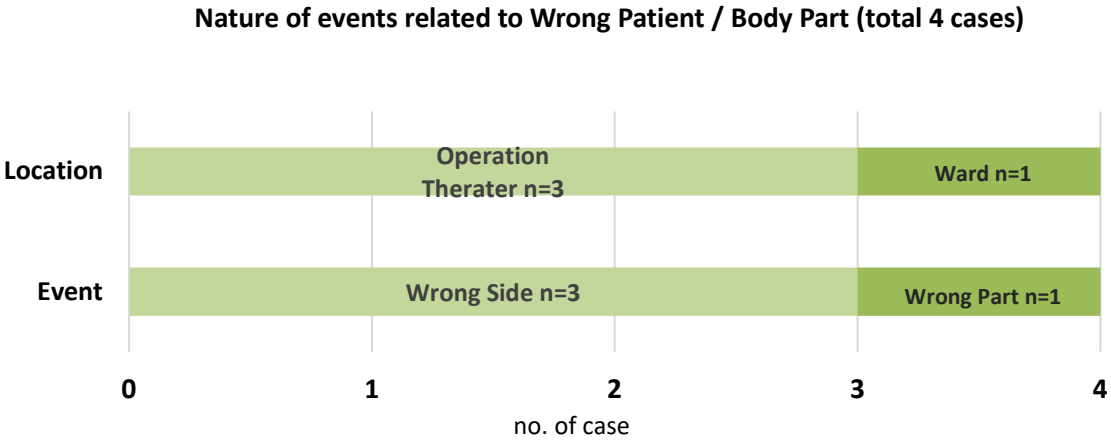

Figure 14

3.3 International Sentinel Event Reporting

In the United States (US), SE cases voluntarily reported to the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) were 800 in 2018, 844 in 2019 and 794 in 2020 respectively.[1] The high number might be due to its broader SE definition including fall, pressure injuries, fire, assault, clinical alarm response or delay in treatment, etc.

In Western Australia (WA), SE is defined as adverse patient safety events that are wholly preventable and result in serious harm or death. The number of SE reported by the Department of Health, State Government of Western Australia (DH Western Australia) was 14 in 2019/20 and 19 in 2020/21.[2,3] The relative SE incident rates in Victoria and WA were 4 per 100,000 patients in 2016-17 and 19.7 per 1,000,000 inpatient episodes of care respectively.[4,5]

In HK, the HA SE incident rate per 1,000,000 episodes of patient attendances / discharges was 1.1 in 2019-20 and 1.4 in 2020-21 respectively. Despite differences in definitions, the top five commonly reported SE among HA, Western Australia and the US are summarized in Table 4 for reference.

[1] The US Joint Commission, Summary Data of Sentinel Events Reviewed by The Joint Commission: as of January 27, 2021.

[2] Sentinel events annual report 2020-2021. 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: 2021. 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 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).

Commonly Reported SE in 2020-21 (for Reference)

HA	Western Australia (WA)	US Joint Commission
1. Retained instrument / material (12)	Medication error resulting in serious harm or death (10)	Fall (170)
2. Inpatient Suicide (including home leave) (7)	Unintended retention of a foreign object in a patient after surgery or other invasive procedure resulting in serious harm or death (3)	Unintended retention of a foreign object (106)
3. Wrong patient / body part (4)	Suspected suicide in psychiatric unit (3)	Suicide (81)
4. Medication (1)	Use of incorrectly positioned oro-or naso-gastric tube resulting in serious harm or death (2)	Delay in treatment (76)
5. Maternal Death (1)	Wrong patient / site (1)	Wrong-site surgery (68)

Table 4

4. SERIOUS UNTOWARD EVENTS (SUE) STATISTICS

4.1 SUE Trend (2011-12 to 2020-21)*

4.1.1 SUE Category

A total of 94 SUE were reported in 4Q20 – 3Q21. The yearly distribution of SUE by category since 2011 is depicted in Figure 15, with the total number of cases each year shown at the top of each bar. The yearly outcomes of SUE are depicted in Figure 16.

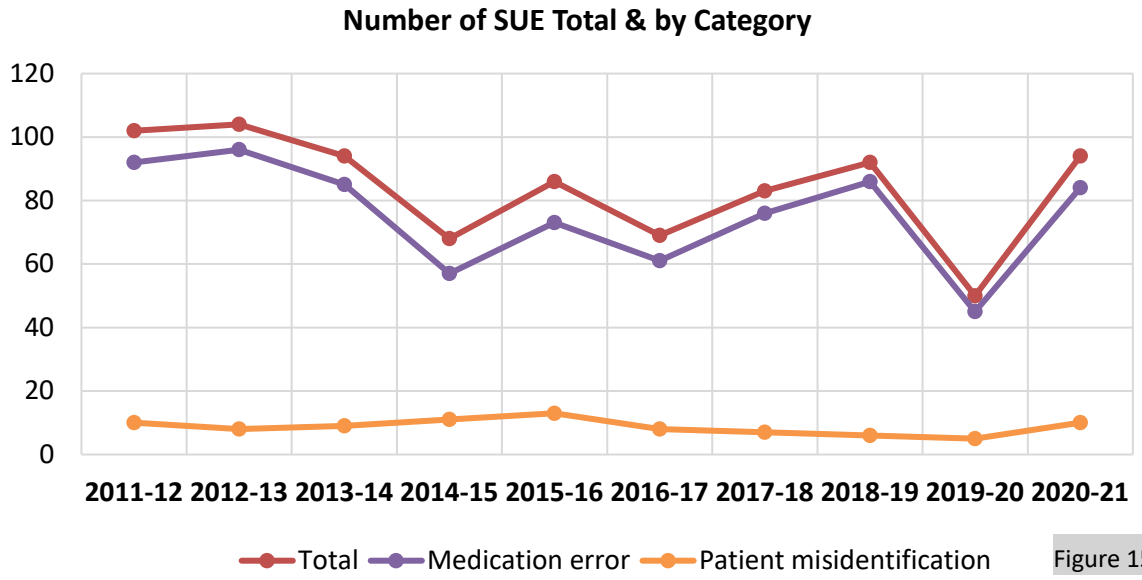

Figure 15

Number of SUE by Category

SUE Category / Period	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2017 - 2018	2018 - 2019	2019 - 2020	2020 - 2021
Medication error	92	96	85	57	73	61	76	86	45	84
Patient misidentification	10	8	9	11	13	8	7	6	5	10
Total	**102**	**104**	**94**	**68**	**86**	**69**	**83**	**92**	**50**	**94**

Table 5

* Statistic from October to September of respective year

4.1.2 SUE Outcome

The outcomes are grouped into minor or insignificant consequences, moderate consequences and temporary major consequences (Figure 16). The description of consequences is illustrated in Annex II.

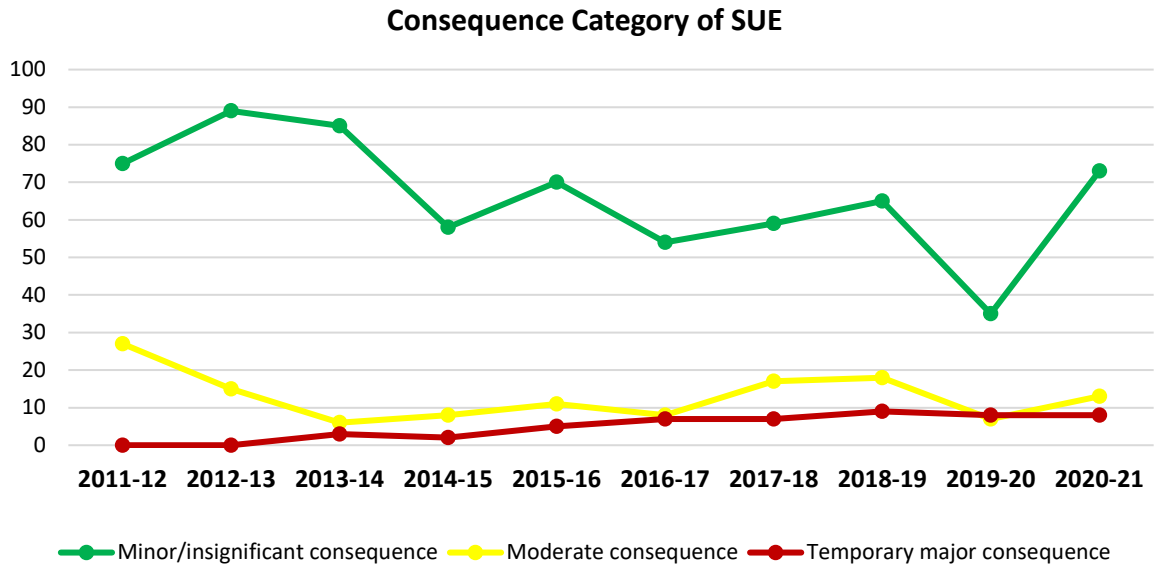

Figure 16

4.13 SUE Medication Incidents

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.

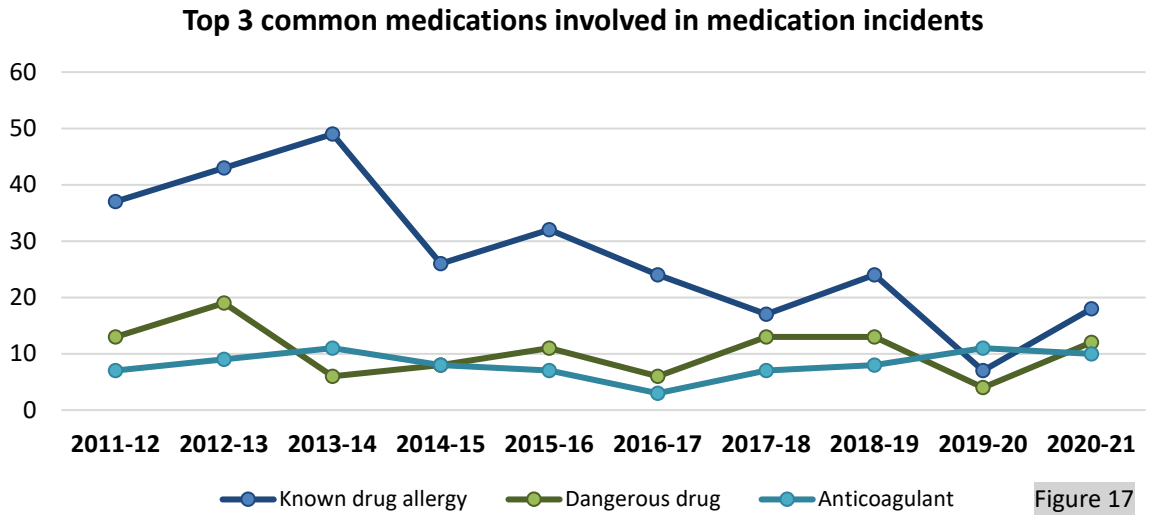

Figure 17

* Statistic from October to September of respective year

4.2 SUE Report (4Q 2020 to 3Q 2021)

4.2.1 Overview

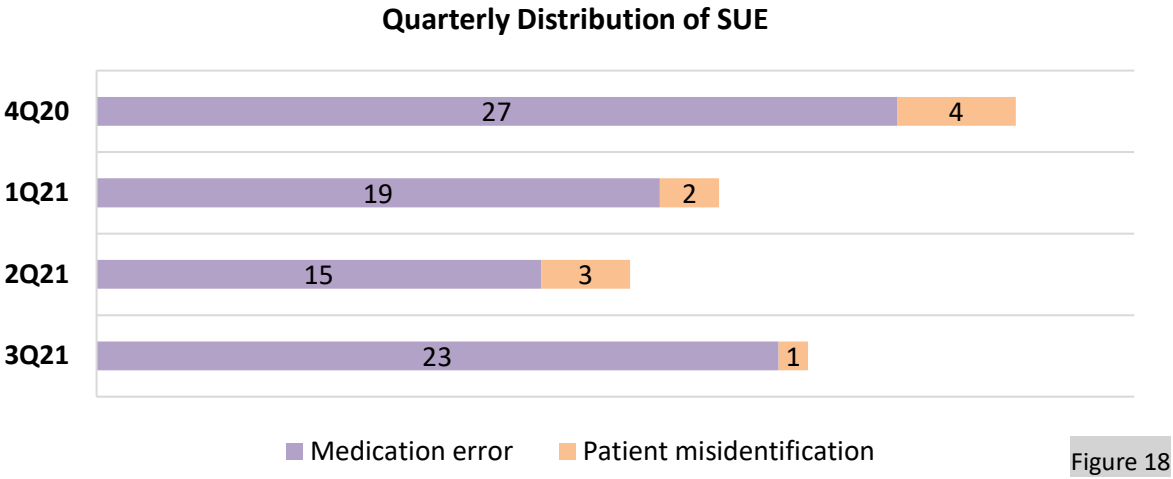

Figure 18

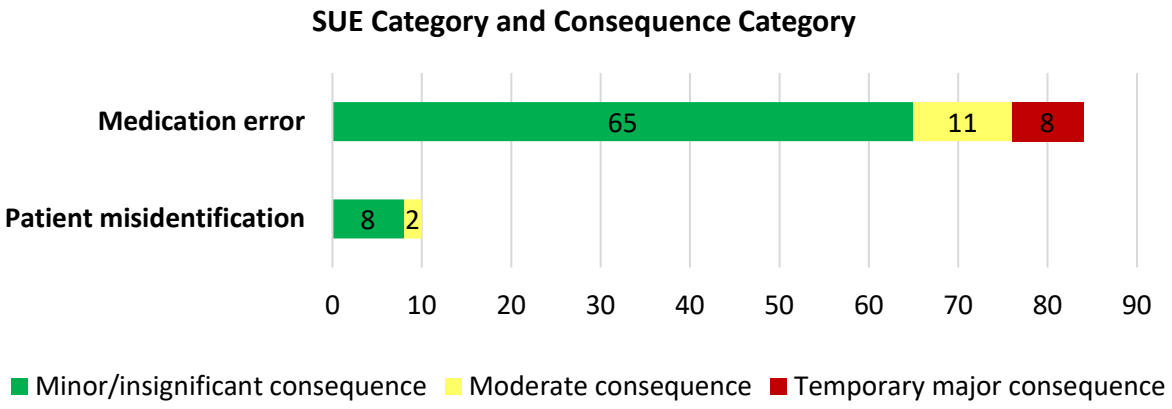

Figure 19

The quarterly distribution of SUE reported is illustrated in Figure 18. Of the 94 SUE cases, 73 had minor / insignificant consequences, 13 had moderate consequences and 8 had temporary major consequences (Figure 19).

4.2.2 Category: Medication Error

The four most common medication errors involved *known drug allergy* (18 cases), *dangerous drug* (12 cases), *anticoagulant* (10 cases), and *insulin* (10 cases) (Figure 20). Drugs such as losartan and lignocaine are grouped under *other medications*.

Distribution drugs involved in medication error

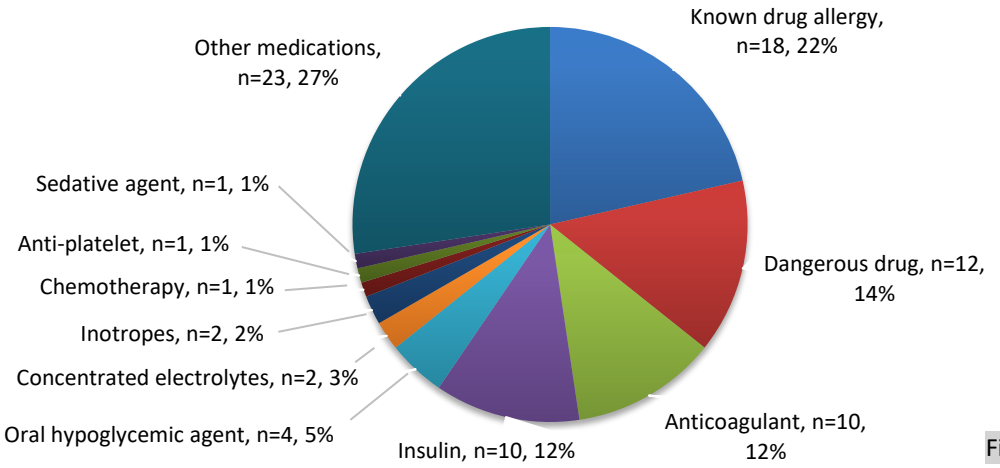

Figure 20

Distribution of drugs related to known drug allergy and location of occurrence

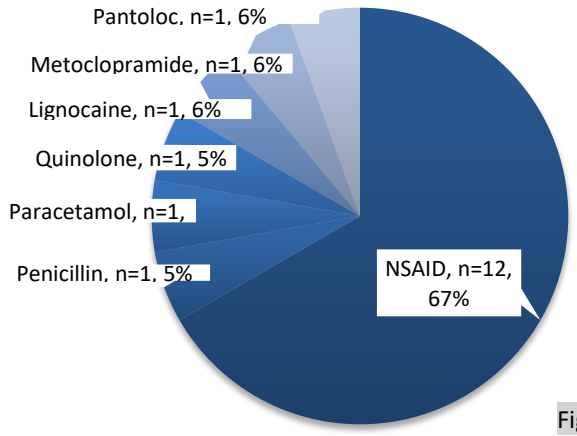

Figure 21

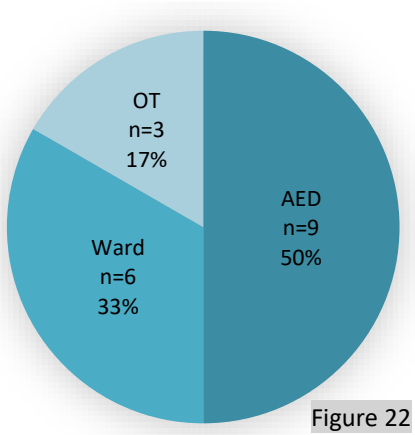

Figure 22

Of the 18 *medication errors* related to *known drug allergy*, the most commonly involved drugs were non-steroidal anti-inflammatory drugs (NSAID) (12 cases) (Figure 21). Of the 18 known drug allergy cases, the two most common locations of occurrence were Accident & Emergency Department (AED) (9 cases) and ward (6 cases). The remaining three cases occurred in Operation Theatre (OT) (Figure 22). Of the 18 *known drug allergy* cases, 17 had minor / insignificant consequences and one had temporary major consequence.

4.2.3 Patient Misidentification

10 SUE due to *patient misidentification* were reported. The top three scenarios included four cases of *patient misidentification* during drug administration, two during drug dispensing, and two due to incorrectly referring to another patient's report (Table 6).

Quarterly distribution of patient misidentification by scenarios

Patient misidentification scenarios	*4Q20*	*1Q21*	*2Q21*	*3Q21*
During drug dispensing	0	0	2	0
During drug administration	1	1	1	1
Mixing up patients' sample in laboratory	0	1	0	0
Referring to another patient's report	2	0	0	0
Wrong patient's labels were used	1	0	0	0
Total	**4**	**2**	**3**	**1**

Table 6

Of the 10 *patient misidentification* cases, two patients had moderate consequence (Table 7).

Consequences of patient misidentification

Patient misidentification scenarios	*Minor/ Insignificant*	*Moderate*	*Temporary Major*
During drug dispensing	2	0	0
During drug administration	2	2	0
Mixing up patients' sample in laboratory	1	0	0
Referring to another patient's report	2	0	0
Wrong patient's labels were used	1	0	0
Total	**8**	**2**	**0**

Table 7

5. ANALYSIS OF SENTINEL EVENTS

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 recurrence) for each category of SE reported in 4Q20 – 3Q21 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 (8 cases)		
Policies / procedures / guidelines	Endobag was not included as a surgical counting item, nor counted in the nurse handover	Review counting mechanism and specimen checking process to ensure all accountable items and at-risk items including Endobag are included in the surgical counting and nurse handover
	Lack of robust gauze counting system for vaginal swabbing before knife-to-skin in TAHBSO	Adopt a structured team-based approach involving surgeon and nursing staff for gauze counting before and after the procedure of vagina preparation
	Counter-checking of guide wire after procedure was not performed	Perform the "SIGN OUT" procedure and counter-check the number of instruments used, with “Pointing and Calling"
Communication	Assumption was made on the status of the guide wire and confirmation was not sought from relevant staff The process of “SIGN OUT” was done without visual confirmation	Confirm clear visual identification of the guide wire with another responsible clinical staff right after the removal
Clinical handover / documentation	Incorrect documentation of “complete removal of gauze” in the wound packing record due to false reassurance that no gauze was found during wound assessment	Reinforce correct documentation of gauze count (actual number of gauze removed and packed) and essential information of packed items (material, number and length) on wound packing record

		Ensure standardized wound assessment and documentation to facilitate communication and enhance handover safety
Knowledge / skills / competence / procedures	Not easy to spot the retained ribbon gauze in a small wound opening with deep tunnel Staff was unfamiliar with the reporting mechanism and did not report timely on the discrepancy of gauze count	Promulgate good practice of leaving distal end of dressing material outside the wound for easy visualisation and retrieval Reinforce nurses to report if there is discrepancy in dressing material count Consult wound specialist for complicated wound
Retained instruments / material – related to broken instrument / material (4 cases)		
Policies / procedures / guidelines	Checking the vascular closure device foot following vascular closure was not a routine Arterial wall spasm is common in children. Advancement of the device may result in arterial telescoping, causing vascular insufficiency. Integrity check of the suction catheter was not performed after oro-pharyngeal suction	Integrity of device foot should be checked after removal from the body Careful patient selection for device use, especially in children. Consider angiography or other appropriate imaging immediately before device application to accurately assess vessel size for children and if indicated. Check suction catheter integrity before and after the procedure.
Knowledge / skills / competence / communication	Lack of staff awareness of the risk of coating detachment of hydrophilic guide wire during manipulation Not enough staff awareness on the importance to assess patients' fitness for oro-pharyngeal suction	Enhance staff awareness on the risk of coating detachment from hydrophilic guide wire and remind staff to remove the metal needle before withdrawing the guide wire Keep a high index of suspicion of possible retained foreign body in all attempted areas when reviewing post-procedural X-Ray in difficult cannulation cases Enhance staff awareness in assessing patients' fitness for oro-pharyngeal suction. Agitated or struggling patients may have increased risk of biting the catheter during suction.
Wrong patient / part (4 cases)		
Knowledge / skills / competence	Staff was not vigilant in checking laterality	Add a pause immediately before injection to reconfirm the marked operating site

	Lapse of concentration – The patient was agitated during the ECMO preparation. Doctor had to pause the connection of the V and A cannulae to the ECMO machine and stabilize the patient.	Remove the blue cap of the venous sheath and the red cap of the arterial sheath only during the last step of connection to the drainage and return tubings of the ECMO machine respectively. Enhance checking for correct anatomical sites of cannulation and correct blood flow direction, immediately after connection to the ECMO machine, with independent checking by the doctors responsible for the cannulation procedure.
Policies / procedures / guidelines	Patient's correct site was not doubly checked before the laser therapy The team did not check the implant information and laterality against whiteboard	Communicate with patient actively throughout the procedure Read out package information by circulating nurse and white board information by surgeon simultaneously during implant verification process. Introduce "Stop Moment" for implant verification.
Communication	The surgeon was not involved in the process of site marking The operation involving bilateral knees contributed to the risk of picking wrong prosthesis	Involve the surgeon in site marking for patient Enhance the clarity of white board display by displaying one-sided implant information on the board at a time
Work environment	Having the laser goggles on in an unlit operating theatre had impaired staff's vision	Dim down the lights instead of turning off all lights to maintain adequate working visibility

Lessons Learnt from SE

Medication error *resulting in major permanent loss of function or death* - Wrong Dose of Warfarin Prescribed to an Out-patient

Key contributing factors:

i. The good practice of rechecking prescription print-out sheet was not performed
ii. A complicated drug regimen was involved

Recommendations:

i. Recheck the print-out of prescription sheet against the old regimen and the intended treatment plan
ii. Enhance the counseling service for patients who are taking warfarin (e.g. Protocol

driven Anticoagulation Clinic supported by trained pharmacists or nurses)

In-patient suicide *– An in-patient suspected to have jumped in a nearby railway station*

Recommendation:
The Hospital Security team will report all patients in hospital pajamas leaving hospital premise to duty Hospital Foreman immediately for necessary follow-up actions.

In-patient suicide *– An in-patient jumped from height and passed away*

Recommendations:

i. Reinforce the proper practice of performing independent clinical assessment of patients followed by complete and detailed documentation.
ii. Enhance staff training on assessment of suicidal risk of patients and identification of early warning signs of possible suicidal acts.
iii. Enhance staff vigilance in detecting and reporting patients who might be at higher risk of self-harm and suicide in order to allow more time to seek specialty care for the patients when necessary.

Other adverse events *resulting in permanent loss of function or death (excluding complications)* – Incorrect laser mode used in macular laser treatment

Key contributing factors:

i. Suboptimal ergonomics in the setting of the laser room increased the risk of concentration lapse
ii. No cross-checking system of the procedure was in place

Recommendations:

i. Explore means to improve the ergonomics in the laser room
ii. Review and refine laser preset program
iii. Introduce safety redundancy to reduce single point of failure

Other adverse events *resulting in permanent loss of function or death (excluding complications)* – Misplaced Patent's Patient's Amputated Index Finger

Key contributing factors:

i. The amputated finger was wrapped in a non-transparent glove with no standardised

handling practice

ii. Ineffective communication about the amputated finger in multiple handover during the operation

iii. Lack of awareness to confine accountable item within OT

Recommendations:

i. Use transparent bag for storage of amputated limb inside OT

ii. Standardise perioperative documentation and checking system of amputated limb

iii. Strengthen clinical handover system to ensure correct handover of critical information for continuity of patient care

iv. Reinforce correct handling of accountable items within OT

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

Key contributing factors:

i. Alert was not escalated when difficulties in management were encountered

ii. Service delivery was delayed in the management of hyperkalaemia, feeding, intravenous fluid administration and blood collection

iii. Inadequate supervision and communication between different disciplines

Recommendations:

i. Provide training on escalation mechanism to seek senior support among doctors and nurses

ii. Enhance clinical supervision on implementation of doctors' orders and follow up on patient's response to treatment

iii. Reinforce teaching and supervision to all doctors and nurses on clinical care of hyperkalaemia

iv. Enhance communication among staff, by strengthening clinical handover among doctors, exploring possibility of joint case doctor and case nurse ward round, especially on critical cases

Having analysed the SE reported in 4Q20 – 3Q21, we observe that retained instruments / material remains to be the most commonly occurring SE, constituting 42.9% of all reported SE. With advancement in medical technology, including deployment of new laparoscopic and microvascular instrument or material, comes new challenges. Four SE were related to retained endobags and segment of vessel closure

devices. We would need to step up efforts to reinforce surgical and procedural safety and mitigate risks that new technology brings.

6. ANALYSIS OF SERIOUS UNTOWARD EVENTS

As medication incidents related to *known drug allergy (19.2%)* constituted the most common category of the SUE reported in 4Q20 – 3Q21, recommendations from these cases are summarised below.

(a) Known drug allergy

As the electronic Medication Order Entry (MOE) is extending its implementation to new Hospitals and clinical areas such as Accident and Emergency (AED), chemotherapy centres and intensive care units, as well as application to include more structured alerts for commonly involved drugs such as non-steroidal anti-inflammatory drugs (NSAID), we hope to see a further reduction in related medication incidents.

Recommendations:

i. Check for cross-allergy

ii. Seek advice from senior colleague / pharmacist if in doubt

iii. Check for CMS allergy alert before prescription and administration

(b) Medication errors related to infusion

We also observe that there were many incidents related to infusion errors, for example, incorrect drug, dose, infusion time and route, dilution and pump settings. Incorrect drug concentration and infusion rate are 2 common areas of errors. Use of standardized dosing / infusion tables to minimise calculation error has been reinforced. Staff is also advised to check on “5 Rights” (right patient, time, drug, dose and route” before every drug administration and perform independent double-check whenever feasible.

Recommendations:

i. For safe administration of phenytoin, undiluted phenytoin should be given as "slow intravenous infusion", at a rate not exceeding 50mg/minute for adults and 1-3mg/kg/minute for paediatrics.

ii. Dilution of phenytoin into intravenous infusion is not recommended due to lack of solubility and resultant precipitation. Use large vein and large gauge intravenous catheter for administration. Use syringe pump for administration and cardiac monitor to detect cardiac arrhythmia.

iii. Perform independent double-check on the 5 Rights (right patient, right time, right drug, right dose and right route) against the prescription and pump settings before commencing the infusion and leaving the patient. Be cautious of decimal points.

iv. Use commercially pre-mixed intravenous or epidural solutions if available.

v. Display drug information charts for easy reference to medical, nursing and pharmacy staff, e.g. compatibility, maximum dose and equianalgesic opioids in all patient care units.

vi. Keep only one strength of parenteral narcotic/opioids in the ward (if applicable).

(c) Medication discontinuation

Many medication incidents could have been avoided if "medication discontinuation" has been stringently observed, so that patient will have an updated drug prescription record for reference even when patient seeks medical attention in other specialties or hospitals. The use of "medication discontinuation" helps to alert other clinical staff that a particular drug has now been discontinued and prevent unintentional prescription of “discontinued” drug. Medication discontinuation function is available in MOE. Discontinued drug history can also be reviewed through MOE, ePR and Discontinued Drug History Enquiry in CMS menu bar.

“Medication discontinuation” has been actively promulgated and reinforced in multiple communication platforms with frontline including Staff Forum and HARA.

Among the 10 cases of patient misidentification, four were related to procedure and six were related to medication.

Patient misidentification related to procedure

Recommendations:

Check patient's name and ID before procedure against all documents including

i. Labels on paper documents such as consent forms and checklists

ii. Name and HKID on electronic record

Patient misidentification related to medication

Recommendations:

Remember to check for patient's correct ID by verifying

i. Message on the scanner screen and

ii. Patient's bracelet / patient's verbal confirmation

The number of medication items dispensed in HA per year was 47.9 million in the first 9 months of 2021 compared to 59.8 million for the whole of 2020. The rate of number of medication incidents reported (including medication incidents classified as SUE) per 1 million medication incidents dispensed was 15.12 for the first 9 months of 2021, compared to 14.8 for 2020. For 2011 to 2018, this rate was above 17. This drop coincides with the gradual introduction of "In-Patient Medication Order Entry System" (IPMOE) in HA since 2013.

7. ONGOING RISK REDUCTION MEASURES

Various risk reduction measures have been implemented or are being adopted to enhance patient safety. Highlights of these measures are set out below:

(a) **Surgical safety**

i. Surgical Instrument Tracking System (SITs)

- The Electronic Count Sheet of the SITs, a new initiative implemented in the reporting year, has been rolled out in the operating theatres (OTs) of Tseung Kwan O Hospital and Tin Shui Wai Hospital, which helped enhance the counting and documentation process in OTs.

- A small-scale trial of the Electronic Count Sheet is planned for adoption in the OTs in the Kowloon West Cluster, tentatively in the third quarter of 2022. Further implementation in other Clusters would be considered.

ii. Safety on Vessel Closure Devices

- Since there were 2 SE related to the retention of fragments from Vessel Closure Devices, incident and product investigations were conducted. Safety measures were also reinforced and promulgated to Service Directors (Quality & Safety), Co-ordinating Committee, Central Committee and clinical staff.

- Guideline on the use of the devices in paediatric patients was drawn up. Adequate staff training and compilation of lists of qualified operators were reinforced by relevant clinical departments.

(b) **Prevention of retained guide wire**

i. The Taskforce on Prevention of retained guidewire has commissioned an animation video to highlight and reinforce safe practice in various critical points for guidewire procedure. The video shall be ready for

release in the first quarter of 2022.

(c) **Prevention of inpatient suicide**

i. Recommendations on facility-related provision of the Guideline on Hospital Security Design Planning were updated to prevent inpatient suicide in high-risk areas such as toilets and bathrooms.

ii. The following guidelines were reviewed to enhance the identification and handling of at-risk patients:

- Prevention and handling of suicidal behaviour in non-psychiatric inpatient setting
- Managing high-risk patients with dangerous items in hospitals
- Management of missing patients
- Use of physical restraint

(d) **Medication safety**

i. Known Drug Allergy

- Implementation of Inpatient Medication Order Entry (IPMOE) system in convalescent and rehabilitation hospitals will continue. The application of IPMOE system has been extended to Chemotherapy units, Accident & Emergency (A&E) Departments and Intensive Care Units (ICU) of some hospitals.
- To minimise the risk due to free-text documentation of drug alerts, with the input of Medication Safety Committee and Information Technology & Health Informatics Division, a mechanism is in place to regularly screen and convert free-text drug allergy records in the Clinical Management System (CMS) to structured drug alerts with system checking enabled. In 2021, 127 free text allergy records were converted to structured drug alerts in CMS.
- Extension of decision support for allergy and adverse drug reaction records to electronic Health Record Sharing System was completed in 2021.

ii. Anticoagulants and Antithrombotic Agents:

- A Working Group on Anticoagulants and Antithrombotic Agents has been established to explore potential enhancements to mitigate the risks on use of anticoagulants and antithrombotic agents. In 2021, structured alerts of anticoagulants and antithrombotic agents have been renamed and regrouped for better classification. Anticoagulants and antithrombotic agents were grouped and repositioned atop in the alert field in CMS.

- System auto-flag alerts for some drugs, namely anti-platelet, warfarin, Novel Oral Anticoagulants / Direct Oral Anticoagulants, will be deployed in 1Q 2022.

- Patient's specific cardiac status, for example post-percutaneous coronary intervention with dual anti-platelet requirement, tagged and displayed by "Genie" in Out-patient Medication Order Entry (MOE), was piloted in Queen Mary Hospital (QMH) cardiac team in November 2021 and will be further extended, if appropriate.

8. LEARNING AND SHARING

In view of COVID-19, a number of face-to-face staff forums/trainings were replaced by webinars. Nevertheless, they were met with great success and positive feedback.

In 2020/21, HAHO Patient Safety and Risk Management Department (PSRM) had conducted 4 staff forums on SE and SUE sharing for over 2,800 colleagues. Participants of these forums included hospital leaders, patient safety managers, doctors, nurses and others. Participants provided great responses to the forums, that would continue to shape future planning and development.

To enhance staff knowledge and skills on RCA, a training workshop was conducted by overseas and local trainers in February 2021. Participants are now recruited to help in future training programs.

Apart from traditional mailing alerts, four issues of HA Risk Alert (HARA) and two issues of Patient Safety Express were newly released via electronic platform – HA Chat as well, to increase awareness and accessibility of patient safety information.

9. THE WAY FORWARD

A number of initiatives have been planned for 2022 to enhance safety practice at HA hospitals:

(a) Surgical Safety

A Corporate-wide Electronic Wound, Packing and Drain Management System is under development. It aims to improve the communication and handover of patient's wound condition throughout patient journey.

(b) Prevention of inpatient suicide

- Good practice on cable or wire management to mitigate risk of it being used as a suicidal/self-harm tool in wards will be shared.
- Environmental risks such as those arising from toilet door edge or trap and mitigation measures will be continuously reviewed and monitored.
- The use of the 3-item suicide risk screening tool will also be kept under monitoring and feedback.

(c) Medication Safety

- In 2022, IPMOE will be implemented in Kwong Wah Hospital (KWH) and extended to more Chemotherapy units, A&E Departments and ICUs.
- Regarding anticoagulants and antithrombotic agents, Quality & Safety Division, Medication Safety Committee and Health Informatics will work together to establish standardized prescription regime and system enhancement.
- A corporate-wide warfarin safety campaign is planned in 1Q 2022 to increase staff awareness.

(d) Correct Patient Identification

An animation video to promote staff awareness on correct patient identification throughout patient care, including but not limited to Type and Screen, blood transfusion, drug administration, blood and laboratory specimen taking and last offices, will be produced in 2022/23.

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: Laser therapy performed on the wrong eye

A patient attended LEFT eye laser therapy. Site marking with the letter 'L' was made by a nurse on the skin around 1 cm temporal to the lateral canthus. Laser premedication including topical anaesthetic was applied to the patient's LEFT eye. Lights were turned off in the procedure room during laser use. The macula laser lens was put over patient's RIGHT eye instead and a few shots of subthreshold laser were delivered by the doctor. Doctor realised the error and stopped the procedure immediately. Both eyes were checked. Procedure proceeded subsequently on the LEFT eye. Upon follow-up, no observable damage or problem was detected.

Why did it happen?

1. The surgeon was not involved in the process of site marking
2. Patient's correct site was not doubly checked before the laser therapy
3. Having the laser goggles on in an unlit operating theatre had impaired staff's vision

What can we do to prevent?

1. Involve the surgeon in site marking for patient
2. Communicate with patient actively throughout the procedure
3. Dim down the lights instead of turning off all lights to maintain adequate working visibility

Case 2: Veno-arterial (VA) cannulas reversely connected to extracorporeal membrane (ECMO) system

VA-ECMO to left femoral artery and vein was planned for a patient, who was successfully resuscitated from a cardiac arrest. During ECMO preparation, patient became agitated and struggled. Doctor had to put aside the cannula connection to the ECMO machine and stabilise the patient. After connection to the ECMO machine eventually, patient's blood pressure was persistently low. Intensive Care Unit (ICU) doctor was consulted. The VA cannulas were found reversely connected. After rectification, patient proceeded with percutaneous coronary

intervention uneventfully and was transferred to ICU for further management.

Why did it happen?

1. Lapse of concentration – The patient was agitated during the ECMO preparation. Doctor had to pause the connection of the V and A cannulas to the ECMO machine and stabilise the patient.
2. The patient was in cardiogenic shock at the moment of cannulation and connection to the ECMO machine. The colour of the blood from the femoral artery might not appear as 'red' as it should be.

What can we do to prevent?

1. Remove the blue cap of the venous sheath and the red cap of the arterial sheath only during the last step of connection to the drainage and return tubings of the ECMO machine respectively.
2. Enhance checking for correct anatomical sites of cannulation and correct blood flow direction, immediately after connection to the ECMO machine, with independent checking by the doctors responsible for the cannulation procedure.

Case 3: Retrobulbar block performed on the incorrect eye

Doctor performed skin marking for the RIGHT eye in elective cataract extraction, after checking consent and confirming with the patient. Doctor and nurse conducted "TIME OUT" procedure at the patient's LEFT side. Nurse then went to the head of the bed to assist, while doctor remained at patient's LEFT side to perform retrobulbar block. Doctor immediately realized that the injection was administered to the incorrect LEFT eye. Upon assessment, patient was stable and there was no anaesthesia-related complication. Condition was explained to the patient who agreed to proceed with surgery. RIGHT eye cataract extraction was performed uneventfully under RIGHT retrobulbar block.

Why did it happen?

1. Staff was not vigilant in checking laterality
2. Lapse of attention and distraction during the procedure

What can we do to prevent?

Add a pause immediately before injection to reconfirm the marked operating site

Case 4: Left femoral component of total knee replacement (TKR) implant placed in right knee

Patient underwent robotic-assisted bilateral TKR. Details of implant components for LEFT and RIGHT knees were written on the whiteboard in operating theater. After LEFT TKR, difficulty was encountered during RIGHT TKR. Surgeon decided to change the prosthesis system from Cruciate Retaining (CR) to Posterior Stabilizing (PS). Therefore, a new set of instruments and implants had to be arranged. LEFT femoral component was picked and given to circulating nurse. Nurse counter-checked with surgeon by reading out the package label information. After procedure, post-operative X-ray revealed a LEFT femoral component in patient's RIGHT knee. Revision RIGHT TKR was done afterwards.

Why did it happen?

1. The Team did not check the implant information and laterality against whiteboard
2. The change of surgical plan from CR to PS prosthesis system and the operation involving bilateral knees contributed to the risk of picking wrong prosthesis
3. The printing on implant package was too small to be read clearly

What can we do to prevent?

1. Read out package information by circulating nurse and whiteboard information by surgeon simultaneously during implant verification process
2. Introduce "Stop Moment" for implant verification
3. Enhance the clarity of whiteboard display by displaying one-sided implant information on the board at a time

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

Incorrect Counting of Instruments / Material

Case 1 and 2 involved retain of endobags.

Case 1: An endobag left in patient's abdomen after operation

A patient with phaeochromocytoma underwent laparoscopic LEFT adrenalectomy. An endobag was inserted in the midst of scrub nurse handover, which detected a missing Raytec gauze. In an effort to search for the gauze and to achieve haemostasis, the patient had to be repositioned. A second endobag was inadvertently deployed when the 8.8 by 6 cm vascular tumour was finally ready for removal. Patient was discharged home and later attended the Accident & Emergency Department for abdominal discomfort. Incisional hernia was suspected. CT scan of the abdomen revealed a retained foreign body. An operation was performed to remove the retained endobag.

Case 2: Retained endobag with specimen after operation

A patient with pancreatic cancer was admitted for operation. The gallbladder was resected first and placed in an endobag inside patient's abdominal cavity. Due to extensive operation, patient had to be repositioned. At the end of the surgery, only the pancreatic tumour was sent for histology test while the gallbladder specimen remained in-situ. The endobag inside the patient's abdominal cavity was not included in the nurse handover process, nor at the final counting as it was not an 'accountable item'. Upon review of the surgical specimen post-operatively, the gallbladder specimen was not found. X-ray revealed the retained endobag, which was removed by a second operation.

Case 1 and 2 share the same key contributing factors and recommendations.

Why did it happen?

1. Both patients were repositioned during surgery and the endobags became obscured from operators' view
2. Endobag was not included as a surgical counting item, nor counted in the nurse handover

What can we do to prevent?

Review counting mechanism and specimen checking process to ensure all accountable items and potential retained or at-risk items including endobag are included in the surgical counting and nurse handover

Case 3 and 4 involved retain of guide wire after CVC insertion.

Case 3:

An emergency operation was arranged for a patient with corpus cancer. A triple lumen CVC was inserted into the RIGHT internal jugular vein by an anaesthetist. The procedure was assisted by circulating nurse A under the supervision of nurse B, who was simultaneously assisting in instrument counting with the scrub nurse. Nurse A was called to support another operating room after having prepared the necessary items for the CVC procedure. Before completion of the emergency operation, nurse B found that the trolley for the CVC insertion had been set aside and all the sharp items had been cleared. Nurse B assumed that the guide wire had also been disposed of by the anaesthetist. Post-operation chest X-ray revealed the guide wire within the lumen of the CVC along the RIGHT internal jugular vein. Guide wire was removed together with the CVC eventually.

Why did it happen?

1. The checklist was completed only at the end of the operation, not right after the CVC procedure
2. Assumption was made on the status of the guide wire and confirmation was not sought from relevant staff

What can we do to prevent?

1. Confirm clear visual identification of the guide wire with another responsible clinical staff right after the removal
2. Perform and document the counting and checking of sharp instruments and guide wire right after the CVC procedure, not at the end of the operation
3. Assign a designated nurse to assist the procedure
4. Should designated assistance not be available, proper handover is essential

Case 4:

A patient was admitted to surgical ward due to acute abdominal pain. Upon admission, patient developed septic shock. Central venous catheter (CVC) insertion was performed by a doctor, assisted by a nurse and a supporting staff. In the midst of the procedure, the nurse discarded suturing sharps and mistook them as the guide wire. The nurse hence incorrectly confirmed the doctor that the guide wire had been removed. After the procedure, chest X-ray (CXR) revealed the guide wire, but no other complication. The retained guide wire was removed at bedside.

Why did it happen?

The process of "SIGN OUT" was done without visual confirmation

What can we do to prevent?

1. Reinforce the importance of stringent checking with visual and verbal confirmation of the removed guide wire
2. Revisit CVC insertion procedural workflow e.g. to discard sharp and guide wire after completing "SIGN OUT"

Case 5, 6 and 7 involved retain of gauze.

Case 5: A plain gauze left in patient's vagina after procedure

A patient was admitted for elective total abdominal hysterectomy and bilateral salpingo-oophorectomy (TAHBSO). As part of the pre-operative preparation, a sterile 7 by 7 cm plain gauze was used for vagina swabbing after bladder catheterisation. The operation was completed uneventfully and the patient was discharged. Patient attended Specialist Out-Patient Department (SOPD) and reported that she had passed a plain gauze through her vagina.

Why did it happen?

Lack of robust gauze counting system for vaginal swabbing before knife-to-skin in TAHBSO

What can we do to prevent?

Adopt a structured team-based approach involving surgeon and nursing staff for gauze counting before and after the procedure of vagina preparation

Case 6: A piece of ribbon gauze was retained in a patient's perianal abscess wound

A patient underwent emergency incision and drainage under general anesthesia for perianal abscess. Two ribbon gauzes were packed into the wound. In the next morning round, a doctor

removed one ribbon gauze and informed the ward nurse to remove the remaining one. Ward nurses could not find the remaining gauze in the wound and presumed it had fallen off somewhere. Case nurse then documented that the previously packed ribbon gauzes had been completely removed and only one new ribbon gauze was packed. Patient was discharged after the wound dressing with a referral to General Outpatient Clinic (GOPC). Both treatment sheet and Nursing Discharge Summary recorded only one ribbon gauze in the wound, for daily dressing. Four days later, GOPC nurse retrieved two ribbon gauzes from the wound, one of which was compatible with the one packed intra-operatively. The ribbon gauze had been retained in patient's wound for five days. Patient's wound was otherwise well.

Why did it happen?

1. Not easy to spot the retained ribbon gauze in a small wound opening with deep tunnel
2. Staff was unfamiliar with the reporting mechanism and did not report timely on the discrepancy of gauze count
3. Incorrect documentation of "complete removal of gauze" in the wound packing record due to false reassurance that no gauze was found during wound assessment

What can we do to prevent?

1. Promulgate good practice of leaving distal end of the dressing material outside the wound for easy visualisation and retrieval
2. Reinforce nurses to report if there is discrepancy in the dressing material count
3. Reinforce correct documentation of gauze count (actual number of gauze removed and packed) and essential information of packed items (material, number and length) on wound packing record

Case 7: A piece of gauze was found left in patient's sacral wound

A patient with sacral wound was hospitalized. During wound nurse assessment, a retained gauze was found in the wound.

What can we do to prevent?

1. Ensure standardized wound assessment and documentation to facilitate communication and enhance handover safety
2. Leave visible tail (at least 3cm) of packing materials outside the wound with proper anchorage to facilitate detection and retrieval
3. Check the removed packing quantity against the previous record
4. Consult wound specialist for complicated wound

Case 8: Retained corrugated drain

A female patient with mental history underwent mastectomy. Her wound was complicated with seroma. A corrugated drain was anchored to the wound with stitches and regularly dressed by community nurses. Around 2 weeks later, old aged home staff reported that the drain was missing. Bedside ultra-sonogram and wound exploration were done by doctors the next day but search was in vain. Patient's wound was healing well afterwards. Patient later developed abscess from the wound. Upon re-exploration, the missing drain was identified and retrieved.

How did it happen?

1. Patient's history of self-pulling out surgical drains and underlying mental condition increased the difficulty of communication between patient and healthcare staff
2. The corrugated drain used is elastic and undulated, and generally considered not radio-opaque

How to prevent?

1. Enhance staff's awareness on the risk of foreign body retention
2. Consider imaging investigation whenever in doubt, regardless of the radio-opacity of materials.
3. Explore sourcing of corrugated drains with radio-opaque marking
4. Enhance communication, including documentation of patient's wound condition between OAH and hospital

Broken Instruments / Material

Case 1: Retained of a detached part of guide wire

A patient with end-stage renal failure on haemodialysis (HD) underwent right Permcath insertion and removal of temporary left internal jugular line. Due to calcification and narrowing of the right internal jugular vein (IJV), two different guide wires – J-shaped and straight tips were deployed but both failed to advance beyond 8 cm despite multiple attempts. Procedure was abandoned. The integrity of the two guide wires were checked and documented. CXR did not detect any abnormality.

Ultrasound-guided right Permcath insertion was thus scheduled for the patient a few days later. During the procedure, radiologist encountered similar difficulties and performed Permcath insertion on left IJV instead. CXR showed left Permcath in-situ, with no pneumothorax. Patient was discharged home and had HD in subsequent days.

In the three weeks following Permcath insertion, patient had recurrent left neck puncture site bleeding. Computed tomography (CT) of neck and thorax revealed a retained foreign body within the right IJV.

Retrospective review showed that the detached segment of the guide wire was present in the first set of post-procedural CXR.

Why did it happen?

1. Lack of staff awareness of the risk of coating detachment of hydrophilic guide wire during manipulation
2. Tapering of right IJV near base of neck with dystrophic calcification and stenosis led to difficult cannulation and interpretation of post-procedural CXR and ultrasound

What can we do to prevent?

1. Enhance staff awareness on the risk of coating detachment from hydrophilic guide wire and remind staff to remove the metal needle before withdrawing the guide wire
2. Keep a high index of suspicion of possible retained foreign body in all attempted areas when reviewing post-procedural X-Ray in difficult cannulation cases

Case 2: Retained broken foot of a Vessel Closure Device

During a paediatric splenic artery embolization, after the vascular sheath was removed from the right femoral artery, a vessel closure device ("device") was deployed in view of patient's bleeding risk. The first device failed to achieve a secure knot and a second device was used. Following ultrasound and close monitoring, patient was stable and discharged on post-operative Day 4.

During follow-up, patient was noted to have right lower limb claudication with weak pulses. Urgent CT angiogram, followed by emergency right groin exploration revealed right common femoral artery stenosis and a broken foot from the device. Patient had an uneventful post-operative recovery after arterial bypass surgery.

Root Cause:

Checking the device foot following arteriotomy closure was not a routine.

Why did it happen?

1. Arterial wall spasm is common in children and may cause gripping on such device.
2. Advancement of the device may result in arterial telescoping, causing vascular insufficiency.

Use of Device:

1. Integrity of device foot should be checked after removal from the body.
2. Careful patient selection for device use, especially in children.
3. Consider angiography or other appropriate imaging immediately before device application to accurately assess vessel size for children and if indicated.

Case 3: Retained broken catheter in patient's duodenum

A non-communicable old-aged home resident had frequent admissions in the past few months. He was on nasogastric tube feeding, and had episodes of agitation with struggling. During a recent admission, esophago-gastro-duodenoscopy (OGD) was performed to investigate the cause of anemia. A 5cm long "broken catheter" was discovered in the duoduenum. After investigation, the "broken catheter" was likely the distal end of suction catheter used in hospital. However, how and when it was retained could not be identified.

Learning points:

1. Check suction catheter's integrity before and after use
2. Enhance staff awareness in assessing patients' fitness for oro-pharyngeal (OP) suction
3. Agitated or struggling patients may have increased risk of biting the catheter during OP suction

Case 4: Retained one way valve of a Vessel Closure Device

During a Percutaneous Coronary Intervention (PCI) for a patient with myocardial infarction, a vessel closure device ("device") was used for femoral artery access site closure. The procedure was completed uneventfully. Patient was monitored overnight. The next morning, patient reported limb numbness and absent right lower limb pulse was noted. Urgent CT angiogram revealed occlusion of right femoral artery. Emergency femoral artery embolectomy was done. A ball-shaped component was retrieved from patient's right mid-common femoral artery, likely the cause of obstruction. Patient recovered well afterwards.

Why did it happen?

1. The detached component was part of the silicone valve, in the device sheath which had possibly been cut by the sharp edges of plastic funnel in the main device.
2. Further advancement of the main device through the sheath might have led to the dislodgement of the component into the patient's vessel.

Observations:

1. Staff who operated the device followed the standard procedure, under the supervision of senior and supported by product specialist.
2. Operator obtained proper training before operation.
3. Procedure was smooth, without difficulty encountered.
4. Once the main device is attached to the sheath, it is difficult to separate them to inspect for any broken/ missing component.

Good practices to share:

1. Operator can check the device of any deformity before using, including any fraying of the "teeth" of the "plastic funnel" of the device.
2. Advancing the vascular closure device through the sheath should be performed in a parallel direction, with no or minimal angulation or rotational manoeuvre.

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

Case 1: Wrong dose of warfarin prescribed to an out-patient

A patient attended medical follow-up for atrial fibrillation. The latest blood International Normalised Ratio (INR) was 3.3, slightly above the target therapeutic range of 2.0 – 3.0. The doctor intended to reduce Warfarin from '1.5 mg and 2 mg on alternate days' to '1.5 mg four times a week and 2 mg three times a week'. Doctor explained to patient that the new warfarin regime would have the lower dose of 1.5 mg increased from an average of 3.5 days to 4 days per week.

Having said that, the doctor transcribed the figures of '3.5' and '4' into the dosage of Warfarin, and mistakenly prescribed Warfarin 3.5 mg four times per week and 4 mg three times per week for 14 weeks.

The doctor arranged 2 blood-taking appointments: (i) 1 – 2 weeks after consultation and (ii) 1 week before next follow-up. The patient defaulted on both appointments. The hospital was subsequently notified of the patient's death 3 weeks after the clinic consultation.

Why did it happen?

1. The good practice of rechecking prescription print-out sheet was not performed
2. A complicated drug regimen was involved

What can we do to prevent?

1. Recheck the print-out of prescription sheet against the old regimen and the intended treatment plan
2. Enhance the counseling service for patients who are taking warfarin (e.g. Protocol driven Anticoagulation Clinic supported by trained pharmacists or nurses)

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

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

Inpatient

Case 1

A patient was diagnosed with recurrent breast cancer in 2019 and was given palliative target therapy, hormonal therapy and chemotherapy. The patient was being cared for by two hospitals. Throughout the 10 weeks of hospitalisation, patient was repeatedly assessed by clinical psychologist and medical social worker (MSW) and no suicidal ideation was detected. Patient was found unresponsive one day and subsequently succumbed. Staff discovered a knife stuck at patient's LEFT chest wall during care after death.

Case 2

A patient was admitted for suspected haematological malignancy. He had no suicidal ideation nor self-harm behaviour on admission. Upon subsequent diagnosis of acute myeloid leukaemia, he remained calm and showed acceptance of his disease. Patient was later transferred to another ward for chemotherapy. A staff noticed that he kept a knife in the bedside locker and advised him to change to a blunt or plastic knife for cutting fruits. A few days later, patient developed shortness of breath requiring oxygen therapy. He expressed concern about his deteriorating illness to his case doctor. He remained calm and stable when doctor gave him supportive counselling and reassurance. Doctor consulted clinical psychologist afterwards. In the same afternoon, patient's condition worsened, requiring 100% oxygen via non-rebreathing mask. Upon assessment, doctor found that his bed sheet was soaked with blood. Multiple stab wounds were noted over patient's anterior chest wall, with another actively bleeding laceration in lower anterior neck. A knife was found under his right flank. Resuscitation was activated but patient succumbed around one hour later.

Case 3

Patient in isolation room was found in cardiac arrest by nurse. During cardio-pulmonary resuscitation (CPR), pieces of tissue papers in ball shape were retrieved from the patient's throat. Despite active treatment, the patient succumbed afterwards. The case was reported to the Police and Coroner.

Learning point:

Psychosocial support, e.g. by chaplain and social worker, and more frequent compassionate visit in compliance with prevailing infection control policy may help alleviate patients' stress and facilitate ventilation of feeling, especially whom with declining health condition.

Case 4

A metastatic lung cancer patient was admitted to an oncology ward for dyspnoea. On a weekend, doctor broke the bad news to patient that he was not suitable for targeted therapy. The patient appeared to have good acceptance to the prognosis and opted for supportive care and Do-Not-Attempt Cardiopulmonary Resuscitation (DNACPR). In the next morning, the patient was found, with his head covered by quilt and wrapped by plastic bag. Despite resuscitation, the patient succumbed. The case was reported to the Police and Coroner.

Learning point:

Clinical documentation regarding details of breaking bad news, followed by additional verbal communication to nurses by doctor is a good practice.

Case 5

A patient with history of mental condition was admitted for accidental ingestion of a mouthful of bleach. He remained calm and cooperative during hospitalization, and denied any intention of self-harm. Oesophago-gastro-duodenoscopy was performed and showed chemical erosion of the upper GI tract. A nasogastric (NG) tube was inserted for decompression and medications were prescribed. Two days later in a late evening, a staff found patient removing his NG tube near the back-door of the ward. Returning with more support, staff could not locate the patient but noted that one of the sluice room windows was opened with a slit. Upon local search, the patient was found lying on the ground next to the hospital building. Despite resuscitation, the patient succumbed. The case was reported to the Police and Coroner.

Learning points:

1. Reinforce independent clinical assessment of patients with complete and detailed documentation
2. Enhance staff training on suicidal risk assessment and identification of early warning signs of possible suicidal acts
3. Enhance vigilance in detecting and reporting patients who might be of higher risk, for early referral to specialty care

Missing patient

Case 6

A patient with history of alcoholic dependence, attended Accident and Emergency Department (AED) for alcohol withdrawal symptoms. The patient was alert and emotionally calm upon admission. In view of patient's psychiatric history, emotional status was assessed every two hours. At night, patient expressed his wish to be discharged. The next morning, patient was found missing at 08:30. Local search was conducted but in vain. Ward staff and patient's father failed to contact the patient. Hospital security was notified. According to CCTV footage, patient had left the hospital earlier in the morning after leaving an incorrect ward information with a security guard and expressing his intention to leave the hospital premise to smoke. At 08:35, the missing patient was found lying on the ground in a roof-top garden at a nearby Light Rail Transit station. Despite resuscitation, the patient was certified dead in AED.

Conclusion:

1. Apart from having alcohol withdrawal symptoms, patient was all along emotionally calm and stable during hospitalisation.
2. After the incident, the Hospital Security team will report all patients in hospital pajamas leaving hospital premise to duty Hospital Foreman immediately for necessary follow-up actions.

Patient on home leave

Case 7

A patient with history of lung cancer and inoperable pancreatic cancer was admitted to surgical ward due to duodenal stent obstruction. Suicidal risk assessment detected no suicidal ideation. However, the clinical team noticed that the patient had low mood and referred the patient to clinical psychologist. Supportive psychotherapy was provided. Patient was also referred to multi-disciplinary team including medical social service, pain team, hospice care and dietitian for holistic care. Patient requested for home leave due to personal affairs and the leave was granted by the doctor. Patient left the ward accompanied by her son and was found missing about an hour later. Patient was found to have jumped from height afterwards.

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

Case 1: Maternal Death after Spontaneous Vaginal Delivery

A lady was admitted for induction of labour at the 40th week of gestation and a baby was delivered. Uncontrolled primary postpartum haemorrhage occurred and emergency operation was planned. Patient The overall management offered to the patient was timely and in line with standards of care

The overall management offered to the patient was timely and in line with standards of care developed cardiac arrest before operation and was certified dead despite active resuscitation.

Conclusion:

The overall management offered to the patient was timely and in line with standards of care

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

Case 1: Wrong laser mode used in macular laser treatment

A patient with history of diabetes mellitus and hypertension was followed up at eye clinic for diabetic retinopathy and maculopathy. A series of macular laser treatment was arranged for the patient. In the second macular laser treatment, the doctor planned to perform subthreshold micropulse grid laser to patient's RIGHT eye.

However, the micropulse function was not activated prior to treatment and 10 shots of conventional grid laser were given instead. The error was spotted after 2 seconds, when whitish laser marks were seen at the macula. The patient's visual acuity of RIGHT eye remained unchanged though increased macular edema was noted. Sub-tenon injection of steroid and oral non-steroidal anti-inflammatory drugs (NSAID) were given.

Why did it happen?

1. Suboptimal ergonomics in the setting of the laser room increased the risk of concentration lapse
2. No cross-checking system of the procedure was in place

What can we do to prevent?

1. Explore means to improve the ergonomics in the laser room
2. Review and refine laser preset program
3. Introduce safety redundancy to reduce single point of failure

Case 2: Severe hyperkalaemia

A patient with history of diffuse large B cell lymphoma was admitted for unresolved pneumonia and transferred to Intensive Care Unit due to acute respiratory failure. Upon stabilisation, patient was discharged to general ward. Blood was taken 4.5 hours after the doctor ordered a renal function test (RFT). Blockage of nasogastric (NG) tube was noted but insertion of a new one failed. Scheduled feeding was skipped.

Nurse received the alert of serum potassium (K) 7.5 mmol/L at night and informed on-call doctor. Patient was promptly given treatment including dextrose-insulin (DI) infusion, calcium gluconate

and resonium C.

Second result came back with another alert of K 6.7 mmol/L but repeat DI infusion was administered only 2 hours after the alert and calcium gluconate around 6.5 hours, due to blockage of venous access and failure to reinsert a new one.

Third round of blood tests was ordered in the next morning but blood was taken about 8.5 hours later due to difficulty in blood sampling. NG tube reinsertion and setting a new peripheral venous access were performed successfully in the afternoon.

Patient was later found unarousable and pulseless. Patient succumbed despite resuscitation and the case was referred to Coroner. An alert of K 8.4 mmol/L was received during resuscitation.

Why did it happen?

1. Alert was not escalated when difficulties in management were encountered
2. Service delivery was delayed in the management of hyperkalaemia, feeding, intravenous fluid administration and blood collection
3. Inadequate supervision and communication between different disciplines

What can we do to prevent?

1. Provide training on escalation mechanism to seek senior support among doctors and nurses
2. Enhance clinical supervision on implementation of doctors' orders and follow up on patient's response to treatment
3. Reinforce teaching and supervision to all doctors and nurses on clinical care of hyperkalaemia
4. Enhance communication among staff, by strengthening clinical handover among doctors, exploring possibility of joint case doctor and case nurse ward round, especially on critical cases

Case 3: Misplaced patient's amputated index finger

A patient was admitted for LEFT index finger amputation and multiple lacerations over LEFT hand, after being injured by an electric saw. An emergency operation was arranged for the patient. The amputated LEFT index finger was placed in a designated plastic box with ice in water and brought to the operating theatre (OT).

The finger was taken out from the plastic box by a surgeon for bench work under the microscope. After completion of the bench work, the surgeon wrapped the amputated finger with a sterile glove and replaced it in the plastic box on the consumable trolley with declaration made.

The amputated finger was later found missing and was finally found in a domestic waste bag designated in the OT scrub room after a search of 3 hours.

Why did it happen?

1. The amputated finger was wrapped in a non-transparent glove with no standardised handling practice
2. Ineffective communication about the amputated finger in multiple handover during the operation
3. Lack of awareness to confine accountable item within OT

What can we do to prevent?

1. Use transparent bag for storage of amputated limb inside OT
2. Standardise perioperative documentation and checking system of amputated limb
3. Strengthen clinical handover system to ensure correct handover of critical information for continuity of patient care
4. Reinforce correct handling of accountable items within OT

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