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

## October 2022 – September 2023

## HOSPITAL AUTHORITY
## HONG KONG

## January 2024

醫院管理局
HOSPITAL AUTHORITY

# Acknowledgments

With the publication of the 16th Annual Report on Sentinel and Serious Untoward Events, the Hospital Authority continues to underscore its dedication to upholding clinical excellence and patient safety. The Sentinel Event Policy ("the Policy"), initiated on 1 October 2007, has consistently served as a cornerstone for improving the reporting, management, and monitoring of severe medical incidents.

Since the inaugural Annual report in January 2009, marking the beginning of a tradition of annual publications. Subsequently the Policy has been updated to incorporate Serious Untoward Events (SUE) in 2010 and include a supplementary note on definitions and qualification criteria of SE in 2015. The ethos of the Policy, however, has remained steadfast.

Over the span of sixteen years, our journey has been marked by relentless efforts to improve the quality and safety of the healthcare services we provide. The Advance Incident Reporting System (AIRS) has been pivotal in capturing incident reports, a critical first step towards improvement. Beyond the valuable data collected through AIRS, dedicated teams have conducted thorough root cause analyses to understand the underlying factors contributing to these events. From these analyses, we have been able to devise robust patient safety recommendations, leading to educational, system, and cultural changes within our organisation.

We wish to express our heartfelt gratitude to colleagues who have participated in incident reporting and investigation; to those who have gone above and beyond to avert or avoid patient safety incidents; and most importantly, to all who have remained vigilant and prioritised patient safety despite formidable stress and workload. You have enabled us to remain true to our Mission of "Helping People Stay Healthy"! 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 19 SE and 78 SUE, reported between October 2022 and September 2023.

## Sentinel Events

The 19 reported SE represented an incident rate of 0.9 per 1 000 000 episodes of patient attendances/discharges and deaths. The SE incident rate reached a ten-year low. Sixteen of the 19 SE occurred in acute general hospitals with 24-hour Accident and Emergency services (84%). Two occurred in acute hospitals of special nature (11%) and one occurred in hospital with a mix of acute and non-acute services and psychiatric service (5%).

The top two categories of SE were *retained instruments or other material after surgery/interventional procedure* (14 cases) and *death of an inpatient from suicide (including home leave)* (four cases).

Of the 14 cases of *retained instruments or other material after surgery/interventional procedure*, seven were related to the counting of instruments/material and the other seven involved broken instruments/material.

The four reported cases of *inpatient suicide* represented a suicide rate of 0.21 per 100,000 inpatient admissions. The overall assessment and management as noted by the investigation panel were considered appropriate.

The remaining one reported SE were *Surgery/interventional procedure involving the wrong patient or body part* (one case).

Among the 19 SE, four cases (four *inpatient suicide*) resulted in mortality.

Of the remaining SE, 12 had minor/insignificant consequence and three 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 78 SUE that could have resulted in death or permanent harm, 70 were *medication error* and eight were *patient misidentification*.

The three most common types of *medication error cases* were those involving *known drug allergy* (17 cases), *dangerous drug(s)* (eight cases) and *anticoagulant* (eight cases). Of the *known drug allergy* cases, eight involved penicillin, four involved non-steroidal anti-inflammatory drugs (NSAID), the remaining involved amlodipine (two cases), mydrin-P (one case), lignocaine (one case) and chloramphenicol (one case).

Of the 78 SUE, 24 had moderate consequence and 54 had minor/insignificant consequence.

# 2. Introduction

The Sentinel Event (SE) Policy was implemented in 2007, while Serious Untoward Event (SUE) was incorporated 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 to be investigated using the 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 management and Hospital Authority Head Office (HAHO) to improve patient safety.

This 16th annual report provides a summary and analysis of the SE and SUE reported via the Advance Incident Reporting System (AIRS) between October 2022 and September 2023 (Q4 2022 – Q3 2023). 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 on the scope and definition of SE and SUE, the following abbreviated captions for SE and SUE categories, in square brackets, will be used in this report:

## Sentinel Events (Nine Categories)

| | |
|---|---|
| Category 1 | Surgery/interventional procedure involving the wrong patient or body part<br>[Wrong patient/part] |
| Category 2 | Retained instruments or other material after surgery/interventional procedure<br>[Retained instruments/material] |
| Category 3 | ABO incompatibility blood transfusion<br>[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 (Two 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 (2013-23)

### 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 2021-22 and 2022-23 were comparable (Figure 1). Total number of SE in the past 10 years is also appended in Figure 2 for reference.

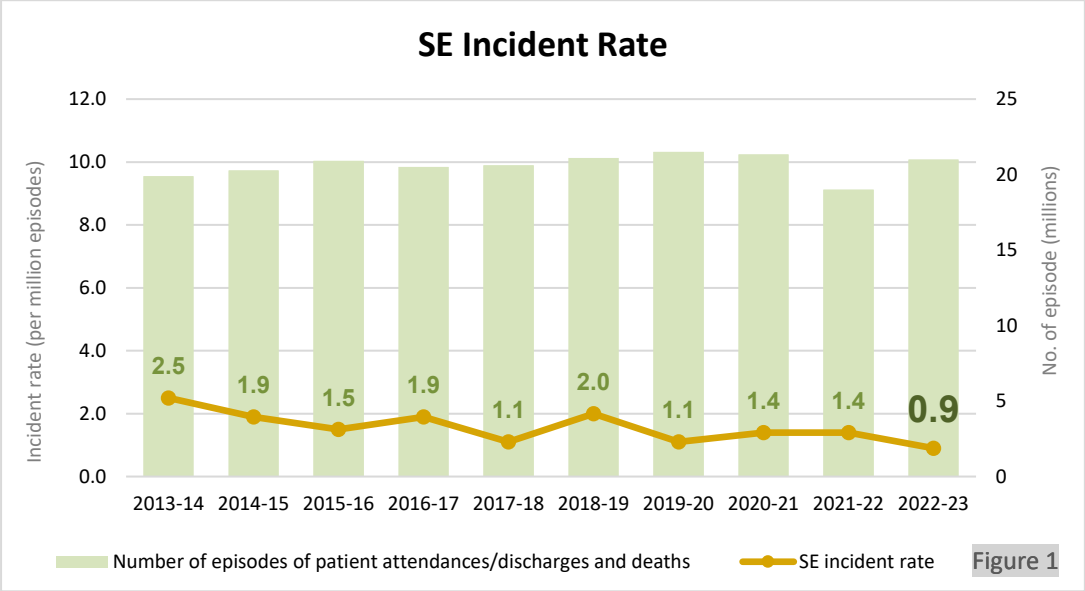

Figure 1

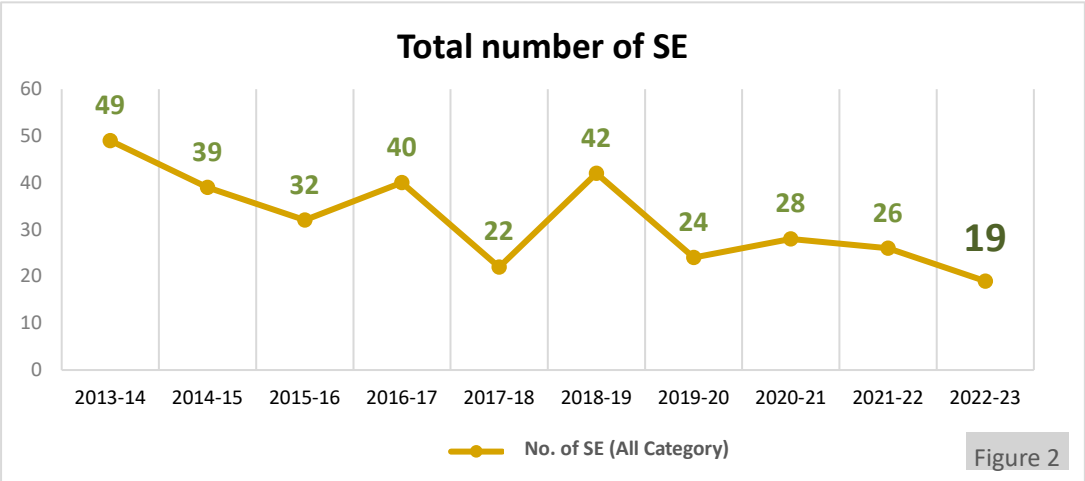

Figure 2

* Statistics from October to September of respective year

### 3.1.2 SE Category

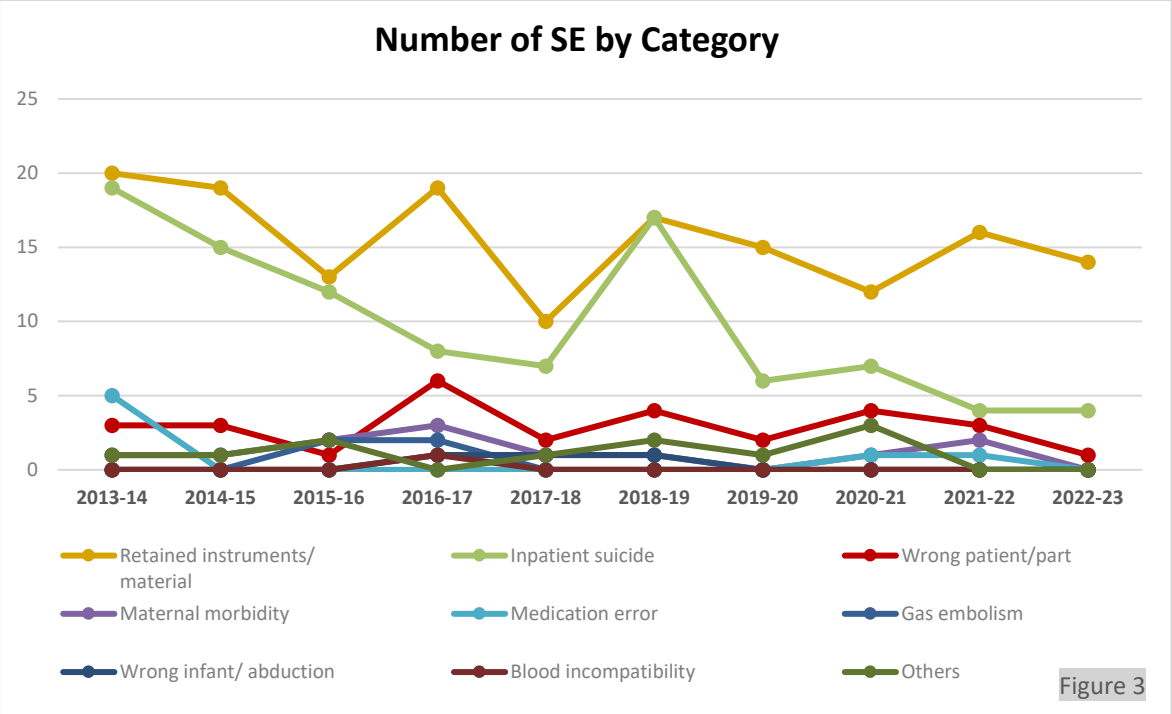


Figure 3

**Number of SE by Category**

| SE Category \ Period | 2013 - 2014 | 2014 - 2015 | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 | 2019 - 2020 | 2020 - 2021 | 2021 - 2022 | 2022 - 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Retained instruments/material** | 20 | 19 | 13 | 19 | 10 | 17 | 15 | 12 | 16 | **14** |
| **Inpatient suicide** | 19 | 15 | 12 | 8 | 7 | 17 | 6 | 7 | 4 | **4** |
| **Wrong patient/part** | 3 | 3 | 1 | 6 | 2 | 4 | 2 | 4 | 3 | **1** |
| **Maternal morbidity** | 1 | 1 | 2 | 3 | 1 | 1 | 0 | 1 | 2 | **0** |
| **Medication error** | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | **0** |
| **Gas embolism** | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | **0** |
| **Wrong infant/abduction** | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | **0** |
| **Blood incompatibility** | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0** |
| **Others** | 1 | 1 | 2 | 0 | 1 | 2 | 1 | 3 | 0 | **0** |
| **Total** | **49** | **39** | **32** | **40** | **22** | **42** | **24** | **28** | **26** | **19** |

* Statistics from October to September of respective year

Table 1

*Retained instruments/material* and *inpatient suicide (including home leave)* have remained the top two most frequently reported SE (Figure 3 and Table 1).

### 3.1.3 SE Outcome

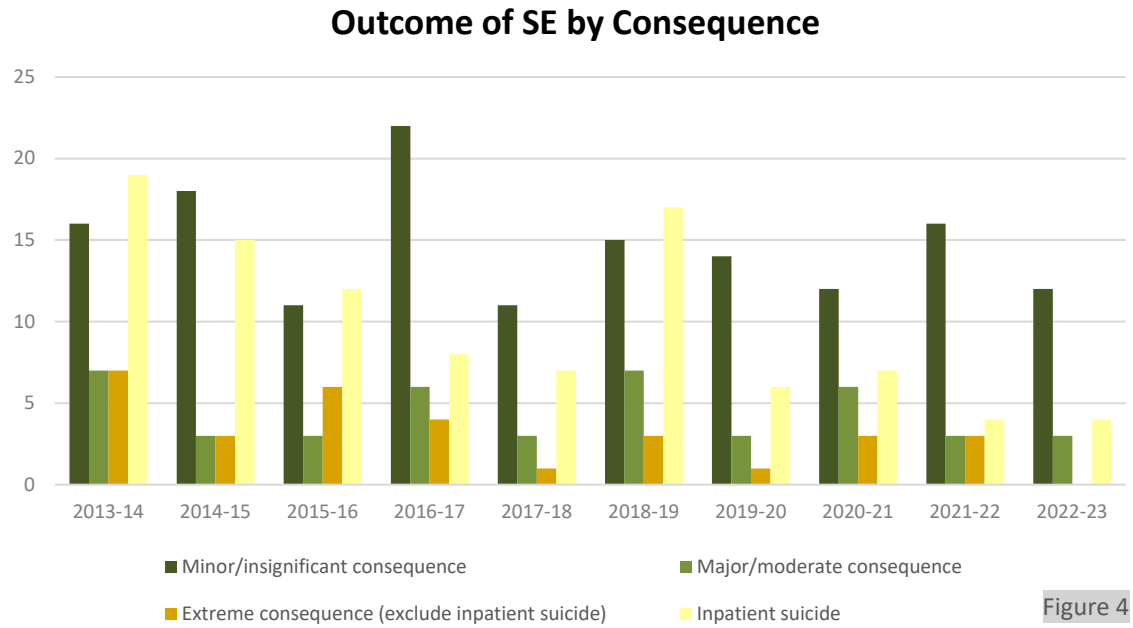


Figure 4

**Number of SE by Consequence Category**

| Period / SE Category | 2013 - 2014 | 2014 - 2015 | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 | 2019 - 2020 | 2020 - 2021 | 2021 - 2022 | 2022 - 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Minor/insignificant consequence** | 16 | 18 | 11 | 22 | 11 | 15 | 14 | 12 | 16 | **12** |
| **Major/moderate consequence** | 7 | 3 | 3 | 6 | 3 | 7 | 3 | 6 | 3 | **3** |
| **Extreme consequence (exclude inpatient suicide)** | 7 | 3 | 6 | 4 | 1 | 3 | 1 | 3 | 3 | **0** |
| **Inpatient suicide** | 19 | 15 | 12 | 8 | 7 | 17 | 6 | 7 | 4 | **4** |
| **Total** | **49** | **39** | **32** | **40** | **22** | **42** | **24** | **28** | **26** | **19** |

* Statistics from October to September of respective year

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.

## 3.2 SE Report (Q4 2022 to Q3 2023)

### 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 15 SE unrelated to inpatient suicide, 15 cases (100%) had insignificant consequences, or major/moderate consequences (Figure 8).

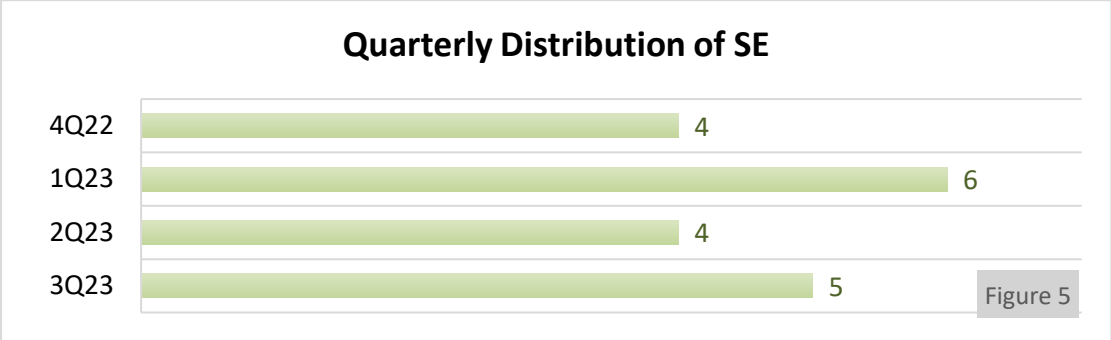


Figure 5

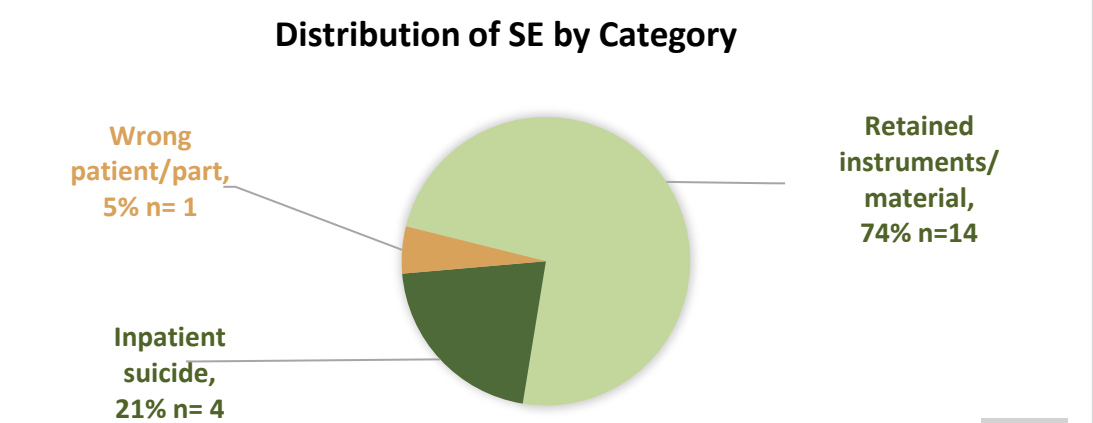


Figure 6

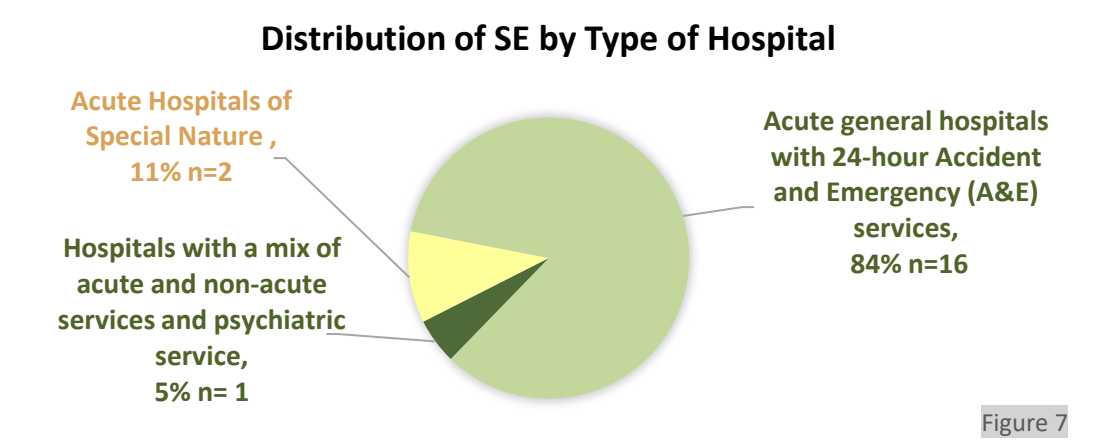


Figure 7

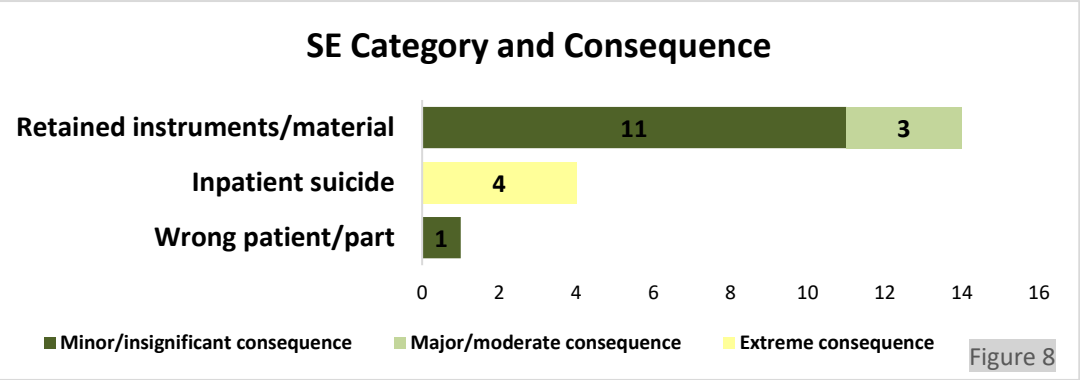


Figure 8

### 3.2.2 Category: Retained Instruments/Material

Among the 14 "retained instruments or other material after surgery/interventional procedure" cases, eight were related to the counting process and six involved broken instruments/material. Seven of the 14 cases occurred in the operating theatres or interventional suites (Figure 10). The type of instrument/material involved is summarised in Table 3.

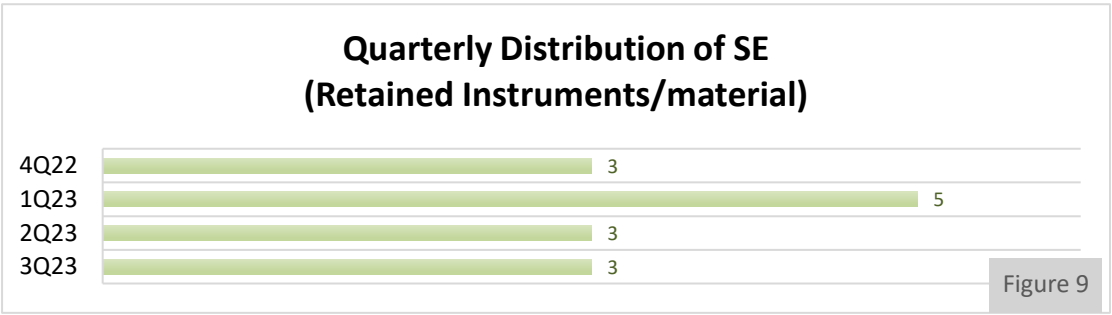


Figure 9

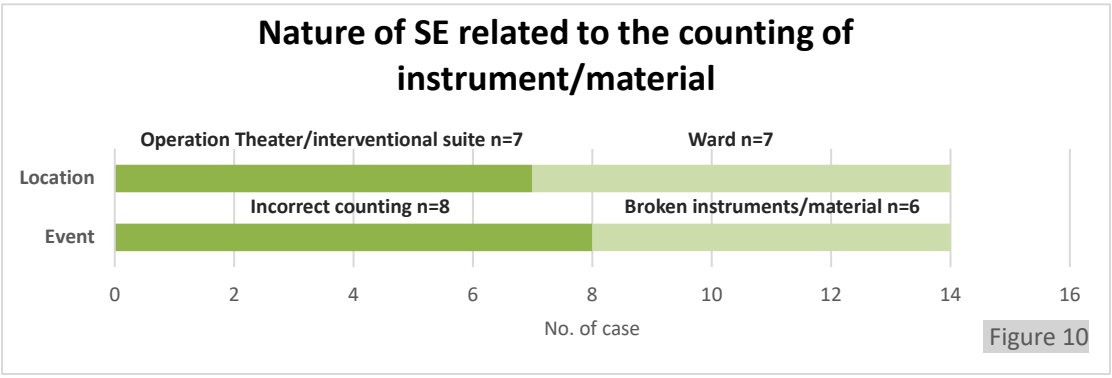


Figure 10

| Type of Instrument/Material | Number of cases |
|---|---|
| **Operating Instrument/Material Fragment** | **5** |
| **Gauze Material** | **4** |
| **Guide wire/Femoral Sheath** | **2** |
| **Rubber/Suction Tube** | **2** |
| **Nasopharyngeal tube** | **1** |
| **Total** | **14** |

Table 3

### 3.2.3 Category: Inpatient Suicide

There were four cases of in-patient suicide (Figure 11 and 12), including one patient found missing and one on “home leave”. The inpatient suicide incident rate for the reporting period was 0.21 per 100 000 inpatient admissions.

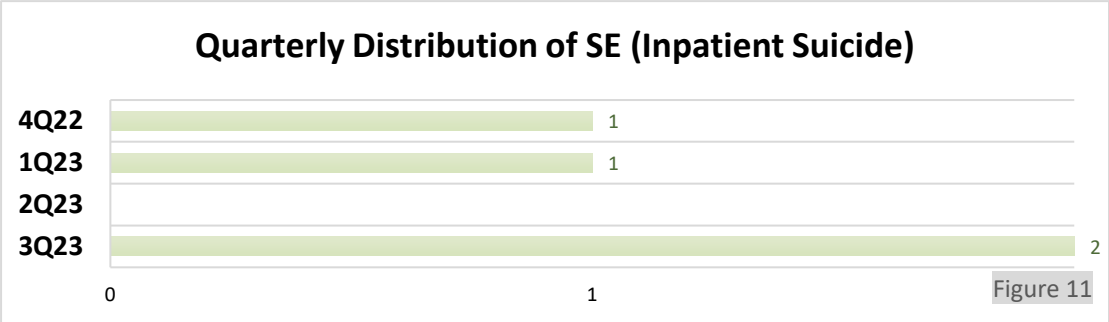


Figure 11

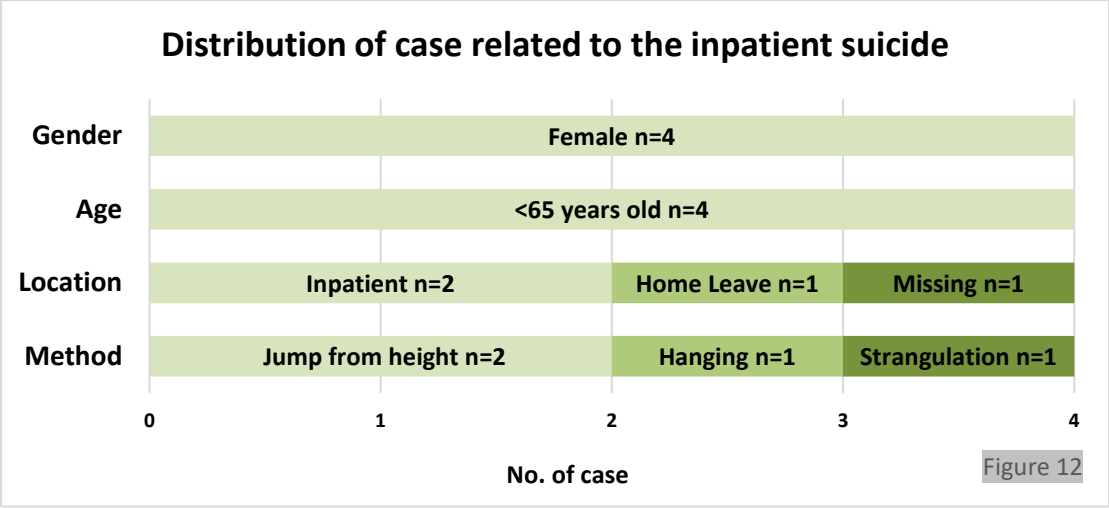


Figure 12

### 3.2.4 Category: Wrong Patient/Body Part

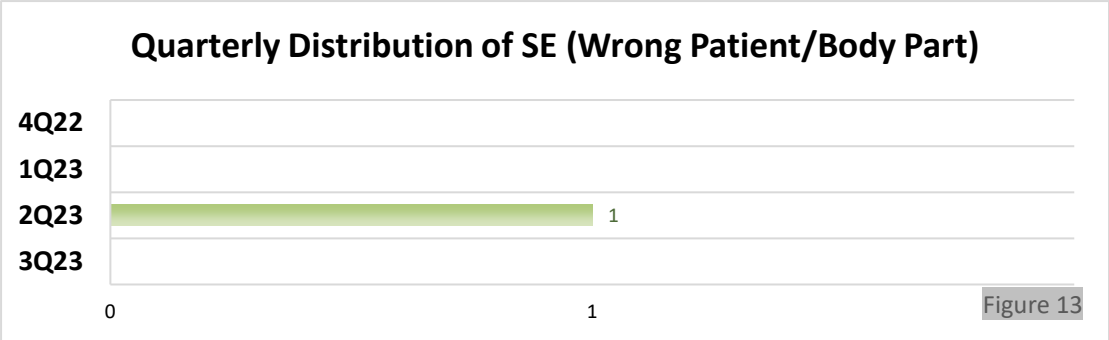


Figure 13

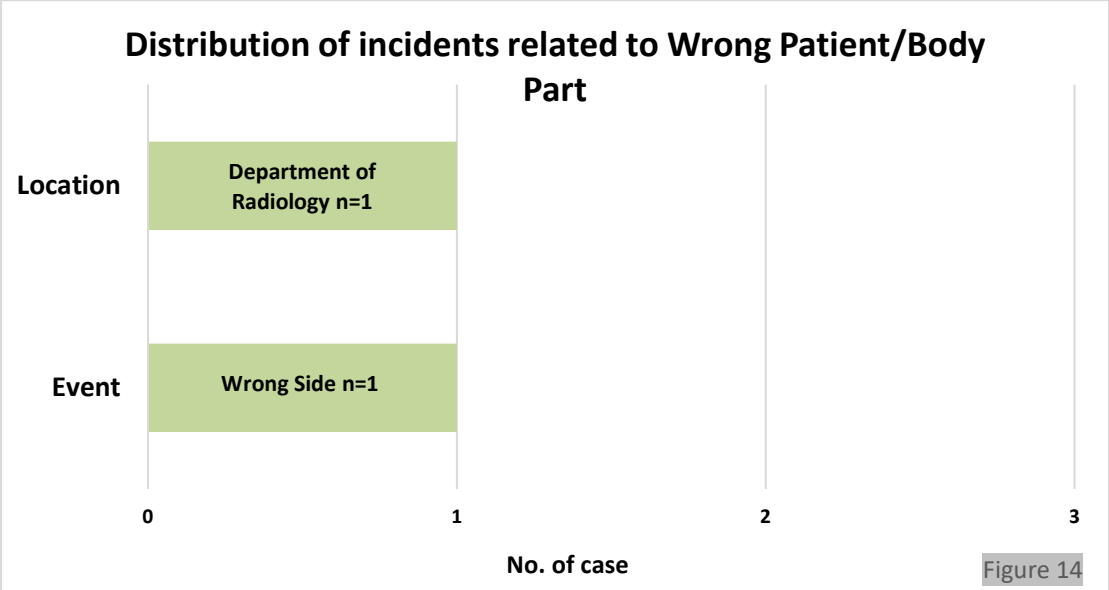


Figure 14

## 3.3 International Sentinel Event Reporting

In the United States (US), SE voluntarily reported to the Joint Commission on Accreditation of Healthcare Organisations (JCAHO) were 1197 in 2021 and 1441 in 2022 respectively.[1] The SE were reported from a larger patient population, and also encompassed a broader definition including self-harm, delay in treatment, fall, pressure injuries, fire, assault, and clinical alarm response, etc. Of these SE, 26% resulted in death/permanent harm of the patients.

In Victoria (VIC), Australia, there were 240 SE notifications from July 2021 to June 2022.[2] In Western Australia (WA), SE are defined as adverse patient safety events that are wholly preventable and result in serious harm or death. The number of SE reported by Department of Health of WA was 19 SE in 2021-22 and 23 in 2022-23.[3] The SE incident rates in VIC and WA were four per 100 000 patients in 2016-17 and 34.9 per 1 000 000 inpatient episodes of inpatient care respectively.[4,5]

In HK, the SE incident rate per 1 000 000 episodes of patient attendances/discharges in HA was 1.4 in 2020-21, 1.4 in 2021-22 and 0.9 in 2022-23 respectively. Of these SE, 21% resulted in significant consequence/death (four suicides). The HA inpatient suicide incident rate in 2022-23 was 0.21 per 100 000 inpatient admissions; it included incidents from all inpatient (general and psychiatric) clinical settings.

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[1] The US Joint Commission, Summary Data of Sentinel Events Reviewed by The Joint Commission: as of March 16, 2023.

[2] Sentinel events annual report 2021-2022 (6 August 2023). Safer Care Victoria, State Government of Victoria, Australia.

[3] Sentinel events annual report 2021-2022 (6 August 2023). Safer Care Victoria, State Government of Victoria, 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 658 859 episodes of care in 2022-23 (Your Safety in our Hands in Hospital - An Integrated Approach to Patient Safety Surveillance in WA Hospitals, Health Services and the Community: 2023).

The top three commonly reported SE in HA, WA Department of Health and the US Joint Commission are summarised in Table 4 for reference. SE categories unique to the US are underlined.

**Commonly Reported SE in 2022-23**

| | HKSAR, China (HA) | WA, Australia (Department of Health) | USA (Joint Commission) |
|---|---|---|---|
| 1. | Retained instrument/material (14) | Medication error resulting in serious harm or death (12) | Fall (611) |
| 2. | Inpatient Suicide (including home leave) (4) | Surgery or other invasive procedure performed on the wrong site resulting in serious harm or death (6) | Delay in treatment (89) |
| 3. | Wrong patient/body part (1) | Unintended retention of a foreign object in a patient after surgery or other invasive procedure resulting in serious harm or death (5) | Unintended Retained Foreign Object (88) |

Table 4

# 4. Serious Untoward Events (SUE) Statistics

## 4.1 SUE Trend (2013-23)

### 4.1.1 SUE Category

A total of 78 SUE were reported in Q4 2022 – Q3 2023. The yearly distribution of SUE by category since 2013 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.

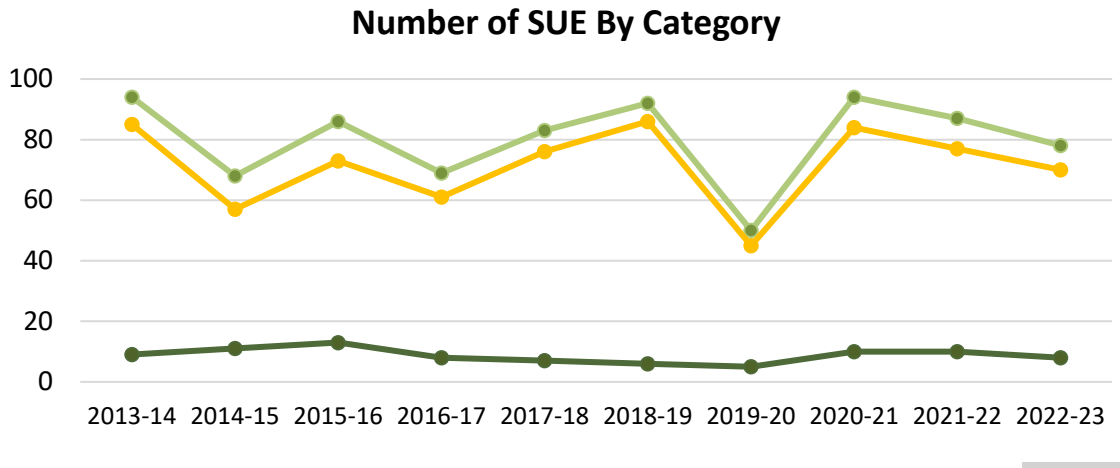



Figure 15

| Period / SUE Category | 2013 - 2014 | 2014 - 2015 | 2015 - 2016 | 2016 - 2017 | 2017 - 2018 | 2018 - 2019 | 2019 - 2020 | 2020 - 2021 | 2021 - 2022 | 2022 - 2023 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Medication error** | 85 | 57 | 73 | 61 | 76 | 86 | 45 | 84 | 77 | **70** |
| **Patient misidentification** | 9 | 11 | 13 | 8 | 7 | 6 | 5 | 10 | 10 | **8** |
| **Total** | **94** | **68** | **86** | **69** | **83** | **92** | **50** | **94** | **87** | **78** |

* Statistics from October to September of respective year

Table 5

### 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.

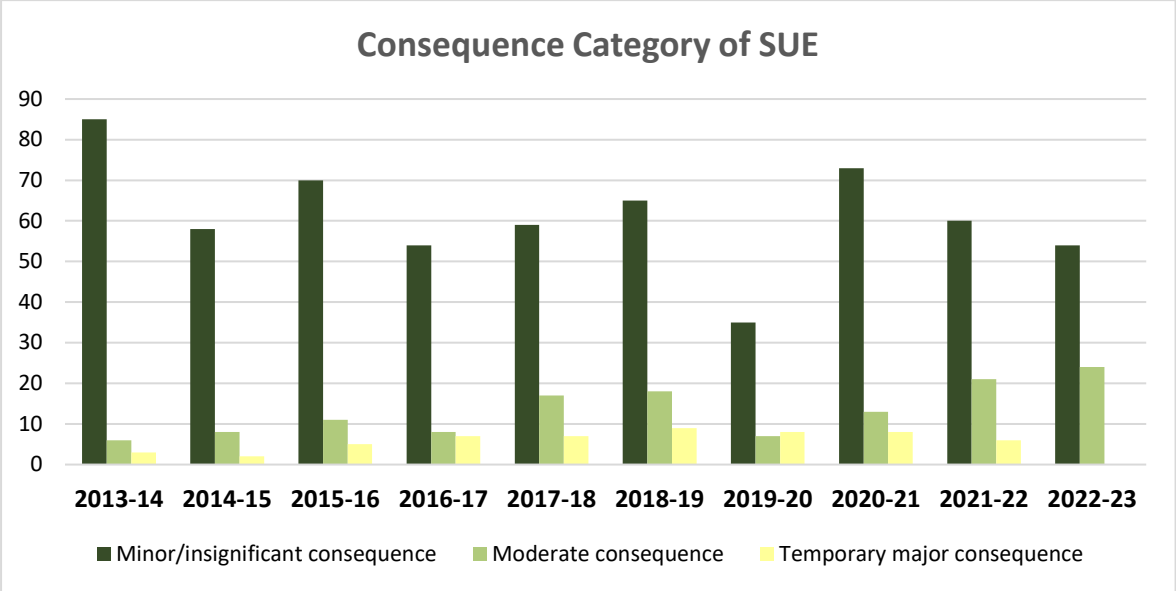



Figure 16

### 4.1.3 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, inotropes, antiplatelet and chemotherapy etc. A list of high alert medications is listed in Annex III.

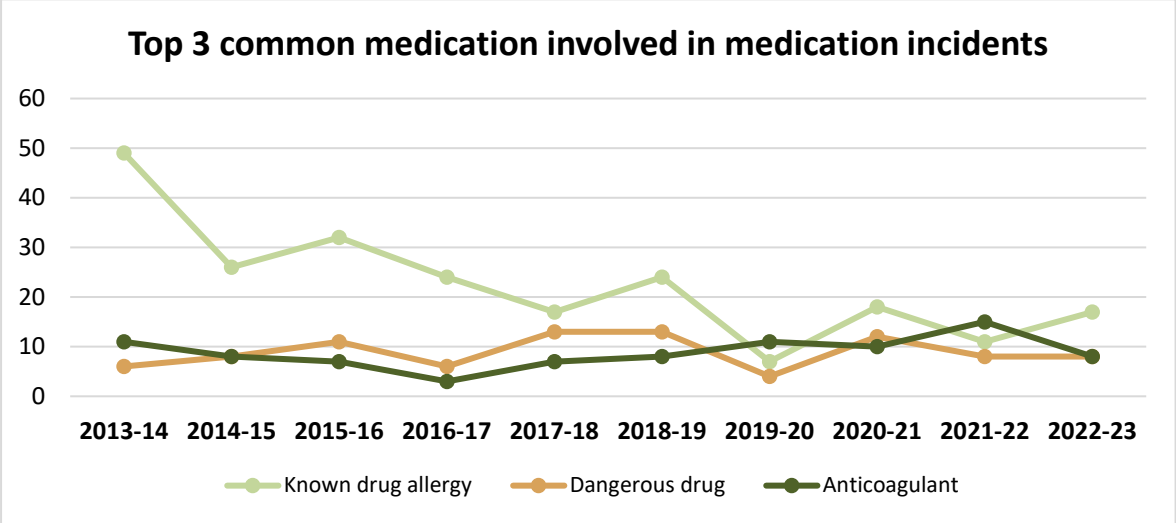



Figure 17

* Statistics from October to September of respective year

## 4.2 SUE Report (Q4 2022 to Q3 2023)

### 4.2.1 Overview

The quarterly distribution of SUE reported is illustrated in Figure 18. Of the 78 SUE cases, 54 had minor/insignificant consequences and 24 had moderate consequences (Figure 19).

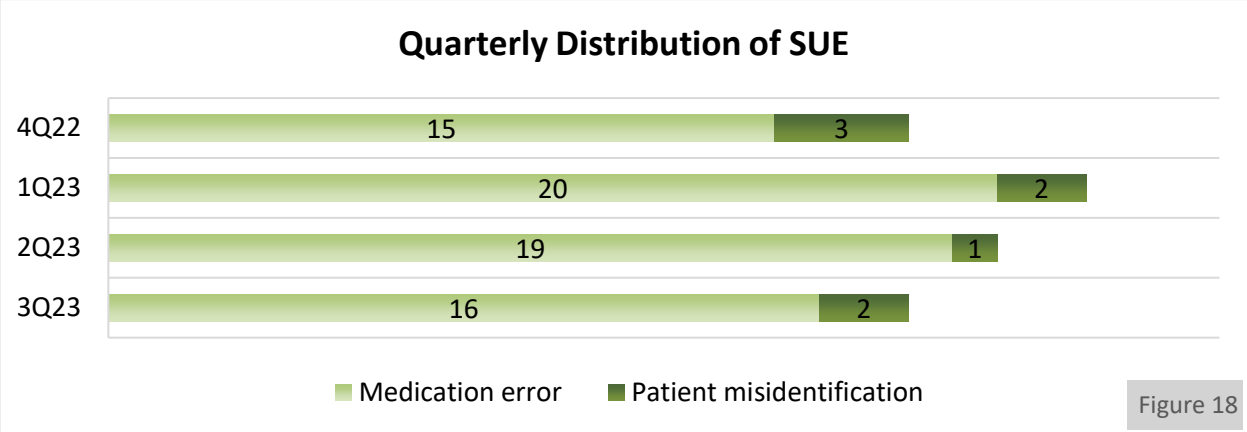



Figure 18

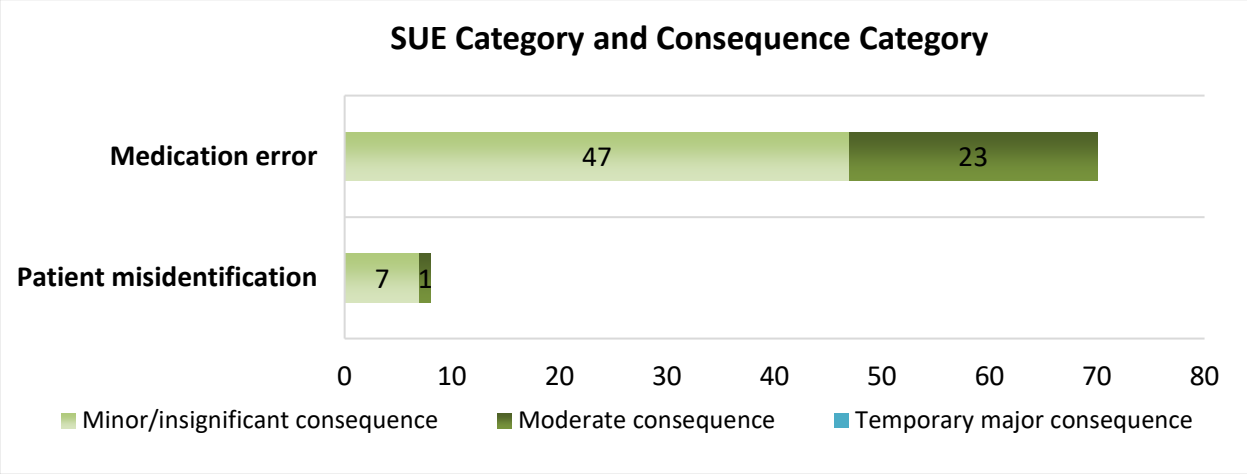



Figure 19

### 4.2.2 Category: Medication Error

The three most common drug categories involved in medication error were *known drug allergy* (17 cases), *dangerous drug* (eight cases) and anticoagulant (seven cases) (Figure 20). Drugs such as thyroxine and total parenteral nutrition are grouped under other medications.

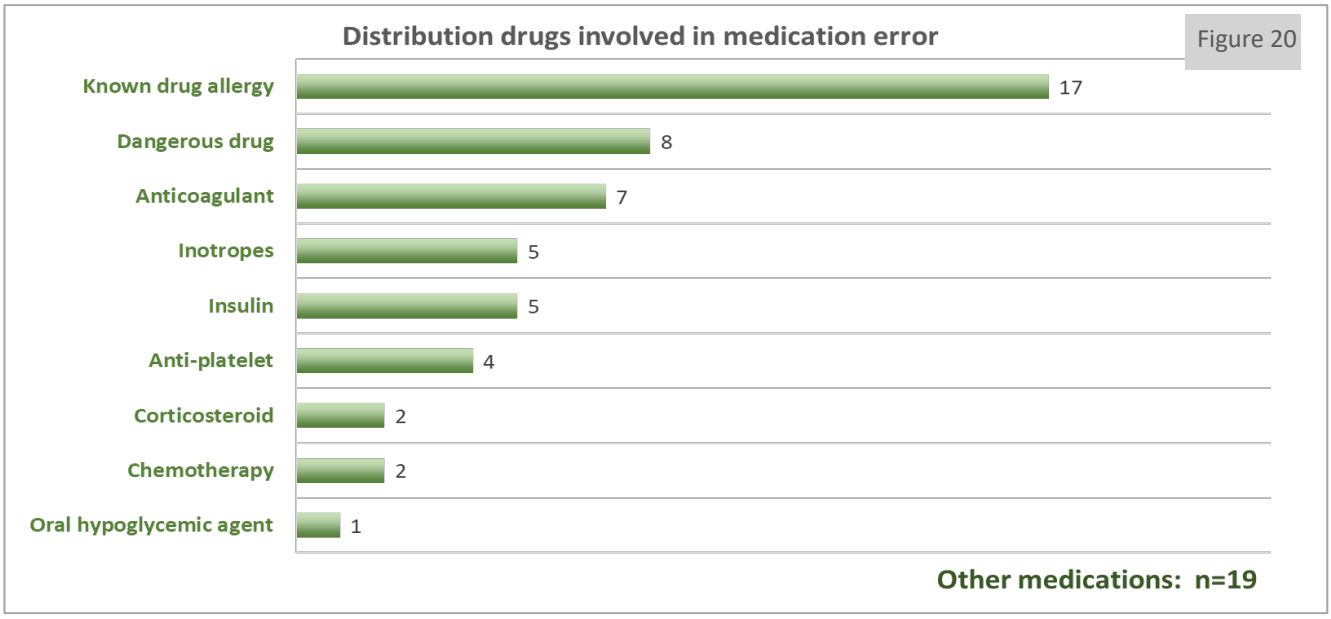


Figure 20

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

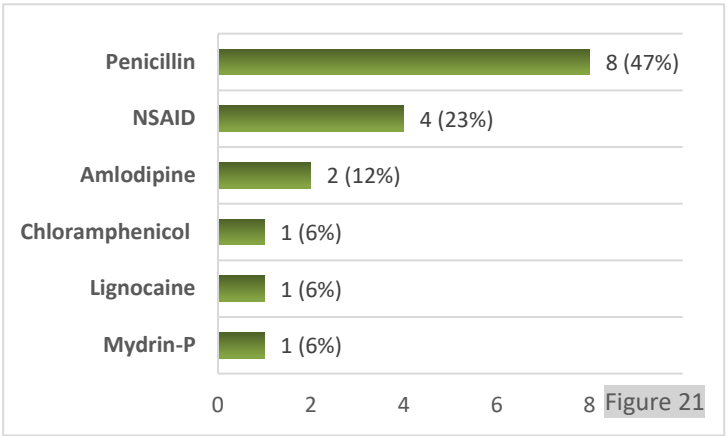


Figure 21

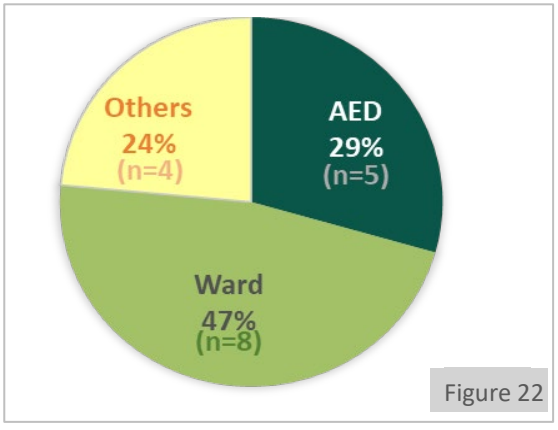


Figure 22

Of the 17 *medication errors* related to *known drug allergy*, the most commonly involved drugs was Penicillin (eight cases) (Figure 21). Of all *known drug allergy* cases, the two most common locations of occurrence were ward (eight cases) and Accident & Emergency Department (AED) (five cases). The remaining four cases occurred in operating theatre, eye clinic, endoscopy unit and out-patient clinic. (Figure 22). Of the 17 known drug allergy cases, all cases had minor/insignificant consequences.

### 4.2.3 Category: Patient Misidentification

A total of eight SUE due to *patient misidentification* were reported. The top two scenarios included five cases of patient misidentification during drug administration and two cases due to the use of incorrect patient labels (Table 6).

**Quarterly distribution of patient misidentification by scenarios**

| *Patient misidentification scenarios* | 4Q22 | 1Q23 | 2Q23 | 3Q23 |
|---|---|---|---|---|
| *During drug administration* | 2 | 2 | 1 | 0 |
| *Wrong patient's labels were used* | 0 | 0 | 0 | 2 |
| *Referring to a wrong specimen number* | 1 | 0 | 0 | 0 |
| *Total* | **3** | **2** | **1** | **2** |

Table 6

Of the eight *patient misidentification* cases, seven had minor/insignificant consequences and one had moderate consequence (Table 7).

**Consequences of patient misidentification**

| *Patient misidentification scenarios* | Minor/ Insignificant | Moderate | Temporary Major |
|---|---|---|---|
| *During drug administration* | 4 | 1 | 0 |
| *Wrong patient's labels were used* | 2 | 0 | 0 |
| *Referring to a wrong specimen number* | 1 | 0 | 0 |
| *Total* | **7** | **1** | **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 Q4 2022 – Q3 2023 are analysed. 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.

**Category 1 - Wrong patient/part (total one case)**

The root cause of the case involving incorrect pleural drain insertion on the wrong side under ultrasound guidance was identified as a loss of information regarding the laterality of procedure, which consequently led to wrong side of procedure being performed. In addition, a reliance on real-time ultrasound imaging resulted in the non-review of relevant radiological images. While reinforcing routine practices such as proper sign-in and various clinical cross-checks remains essential, equal importance should be placed on optimizing document systems, including e-consent and checklists, to ensure all vital details are accurately captured. Encouraging a culture where both staff and patients are well-informed and feel confident expressing any uncertainties can contribute significantly to preventing similar incidents in the future.

**Category 2 - Retained instruments/material (total 14 cases)**

Apart from the commonly implicated items such as operating instrument/material fragment (five cases), gauze material (four cases) and rubber/suction tube (two cases), for which risk mitigation measures have been on-going, two types of retained instruments/material are particularly highlighted this year. The first type of retained material highlighted in this report is guidewire/femoral sheath for temporary pacemaker (two cases). An e-Course on "Safety Precautions for Central Venous Catheter (CVC) Insertion" was introduced on the eLearning platform to reinforce safety on CVC insertion. The second type is nasopharyngeal airway (one case), inadvertently left in the patients' post-nasal space. This appeared to be an uncommon type of retained material. On this aspect, we have collaborated with Business Support Services Department (BSSD) to review the concerned nasopharyngeal airway and an alternative design of the concerned nasopharyngeal airway with more rigid material was identified and is in place to prevent displacement.

**Category 6 - Inpatient suicide (total four cases)**

During the reporting period, two cases involved jumping from height, one case involved strangulation and one case involved hanging from a long cable in an isolation

room. The risks identified in these cases provided valuable lessons that could enable the development and implementation of more comprehensive control measures in the future.

Through the analysis of the SE reported in Q4 2022 – Q3 2023, we have identified that new challenges continue to emerge in our healthcare environments. It is crucial that we not only bolster our existing risk mitigation measures to prevent incidents, but also remain vigilant in recognizing and addressing the new challenges. Through this proactive approach, combining our established safety practices with innovative solutions, we strive to minimise risks and ensure the safest possible environment for our patients.

# 6. Analysis of Serious Untoward Events

During the reporting period of Q4 2022 – Q3 2023, a total of 78 Serious Untoward Events (SUE) were reported. Medication incidents (Category 1) comprised the majority, accounting for 70 instances (90%) of the reported SUE cases. The remaining 10% involved patient misidentification incidents (Category 2). The specific subtypes of SUE are discussed in the subsequent sections, with essential recommendations and safety messages provided.

**Category 1 - Medication incidents (70 out of 78 SUE)**

The number of medication items dispensed in HA per year was 55.7 million in the first nine months of 2023, compared to 66.5 million for the entire year of 2022. The rate of reported medication incidents (including those classified as SUE) per one million medication items dispensed was 11.8 for the first nine months of 2023, slightly lower than the 11.9 reported for 2022. Notably, between 2011 and 2018, this rate consistently exceeded 17. The decline in the rate of medication incidents coincided with the gradual introduction of In-patient Medication Order Entry (IPMOE) system in HA since 2013.

Despite this improvement, medication incidents continued to be the leading category of SUE, comprising the majority of reported cases. Of the 70 medication incidents, errors related to known drug allergy contributed 22% of the total SUE, followed by infusion errors (18%) and medication discontinuation (14%).

**Medication error: *Known drug allergy* (total 17 cases)**

Medication errors related to known drug allergy were the most common type of medication incident in hospital settings. This type of error poses substantial risks and requires heightened attention from healthcare professionals during the prescribing, dispensing, and administration of medications. It is crucial to consistently verify and update patient's allergy status during these processes. Maintaining vigilance in checking for the allergy history can effectively prevent medication errors and mitigate potential harm.

<u>Recommendations:</u>

i. Reinforce the practice of checking patient's allergy information through the "Check ID" function for patient registered with pseudo-ID.

ii. Strengthen the reconfirmation of patient's allergy information during drug prescription, order vetting, and medication administration, particularly for patients with pseudo-identity.

iii. Emphasise the importance of checking visual signatures and red wristband clasp when administering medications.

iv. Minimise the practice of keeping stock medications in the ward or clinic whenever possible.

v. Reinforce the proper practice of not bypassing the pharmacy before medication administration, unless in emergency situations.

vi. Enhance staff awareness about the use of the paper checklist when ward stock antibiotics are prescribed through paper forms or verbal orders during exceptional circumstances, such as IPMOE downtime.

vii. Enhance staff awareness regarding the known allergy drugs entered as free text, which are highlighted in red at the CMS alert.

viii. Promote the use of the "Drugs Ingredient Search" function at CMS to access the database of the Drug Office of the Department of Health.

**Medication error: *Infusion error* (total 14 cases)**

Among the 14 reported infusion errors, 71% (10 cases) involved high alert medications. These included insulin (three cases), narcotics and opioids (three cases), vasopressors and inotropes (two cases), anticoagulants (one case), and concentrated electrolyte (one case). The remaining cases involved total parenteral nutrition (TPN) (two cases), anaesthetics (one case), and immunosuppressants (one case). Recommendations from investigations of these cases are summarised below.

<u>Recommendations:</u>

i. Reinforce proper drug labelling during drug preparation to ensure accurate infusion identification and prevent medication mix-ups.

ii. Emphasise adherence to the "Five Rights" principle during medication administration. Restart the checking procedure if there are interruptions or distractions.

iii. Reinforce the practice of performing prescription and rate checking, as well as dose/infusion rate calculation, during infusion preparation, before starting the infusion, and during shift handover.

iv. Emphasise the importance of tactile checking and physical tracing infusion lines from the infusion bag/syringe to the patient's intravenous access or vice versa.

v. Reinforce the practice of infusion line patency checking, including the three-

way stopcock, especially during independent double check of high alert medications.

vi. Alert staff about the possible limitations of syringe pump in triggering a timely occlusion alarm, particularly for infusions running at slow rates. Staff should be vigilant for signs of blockage or kicking of lines and take appropriate action if any issues arise.

**Medication error: *Medication discontinuation* (total 11 cases)**

Long-term medications play a vital role for managing conditions such as adrenal insufficiency or abnormal thyroid function, and special needs like post-percutaneous coronary intervention with dual anti-platelet requirement. Among the 11 reported cases of medication discontinuation, the most common involved drugs were antiplatelet drugs (four cases), hydrocortisone (three cases), and thyroxine (two cases). The rest included anticoagulants and anticonvulsants. Inadvertent omission or discontinuation of these medications could lead to severe consequence. It is imperative to be aware of the importance of these long-term medications and ensure their uninterrupted continuation during the prescription process.

Recommendations:

i. Emphasise the importance of comprehensive reviews of prescription history and treatment plans by the clinical team during prescription, prior to patient discharge, and during transitions of care.

ii. Implement medication reconciliation during transitions of care, ensuring that the most accurate and up-to-date medication information is communicated at all points of transition.

iii. Ensure effective clinical handover and documentation of medication management during transitions of care by use of the CMS functions and tools.

iv. Reinforce the practice of entering CMS alert regarding the end date of dual antiplatelet prescriptions if the patient received percutaneous coronary intervention in a private hospital.

v. Highlight the necessity of providing clear and explicit instructions and rationales when discontinuing certain medications, and ensuring this information is well-documented and readily available for all healthcare professionals involved in the patient's care.

vi. Reinforce the use of "special instructions" in the IPMOE system to temporarily withhold specific drugs instead of selecting "End now" when

intending to pause medication for a short period.

vii. Strengthen role delineation among clinics and document the clinic responsible for managing individual medical problems in the CMS notes, particularly for patients with follow-up in multiple clinics.

viii. Reinforce the nursing practice to thoroughly review and check the prescribed medications before issuing the prescription sheet to the patient.

ix. Enhance patient empowerment and carer engagement in the medication management by providing information and explanation about the importance of medication adherence and the overall treatment plan.

x. Promote the use of HA Go to enhance patient self-awareness and participation in their own care.

**Category 2 - Patient misidentification (Eight out of 78 SUE)**

During the specified period, there were eight reported cases of patient misidentification, accounting for 10% of all SUE cases. Accurate patient identification is of utmost importance for patient safety. Unfortunately, these misidentification episodes were not limited to medication prescription and administration but also extended to specimen labelling and laboratory reporting. Errors of this nature have the potential to cause significant harm or lead to undesirable outcomes for patients.

In one noteworthy incident, two patients' breast biopsy reports were mixed up, leading to a misdiagnosis of invasive carcinoma for one patient. Such an error can drastically alter the patient's clinical management strategy and influence subsequent treatment decisions. It is crucial to address and mitigate the factors contributing to these incidents to enhance patient safety and prevent their future occurrences.

<u>Recommendations:</u>

i. Strengthen staff adherence to the correct patient identification procedure when filing documents to a patient's medical record. Discourage the practice of affixing patient documents to the outside cover of the medical record.

ii. Highlight to staff the importance of strict compliance with standard patient identification requirements during prescription and administration.

iii. Reinforce practice of checking the patient's latest relevant laboratory results and verifying patient identifiers on the laboratory report prior to prescription and administration.

iv. Encourage safe practices such as handling one patient at a time and restarting the patient identification procedure if interrupted.

v. Reinforce the implementation of a complete independent double check for high alert medication, including verification of right patient.

vi. Ensure that the audible and vibration functions of the Unique Patient Identification (UPI) hand-held scanners in the wards are optimally functioning.

vii. Emphasise the importance of patient identification during the laboratory reporting procedure, specifically cross-checking the accession number printed on patients' laboratory request forms, slides, and the patients' profile in the Laboratory Information System (LIS).

viii. Develop a standard equipment list including a barcode scanner and reporting computer for establishing dedicated reporting workstation in the laboratory.

# 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:

## 7.1 Surgical Safety

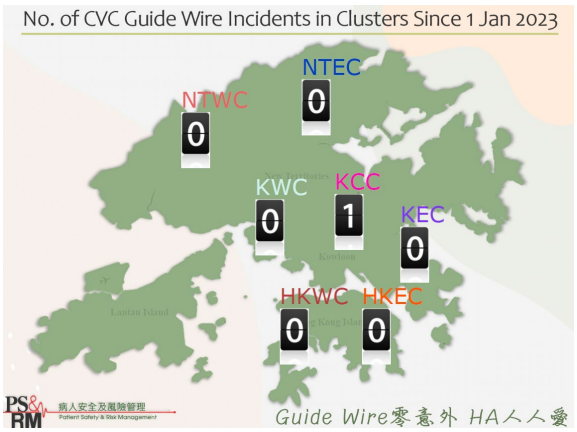
**a) Electronic Wound and Packing Solution**

- The development of a corporate-wide electronic documentation for packing module was initiated. The initiative aims to standardise packing documentation processes.

**b) Prevention of Retained Guide Wire**

- An e-Course on "Safety Precautions for Central Venous Catheter (CVC) Insertion" has been introduced on the eLearning platform. On the other hand, a billboard showing the number of CVC retention incidents across clusters was developed and is accessible on our website.


**E-Course on "on "Safety Precautions for Central Venous Catheter (CVC) Insertion"**




**Billboard showing the number of CVC retention incidents**

**c) Prevention of Nasopharyngeal Airway Retention**

- A collaboration with Business Support Services Department (BSSD) to review the concerned nasopharyngeal airway and an alternative design of the concerned nasopharyngeal airway with more rigid material was identified and is in place.

- In view of incidents regarding to medical instruments and equipment, weekly meetings were held with BSSD to review various medical instruments and equipment.

**Nasopharyngeal Airway -**
**Design with more rigid materials**

## 7.2 Medication Safety

**a) Known Drug Allergy**

- With significant progress in the Kwong Wah Hospital (KWH) redevelopment project and moving-in to the new building in June 2023, the Inpatient Medication Order Entry (IPMOE) system has been implemented in 40 hospitals. The pilot of IPMOE in Kwai Chung Hospital (KCH) is expected to commence in 2024, with complete rollout of IPMOE in the months that ensue. The IPMOE system has also extended its application to Accident & Emergency Departments (AED) in Tuen Mun Hopspital (TMH), Queen Mary Hospital (QMH), Alice Ho Miu Ling Nethersole Hospital (AHNH) and Intensive Care Unit (ICU) of KWH in 2023.

- In 2023, in view of the known drug allergy medication incidents related to "pseudo-identity", the Quality & Safety Division, in collaboration with the Information Technology & Health Informatics Division continued to explore measures to reduce the related incidents. Initiatives underway aim to improve the user interface for "Check ID" in Clinical Management System (CMS). By linking the allergy status of verified Hong Kong identities with the corresponding "pseudo-identities" of patients, the system will enhance safety and accuracy of medication administration.

**b) Inadvertent Continuation or Discontinuation of Medications**

- With previous corporate-wide campaign on enhancing safety of high-risk medications (e.g. warfarin) and continuous long-term explorations, explicit indication of clinical intent by prescriber and a "medication journey" approach to patient medication management were identified as the most feasible approaches to tackle the issue of inadvertent continuation of unnecessary medication or discontinuation of essential long-term medications.

- The Clinical Intention and Medication Journey features were developed in IPMOE to help clearly indicate the clinical intent behind a prescription and provide a comprehensive view of patient's medication history over the year. The implementation of these features reached all clusters.

## 7.3 Infusion Pump Risk Reduction

- The working group on safe use of infusion pump has conducted a review of relevant guidelines.

- The review has explored the feasibility of various smart pump solutions, including built-in safety features to prevent infusion-related errors. Concurrently, it has emphasised the imperative need for tracing of infusion lines by hand, performing independent double checks and reinforcing the compliance to five-rights checking during medication administration.

## 7.4 Tourniquet Risk Reduction

- The working group on safe use of tourniquet was newly formed to address the issue of tourniquet retention during blood sampling procedures, a recurring challenge that has been identified within the healthcare system – one that has been repeatedly highlighted since the first issue of HA Risk Alert (November 2007).

- Following this, a stock-take across all clusters was conducted in November 2023 to assess the current practices and identify areas of potential improvement. All clinical departments were required to implement the improvement measures proposed by the working group.

# 8. Learning and Sharing

The Patient Safety and Risk Management Department (PS&RM) enhanced continuous learning by initiating educational programs in 2022-23. The regular issues of HA Risk Alert (HARA) continued its legacy of serving as a fundamental conduit of information for staff and public regarding Sentinel Events (SEs) and Serious Untoward Events (SUEs) in HA. Two staff forums were held on Sentinel Events and Serious Untoward Events, engaging over 3,200 diverse healthcare professionals, from executives to frontline staff.

In collaboration with the Human Resources Division and the Legal Services Department, we organised a series of staff seminars to provide valuable training and practical guidance on managing clinical incidents. These seminars, which covered handling of medical errors or incidents, medical legal claims and effective media communication, successfully engaged over 2,000 participants in both virtual and physical sessions.

At the invitation of the University of Hong Kong, the coordinating body for intern training in 2023, our department continued our commitment to education by delivering lectures on clinical incident management to pre-interns and medical students. These lectures emphasised vital patient safety protocols and the promotion of a fundamental culture of safety awareness. Additionally, we extended our educational impact by conducting a seminar on clinical incident management for mental health nursing students at Hong Kong Polytechnic University, further extending our reach and influence in healthcare education.


**A series of staff seminars**

# 9. The Way Forward

A number of initiatives have been planned for 2024 to enhance patient safety:

## 9.1 Surgical Safety

- A corporate-wide “Electronic Wound and Packing Solution” system would be piloted in 2024. It aims to improve the communication and handover of patient’s wound condition throughout patient journey.

## 9.2 Medication Safety

- In 2024, the Inpatient Medication Order Entry (IPMOE) will be implemented in Kwai Chung Hospital and extended to Intensive Care Unit (ICU) of Tseung Kwan O Hospital and United Christian Hospital.

- The “Medication Genie” function on IPMOE, which allows nurses to check relevant laboratory results before drug administration, will be further improved by integrating additional data sources (e.g. e-vitals) to assist in drug administration decisions. The system would be enhanced for a better user interface and experience, and improved for targeted display at specific clinical scenarios.

- The use of "Clinical intention" feature, which supports the prescription process is expected to rise across clinical staff. This feature improves documentation and transitions of care by automatically ensuring that essential medications such as long-term steroid replacement, thyroxine and antiepileptic drugs are not omitted, thereby improving patient safety.

## 9.3 Infusion Pump Risk Reduction

- Collaboration with Nursing Services Department (NSD) would be continued in 2024 to reinforce good practices and to enhance training to improve competency and proficiency among pump users.

- The feasibility of utilising drug library for the top high risk intravenous drug groups would be explored.

- Focus would be placed on equipment standardisation and technological advancement in procurement strategies.

## 9.4 Tourniquet Risk Reduction

- A policy of "Prohibition of the use of gloves as tourniquets" would be established.

- Improvement measures and recommendations suggested by the working group would be communicated and implemented in collaboration with NSD.

- Alternative devices such as auto release tourniquet and tourniquet with timer would be explored.

- An intranet webpage would be developed to share good practices, innovative devices and technologies.

# ANNEX I - HA Sentinel and Serious Untoward Event Policy

## 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 organisation'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 minimise 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/counselling 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 scrutinised 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<br>Monitoring may be required<br>No investigation or treatment required |
| | 2 | Minor injury<br>Monitoring, investigation or minor treatment required<br>No change in vital signs |
| **Major/ Moderate** | 3 | Temporary morbidity<br>Monitoring, investigation or simple treatment required<br>Some changes in vital signs |
| | 4 | Significant morbidity<br>Transfer to a higher care level, emergency treatment, surgical intervention or antidote required<br>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<br>Monitoring may be required<br>No investigation or treatment required |
| | 2 | Minor injury<br>Monitoring, investigation or minor treatment required<br>No change in vital signs |
| **Moderate** | 3 | Temporary morbidity<br>Monitoring, investigation or simple treatment required<br>Some changes in vital signs |
| **Temporary Major** | 4 | Significant morbidity<br>Transfer to a higher care level, emergency treatment, surgical intervention or antidote required<br>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**

Ultrasound guided LEFT pleural drainage was requested for a patient with recurrent LEFT pleural effusion via the Generic Clinical Request System (GCRS). The doctor selected "Percutaneous Drainage of Abscess of Fluid Collections" under the Department of Radiology (DR) in the e-Consent module. The e-Consent was then signed.

The doctor performed an ultrasound examination on the patient's RIGHT chest and noted a significant amount of pleural fluid.

The doctor and nurse then performed the TIME OUT procedure and checked the interventional procedural safety checklist against the eConsent. However, the e-Consent did not specify which side the pleural drainage should be performed on. The laterality on the GCRS request form was not checked.

Ultrasound-guided RIGHT pleural drainage was eventually performed instead of LEFT pleural drainage. Around 800mL of pleural fluid was drained from the RIGHT chest over two hours after the procedure. The wrong side drainage was discovered later.

**Areas for Improvement Identified:**

1. Specify the laterality in the consent
2. Review the interventional procedural safety checklist used in DR, including the addition of laterality to the checklist and the addition of imaging review in the TIME OUT phase
3. Consider a designated location or folder to place the GCRS request form, consent form and interventional procedural safety checklist together to facilitate the checking process

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

### *Operating instrument/material fragment*

**Case 1, 2, 3 and 4 involved retention of cement.**

**Case 1**

A patient with fractured left neck of femur underwent a left hip hemiarthroplasty using a modified posterior approach. During the operation, surgeons packed the acetabulum with gauze to prevent cement spillage. Inspection and manual palpation of the acetabulum were performed before bone reduction and no cement was noted in the acetabulum. After reduction, the range of movement for the implant was checked, and the operation was finished uneventfully.

An X-ray taken on post-operative day 1 showed cement was retained in the acetabulum. An emergent operation for exploration and removal of the retained cement was performed without complication. A 2.5 cm cement was extracted. The patient's rehabilitation was uneventful.

**Areas for Improvement Identified:**

1. Enhance training on the technique/manoeuvre to expose whole acetabulum for assessment before reduction
2. Review departmental training on hemi-arthroplasty using a modified posterior approach
3. Raise staff awareness of the potential risk of retained cement in similar procedures

**Case 2**

A patient with a displaced right femur neck fracture underwent right hip arthroplasty. Post-operative day 1 X-ray and day 2 computed tomography (CT) scan showed suspected retention of cement. A second operation for removal of the cement and exploration of the skin wound was performed on postoperative day 6, with a 1.5 cm x 1 cm piece of bone cement fragment found in the acetabular fossa.

**Areas for Improvement Identified:**

Enhance a structured work-based assessment (including debriefing, coaching & training), starting from the basic trainee level to ensure patient safety and staff competence

**Case 3**

A patient with left knee osteoarthritis underwent a left total knee replacement surgery. Upon

secondary review of an X-ray taken on post-operative day 4, retention of an extra-articular cement was identified in the left knee. The patient agreed with conservative management unless clinical or radiological evidence of foreign body dislodgement was found.

**Areas for Improvement Identified:**

1. Reinforce the good practice of adequate pulsatile lavage after cementation
2. Consider repeated inspection of the joint for any retained cement
3. Consider X-ray if there is a clinical suspicion of cement retention

**Case 4**

A patient with fractured left neck of femur underwent a left hip unipolar arthroplasty. During the operation, surgeons provided adequate irrigation and had performed palpation to rule out cement or bone retention in the potential spaces. However, an X-ray taken on post-operative day 2 showed a 5mm radio-opaque lesion located lateral to the left proximal femur. A subsequent computer tomography (CT) confirmed the radio-opaque lesion was located at the muscle layer lateral to the left proximal femur, which is not communicated to the joint.

**Areas for Improvement Identified:**

1. Raise staff awareness on the risk of cement retention during operation
2. Consider intra-operative X-ray if there is a clinical suspicion of cement retention

**Case 5 involved retention of metallic fragment.**

**Case 5**

In October 2022, a patient underwent closed reduction and intramedullary nailing for a right hip fracture. Five days later, the patient had another injury, this time with left hip fracture. The operation proceeded on the left hip without any complication. An X-ray taken intra-operatively showed no abnormality. All instruments used during the procedure were checked and found to be intact.

In an X-ray taken on postoperative day 2, a 1.3mm metallic fragment was discovered at the nail-blade junction. The fragment did not require surgical removal. The patient's post-operative recovery was well.

**Learning Point:**

X-ray taken in the operating theatre was mainly used to confirm alignment. It might not be easy to identify tiny metal fragments at this stage.

## *Gauze*

**Case 1, 2 and 3 involved retention of gauze**

**Case 1**

A patient underwent a temporary tracheostomy, during which a cuffed tracheostomy tube was inserted and a ribbon gauze with adrenaline was packed at the wound site, as documented in the operation record. On post-operative day 1, gauze removal was documented without specifying the responsible party. On post-operative day 5, the tracheostomy tube was changed to a non-cuffed tube. The patient was discharged and instructed to continue wound dressing at a General Outpatient Clinic (GOPC).

During a subsequent chemotherapy admission two weeks later, the patient reported a gauze had slipped out from the tracheostome while receiving wound care at the GOPC. The ribbon gauze was successfully removed at the bedside.

**Areas for Improvement Identified:**

1. Standardise the practice of leaving the visible tail of packing material and ensure its removal
2. Standardise documentation of gauze packing for continuity of care and cross-checking, as well as gauze removal information (when and by whom)
3. Verify ribbon gauze removal when in doubt

**Case 2**

A patient had two hospital admissions across two months due to an infected sacral sore with a deep tunnel wound (>10cm). The wound was cared by ward and wound nurses. It was also examined by doctors during ward rounds.

Negative pressure wound therapy (NPWT) was initiated using a tailor-made wound filler. In one episode of wound assessment, all dressings had already been removed upon wound nurse‘s review. The patient was later discharged to an old age home (OAH) where daily wound care management was continued by community nurses.

Around one month later, an 11.5 x 1.5cm object was retrieved from the wound tunnel during performing wound dressing by a community nurse. It was confirmed to be the tailor-made wound filler.

**Areas for Improvement Identified:**

1. Enhance training and provide information on components of tailor-made wound filler with diagrams/illustrations for reference

2. Ensure tailor-made wound filler is kept for wound nurses' inspection or take clinical photos for documentation
3. Reinforce the documentation of removal of wound filler and dressing materials
4. Ensure all components of a tailor-made wound filler are secured before application

**Case 3**

A patient was diagnosed with squamous cell carcinoma after a cervical biopsy performed by a private gynaecological oncologist. She underwent various procedures at Hospital A, which included cervical biopsy, vaginal examinations, and brachytherapy.

During the 2nd brachytherapy, a non-raytec gauze, which had been retained, was identified and removed. The exact source of retained gauze could not be ascertained as plain gauze was used in both private and public settings.

**Areas for Improvement Identified:**

1. Re-engineer the workflow of O&G procedures, to ensure accurate counting and documentation of all consumables and instruments that could be left in patient's body cavity
2. Implement the use of a receiver to contain used gauze for counting and documentation, and position waste bins away to prevent accidental disposal of used gauze

**Case 4 involved retention of wipe.**

**Case 4**

A patient with 78% total body surface area deep dermal and full thickness burns, underwent four debridements and dressing in an Intensive Care Unit (ICU). Due to poor bowel function, she received fleet enema multiple times. During the fourth operation, a wipe was placed in the patient's anal orifice to control faecal incontinence.

On post-operative day 3, a nurse noticed a piece of wipe (<1cm) exposed at the patient's anus while attempting to administer another fleet enema. The wipe was removed and subsequent proctoscopy was performed to confirm no additional foreign material.

**Areas for Improvement Identified:**

1. Reinforce training on surgical safety
2. Reinforce the practice of audibly alerting scrub and/or circulating nurses when an object has been placed in a patient's orifice in the operating theatre
3. Reinforce the importance of close-loop communication between team members

## *Catheter/Catheter Segment/Tube*

**Case 1**

A patient underwent emergency surgery for an umbilical hernia with obstruction in 2020. Post-operatively, the laparotomy wound was opposed by tension stitches at interval. The written and graphical documentation of the wound was not consistent, and the exact number of stitches and rubber tubes used were not written down in patient's notes.

The patient was discharged with daily wound care but later developed enterocutaneous fistula with communication to small bowel. The patient underwent surgery for incisional hernia repair, and a rubber tube, from previous tension stitch, was found within the fistula.

**Areas for Improvement Identified:**

1. Remove all tension stitches once tension of wound is relieved
2. Clearly document the number of tension stitches and rubber tubes used especially if they are not removed before discharge
3. Take clinical photo for effective communication and documentation
4. Enhance staff awareness and training on tension stitches and closed-loop communication

**Case 2**

Nasal-pharyngeal suction was performed to a non-communicable patient on nasogastric (NG) tube feeding by nurses and physiotherapists. The patient was occasionally uncooperative and required assistance during suctioning.

On the same day, staff observed the patient biting a catheter. A nurse removed an intact NG tube and found a fragment resembling the tip of a suction catheter in patient's mouth. A subsequent chest x-ray did not show any definite foreign body

**Areas for Improvement Identified:**

1. Avoid oro-pharyngeal suction for uncooperative patients
2. Check the integrity of the suction catheter before and after suctioning
3. Place a bite blocker on standby for uncooperative patients if oro-pharyngeal suction is needed

## *Guide wire/Cannula*

**Case 1**

In October 2022, a pacemaker-dependent patient was admitted for pacemaker replacement. Temporary trans-venous pacing was performed through the right femoral site. The permanent pacemaker replacement was successfully carried out, the temporary pacing was switched off with removal of the temporary pacing wire. Circulating nurses secured the femoral site wire sheath, intended for later removal, with Tegaderm. The removal of the patient's right femoral sheath was then handed over to a cardiac catheterisation laboratory (CCL) nurse.

The CCL nurse next handed over care of the patient to a ward nurse along with the postoperative order and a CCL procedure checklist. The scrub nurse indicated "No" for "Sheath in-situ" on the postoperative checklist.

The patient was subsequently discharged to an Old Age Home (OAH). An OAH staff noticed a "tube" in the patient's right groin area. Back to the hospital, it was discovered that the femoral sheath was still at the right groin. The sheath was removed uneventfully.

**Areas for Improvement Identified:**

1. Document the location and plan of care for the sheath on the operation record and pre-printed post-permanent device implementation order
2. Assign a leader and specify roles among nursing staff during the procedure in CCL to ensure continuity of care and communication
3. Remove venous sheaths early in the CCL recovery area if possible
4. Enhance communication and documentation within the care team, including doctors, nurses, and supporting staff

**Case 2**

A patient with a history of sigmoid carcinoma and liver metastasis underwent laparotomy and reversal of Hartmann's operation in a private hospital. He developed post-operative complications and was transferred to the Intensive Care Unit (ICU) for urgent renal support therapy where a dialysis catheter and central venous catheter (CVC) were inserted by Doctor B under supervision of Doctor A at bedside.

After insertion, resistance was experienced when aspirating blood from one lumens. Assuming Doctor B had removed the guidewire, Doctor A manipulated the catheter and lumens were confirmed to be patent. The nurses assumed Doctor B had removed the guidewire.

Doctor and nurse then signed on the CVC Insertion Safety Checklist for the two insertions procedures performed. Review of X-rays showed a retained guide wire, which was successfully retrieved

**Areas for Improvement Identified:**

1. Guidewire retention is one of the differential diagnoses when resistance is encountered while aspirating blood after insertion
2. Enhance training on CVC insertion with Seldinger technique, particularly on critical steps of guidewire removal and troubleshooting
3. Clearly define roles and accountability of doctors and nurses during CVC insertion and subsequent checking and signing of the CVC Insertion Safety Checklist
4. Do not open a suture needle unless guidewire removal is confirmed

## *Nasopharyngeal tube*

**Case 1**

A 13-year-old patient with a history of global developmental delay, mental retardation and autism was admitted for excision of right accessory auricles. The operation was completed uneventfully under general anaesthesia (GA). Towards the end of the reversal of anaesthesia, the patient developed airway obstruction and required the insertion of a nasopharyngeal airway (NPA) into the left nostril. However, there was no documentation of the NPA insertion in the anaesthetic record or in the Post Anaesthesia Care Unit (PACU) arrival note, the clinical handover regarding the NPA insertion was also ineffective.

The patient later developed nasal regurgitation. An X-ray showed that the NPA was retained in the post-nasal space. It was subsequently removed without causing any structural damage.

**Areas for Improvement Identified:**

1. Review and standardise the documentation practices in the anaesthetic record regarding the patient's clinical condition and the use of airway support
2. Reinforce the clinical handover process between Anaesthetist and PACU nurse for accurate communication of critical patient information
3. Explore alternative NPA designs to prevent the risk of dislodgement (e.g. a larger diameter flanges or more rigid materials)
4. Standardise and incorporate practices for counter-checking the removal and integrity of the NPA into the clinical handover processes between Anaesthetists and PACU nurses

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

**The 4 *inpatient suicide* cases are summarised below:**

**Case 1**

A patient with metastatic breast cancer was admitted for symptomatic anaemia. Due to her immunocompromised state, she was placed in reverse isolation. Palliative care team was referred. "Do Not Attempt Cardiopulmonary Resuscitation" (DNACPR) order was agreed upon by both the patient and her relative. The following day, a medical social worker (MSW) assessed the patient. She appeared calm and showed no signs of suicidal ideation but expressed concern about her daughter's care. Three days later, the patient was found hanging from an electric cable in her isolation room and had passed away.

**Areas for Improvement Identified:**

1. Explore installation of anti-ligature/concealed door drums/closers in isolation rooms to minimise ligature points
2. Minimise use of long cables in isolation rooms and secure them where possible
3. Facilitate communication of assessment findings or suggested interventions through timely handover and documentation
4. For patients assessed to be at high risk of suicide, immediate verbal communication with ward nurse is recommended

**Case 2**

A patient with a history of substance-induced psychosis, depression and substance abuse was compulsorily admitted to the hospital's psychiatric observation unit after being found by police for intoxication and suspected "possession of dangerous drug" (PODD). She was diagnosed with schizophrenia and stimulant dependence syndrome. Her mental state improved with medications and a substance-free environment.

Two months later, the patient was granted a day leave to attend a police station for giving a statement regarding the suspected PODD, and to retrieve her identity card. Her level of suicidal risk was assessed as "low" during a multidisciplinary ward round, and was assessed to be mentally fit to give a statement to the police.

The patient was accompanied by a social worker and escorted by two police officers to the police station. After being informed of the formal charge of PODD, the patient absconded and subsequently jumped from a height at her residence, resulting in death.

**Areas for Improvement Identified:**

1. Explore the possibility of police coming to the hospital for the interview with the patient concerned
2. Enhance assessment via the Nurses' Global Assessment of Suicide Risk (NGASR)

**Case 3**

A patient with a history of depression and repeated suicide attempts, was admitted on a Friday evening after an overdose of paracetamol and rat poison in a suicide attempt. The patient appeared calm and cooperative in the Medical ward, and was put on bihourly suicidal risk observation and assigned a bed near the nursing station for close monitoring. Psychiatry consultation was initiated on the same day.

On Sunday, the patient was found missing during visiting hours. Despite immediate local search, contacting of family and the Police, the patient could not be located. After about two hours, following a loud sound outside the ward, the patient was found to have fallen from height. The patient succumbed despite resuscitation.

**Areas for Improvement Identified:**

1. Importance of staff knowledge, psychiatric and security manpower support for suicide prevention in non-psychiatric units
2. Comprehensiveness of patient search protocols, i.e. inclusion of all relevant locations and review of CCTV footage
3. Facility improvement and maintenance (e.g. door lock system, CCTV, fall-prevention railings) to prevent unauthorised access to and potentially dangerous activities in restricted areas
4. Tagging and alarm systems for tracking of vulnerable patients and timely intervention

**Case 4**

A patient with no prior psychiatric history was admitted for self-inflicted injury, with a fractured and nearly amputated left index and three other finger lacerations. After emergency operation, a volar slab was applied to left hand up to the forearm for stabilisation and protection.

The patient was agitated and uncooperative post-operatively. She was noted to be struggling and repeatedly banged her head on the bed rails, and self-muttering with incomprehensible words. She was transferred to a special observation ward for close monitoring and protective measures were given:

- Pillows were placed between the patient's head and bed rails for cushioning.
- Magnetic limb holders were applied to the uninjured right upper limb and bilateral lower limbs for protection.
- Towel for padding was secured around the patient's head using crepe bandage to avoid dislodgement.

In view of confusion with tendency of self injury, the patient was put on suicidal precaution after assessment.

Additional magnetic shoulder and waist belts were applied for stabilisation. The patient was then observed to be calm after antibiotics injection and at multiple intervals throughout the night. However, she was later found to be unresponsive. While all restraints were still in place, the volar slab was found on the floor and bandage was noted around her neck. Resuscitation was attempted immediately but in vain.

**Areas for Improvement Identified:**

1. Enhance training on Assessment and Clinical management of patients with confusion and/or self-harm behavior, e.g. on the use of physical and/or chemical restraints
2. Enhance the equipment for protecting patients from self-injury e.g. Bedrail pads

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