

RISK ALERT

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A Risk Management Newsletter for Hospital Authority Healthcare Professionals

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- * Safe tips in Anticoagulant Management
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Opening Message

Attitude makes a difference in patient safety

Patient safety is a high priority for healthcare systems worldwide. It is an indicator of quality of care. Ensuring patient safety is no doubt attributed to the right culture, environment, processes, procedures and technologies, yet the crux of the matter lies in attitude. “Attitude is a little thing that makes a big difference”, said Winston Churchill. Similarly, attitude of healthcare providers is pivotal to preventing risks and reducing harm to patients.

Healthcare professionals in HA endeavour to render high quality and safe patient care. With advanced technologies and systems, many clinical processes are supported to prevent errors, thus improving service quality and patient safety. Nevertheless, technologies assist but cannot replace human beings.

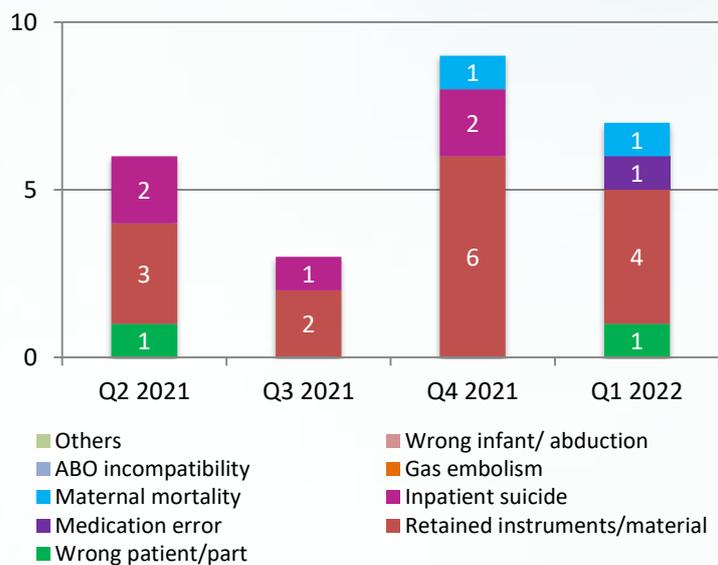
Studies show that the level of knowledge and attitude of healthcare workers towards patient safety has great impact on the provision of safe patient care. Take medication safety as an example, medication administration, mainly done through nurses, records 3 million occurrences a month in HA. Nurses play a significant and active role in guaranteeing patient safety with a diligent attitude as well as continuous education and training – uphold the checking principles to ensure the right drug in the right dose is given to the right patient by the right route at the right time – as set out in the core practice standards on patient identification and nursing documentation.

While we keep pace to enhance patient safety by implementing strategies for culture creation, training and technology advancement, always keep in mind that positive attitude benefits patients’ well-being most. All bright ideas and great dedication to ensuring patient safety are greatly treasured and highly appreciated. Let’s keep up the good work together towards safe patient care!

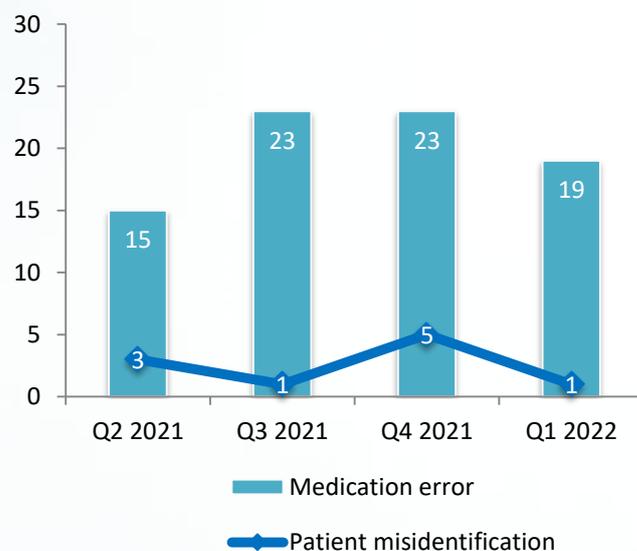


Mr Lawrence POON, Chief Manager (Nursing)/Chief Nurse Executive, Hospital Authority Head Office

Distribution of SE in the last four quarters



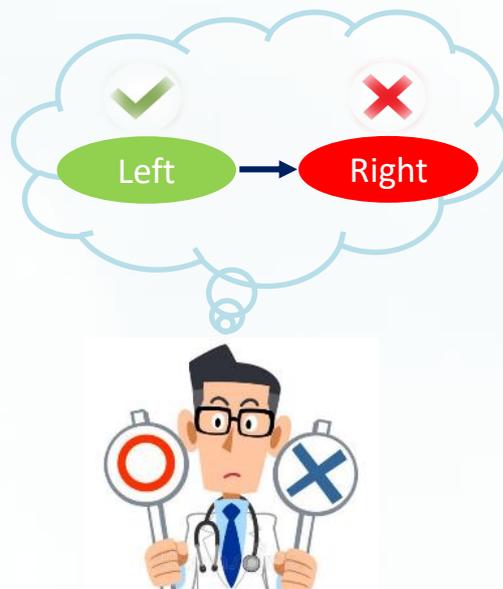
Distribution of SUE in the last four quarters



Sentinel Events

Incorrect Side Ureteroscopy

A 67-year-old male with left ureteric stone, was followed up in a urology clinic. During consultation, ureteroscopic lithotripsy (URSL) was scheduled by the attending surgeon, but right instead of left side was booked. Patient proceeded with surgery. The incorrect side was discovered by the operating surgeon after right side ureteroscopy was performed, and patient's profile and computed tomography (CT) images were reviewed. Procedure was carried out uneventfully on the left side in the same session.



How did it happen?

1. Informed consent was not conducted in conjunction with clinical consultation, proper patient assessment and careful reconciliation of clinical information
2. Failure to speak up and clarify for the discrepancy in clinical information

How to prevent?

1. Ensure that the informed consent is conducted in clinic consultation preferably by the booking surgeon
2. Cross check Clinical Management System (CMS) notes and relevant radiology images during consent taking and subsequent verification procedure
3. Display the relevant radiology images in operating theatre to raise staff alertness towards the indicated operative side

Throat Pack

- ❖ An 11-year-old patient underwent excision and extraction of teeth under general anaesthesia. During the operation, the throat pack was cut into two, with one inserted into patient's oral cavity during the procedure.



- ❖ The throat pack remained as "1" unit on the count sheet. Soon after the first count was completed and checked correct, the doctor completed wound closure and removed surgical drapes. Scrub nurse assumed that the throat pack was out and performed the final count with circulating nurse, who assumed that the scrub nurse had discarded the throat pack. Patient was sent to recovery room. A throat pack was discovered and removed uneventfully from patient's oral cavity.

How did it happen?

- Surgical team did not fully comply with the practice of final counting:
 - Visually check the presence of accountable items
 - Complete the final count of throat pack before removal of surgical drapes

How to prevent?

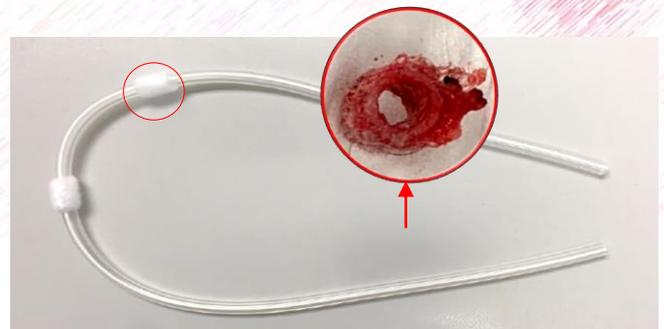
- Ensure the completion of final count before removal of surgical drapes
- Adopt the "count away" technique throughout the operation
- Review the counting workflow
- Promote a speak-up culture to enhance team communication

Tenckhoff Catheter Cuff/Fragment

- ❖ A 60-year-old male patient with history of end stage renal failure had double-cuffed Tenckhoff catheter inserted in 2017 for Continuous Ambulatory Peritoneal Dialysis (CAPD). In 2021, patient was admitted for peritonitis. Emergency Tenckhoff catheter removal was done and patient was discharged.
- ❖ Since then, patient had repeated episodes of old Tenckhoff catheter exit site infection. During a haemodialysis session 2 months post-removal, an abdominal mass was noted under the old wound. Ultrasound and CT confirmed a short segment of tubular structure at the subcutaneous layer, compatible with the retained part of a Tenckhoff catheter. Emergency operation for removal was performed. It was a segment of outer cuff together with the Tenckhoff tubing.

How did it happen?

- The usual practice of integrity check on the retrieved Tenckhoff catheter including the inner and outer cuffs, had not been fully complied with.



Tenckhoff catheter and the retained segment (arrow)

How to prevent?

- Vigilant integrity check on the retrieved Tenckhoff catheter including both inner and outer cuffs, e.g. by palpation and visualization

Guide wire

Case 1 A 50-year-old patient developed left pleural effusion during hospitalization. Seldinger chest drainage system insertion was performed at bedside by a doctor, assisted by two nurses. While one nurse helped support and monitor the patient, the other nurse assisted the procedure and was simultaneously engaged with the care of other patients. The doctor retrospectively signed the bedside procedure safety checklist. One of the assisting nurses thought that the guide wire had been discarded in the sharp box. Review of the chest X-ray on the same day noted a retained guide wire, which was then removed en bloc with the chest drain.

Safety Gist

Ensure Removal of Guide Wire after Chest Drain Insertion

Incident Occurred

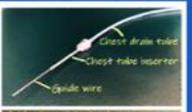
- Seldinger chest drainage system was used for insertion of chest drain for patient with pleural effusion.
- The retained guide wire was noted on post procedural X-ray.



Retained guide wire

Lessons Learnt

- ☐ Stay focused when performing and assisting the procedure, especially on critical steps (e.g. guide wire removal).
- ☐ Perform "SIGN OUT" procedure and countercheck instrument(s) with adoption of "Pointing & Calling" method before documentation, especially guide wire.
- ☐ Conduct regular training on chest drain insertion for doctors and nurses, highlight on surgical safety concepts.




How did it happen?

- Did not countercheck or confirm that the guide wire had been discarded in the sharp box
- Failed to complete post-procedural sign out before completion of procedure

How to prevent?

- Adhere to the Sign Out procedure especially on guide wire removal
- Enhance training on chest drain insertion and reiterate procedural safety

Case 2

A 74-year-old patient required insertion of Dual Lumen (DL) catheter and central venous catheter (CVC) for Continuous Veno Venous Hemofiltration (CVVH) and close monitoring. After insertion of DL catheter via right femoral vein and confirmation of guide wire position, resistance was noted. Patient then developed hypotension, and the right femoral site was switched for CVC insertion instead, using existing DL guide wire. Left femoral DL insertion was performed subsequently, and the DL guide wire on left side was removed. The procedure was performed by a total of four doctors and one nurse inside an Airborne Infection Isolation Room (AIIR), in addition to one nurse outside who communicated via the audio system. A total of three sets of CVC catheters were opened.

Patient's condition later improved. Right femoral CVC and left femoral DL were removed. A guide wire was noted upon removal of right femoral CVC.

How did it happen?

- Communication gap among doctors, and nurses inside and outside AIIR.
- Two vascular accesses (DL and CVC), one at each femoral vein, and more than one guide wire used.

How to prevent?

- Enhance the bedside procedure checklist to include number of guide wires used and independent checking
- Perform catheter insertion procedures one at a time, if clinical situation allows
- Reinforce documentation of bedside procedure checklist
- Reinforce refresher training on CVC insertion



Maternal Mortality

A 37-year-old lady at 31+3 weeks of gestation followed up at Maternal and Child Health Centre, had unremarkable antenatal history. In a morning, she was admitted for shortness of breath and epigastric pain. High blood pressure (BP) was noted upon admission and severe pre-eclampsia was suspected. Pre-eclampsia management including pharmacological treatment was initiated and emergency caesarean section was planned. Patient suddenly became unconscious in ward with persistently high BP. Obstetric Crash Call was activated. Clinical team proceeded with crash Lower Segment Caesarean Section (LSCS), and a live baby was delivered. During the operation, the patient was noted to have bilateral fixed and dilated pupils. Post-operative CT of brain revealed extensive intracranial bleeding. Patient succumbed 5 days later.



Conclusion

In this unfortunate event, the multidisciplinary treatments to the mother and the new born were deemed timely and appropriate by the Root Cause Analysis team.

Long Term Steroid



A 81-year-old male with multiple medical problems, was put on oral Hydrocortisone since 2014 for adrenal insufficiency. Patient was later admitted for chest infection and septic shock, and oral medications were withheld. He was given IV Hydrocortisone for replacement. His condition improved and IV Hydrocortisone was stopped. However, oral Hydrocortisone was not continued. A day later, he was found unarousable. The patient succumbed despite resuscitation.

How did it happen?

- Low alertness to the importance of reviewing patient's past medical history before stopping an important medication
- Hydrocortisone was mistaken to be for septic shock treatment, rather than long term replacement

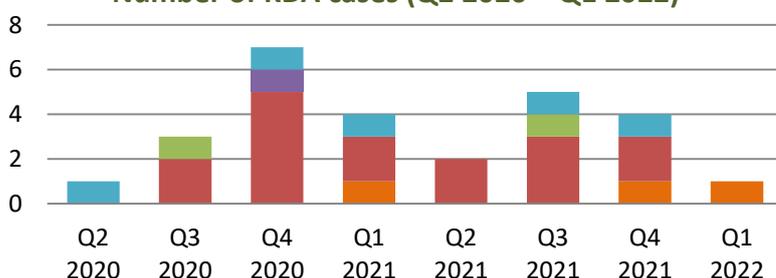
How to prevent?

1. Develop structured alert for patient on long term steroid replacement
2. Improve documentation when prescribing long term steroid
3. Review patient's past history before prescribing/stopping medication

Serious Untoward Events

Of the 20 SUE cases reported in 1Q 2022, 19 cases were related to medication errors, including known drug allergy (KDA) (1), anticoagulant (6), insulin (2), chemotherapeutic agent (1), oral hypoglycemic agent (1), dangerous drug (3) and others (6).

Number of KDA cases (Q2 2020 – Q1 2022)



Known Allergy	Allergen prescribed
Penicillin	Augmentin

■ Related to Penicillin
 ■ Related to NSAID
 ■ Paracetamol
 ■ Quinolone
 ■ others



Antithrombotic Incidents

To enhance staff awareness, this issue shall highlight some scenarios and common loopholes related to antithrombotic management and incidents.

Heparin Flushing & Infusion

After insertion of haemodialysis (HD) catheter, blood clot was noted inside the venous limb (V limb) of the catheter. While attempting to flush the V limb with normal saline to clear the clot, 6000 units of heparin locked in the V limb had not been withdrawn, and entered into patient's venous system.

To perform HD catheter flushing, the heparin from catheter lumen should first be aspirated. Without carrying out this step, nurse directly flushed 4.5ml (i.e. 22,500 units) of heparin into patient's venous system via the venous and arterial lumens of the HD catheter.

Learning Points

- Aspirate all Heparin (Heparin lock volume + 1 ml) from the lumen, then close the clamp and check for any clot one by one
- Keep catheter clamped at all times once the limbs have been primed with Heparin

Patient post-venous thrombectomy was maintained on heparin infusion 10,000 units in 100ml NS at 10ml/hour, i.e. **22units/kg/hour**. The prescription was however, incorrectly transcribed into 1,000ml NS (10 times intended vol. of NS), i.e. **2.2units/kg/hour**. APTT# 9 hours later was found below target range. The under-dosing was discovered by an on-call doctor. Further treatment was given to patient accordingly.

Warfarin

Patient on long term warfarin attended General Outpatient Clinic (GOPC) for follow up. Serial INR* was taken. Dosage of warfarin was incorrectly titrated upwards to 1.5mg, then 2mg, despite patient's INR results being higher than the target range. The error was later realized by the doctor.

Patient with left ventricular thrombus was on warfarin, with optimal INR results followed up by medical. At a follow-up, usual medications were refilled and next INR blood test was arranged. However, warfarin was omitted from the prescription. The error was noted by the attending doctor 8 weeks later during patient's next follow up.

Antiplatelets

Patient was put on Dual Antiplatelet Therapy (DAPT) after Percutaneous Coronary Intervention (PCI) and stent placement. Clinical Management System (CMS) alert was tagged with **"On dual anti-platelet (Aspirin + Clopidogrel [Plavix] or equivalent)**. During the second follow up, the attending doctor who intended to discontinue patient's other medications, unintentionally discontinued Plavix.

*INR (International Normalized Ratio)
= Patient prothrombin time (PT) / control PT
#APTT (Activated partial thromboplastin time)

Loopholes To Avoid

1. Insufficient alertness regarding patient's need for long term anticoagulant therapy
2. Overlooking of prescription order or CMS alert
3. Misinterpretation of INR result
4. Dissociation of INR result from the clinical intent
5. Transcription Error





This issue shall highlight the important patient management perspectives related to anticoagulants.

Comparison of key properties of Direct oral Anticoagulants (DOACs)

	Dabigatran (Pradaxa®)	Rivaroxaban (Xarelto®)	Apixaban (Eliquis®)	Edoxaban (Lixiana®)
Mechanism of action	Direct thrombin inhibitor	Direct factor Xa inhibitor		
Dosage range	110 or 150mg twice daily or 220mg daily	10-20mg once daily or 15mg twice daily	2.5 -10mg tab twice daily	30mg (if ≤60kg) or 60mg once daily
Renal impairment	CrCL 30-50mL/min: 75-150mg once-twice daily	CrCL 15-50mL/min: 15 mg daily	CrCL 15-29mL/min: Use with caution	CrCL 15-50mL/min: 30mg daily
Hepatic impairment	Severe: Not recommended	Moderate-severe: Not recommended	Mild-moderate: Use with caution Severe: Not recommended	Mild-moderate: Use with caution Severe: Not recommended
Age (≥80 years old)	Reduced dose (75 mg twice daily)	No dose reduction unless age-related renal impairment	Consider 2.5 mg twice daily	No dose reduction unless age-related renal impairment
Pregnancy & breastfeeding	Not recommended	Contraindicated	Not Recommended	Contraindicated
Administration	Take with or without food; swallow whole capsule	Take with food to increase absorption; maybe crushed	Take with or without food; maybe crushed	Take with or without food
Specific antidote	Idarucizumab	Andexanet alfa (Not registered in Hong Kong) May consider prothrombin complex concentrate (4 factor)		
Usual time to discontinue before surgery or invasive procedures	Stop 1-4 days before*	Stop 1-3 days before*		
<i>*The actual time of discontinuation varies with the renal function of patient; consult specialist advice before discontinuation</i>				

Reference:

- Package insert of dabigatran (Pradaxa®, Jul 2020), rivaroxaban (Xarelto®, Sep 2019), apixaban (Eliquis®, Jul 2019) and edoxaban (Lixiana®, Jul 2019)
- Handbook of Internal Medicine (Version 8.4, Oct 2021)



Update on Warfarin Safety Campaign



Local Sharing

Multi-target approach to reduce warfarin related incidents

- Facilitate and optimize use of direct oral anticoagulants (DOACs), e.g. in post-operative thromboembolism
- Develop algorithms to monitor time in therapeutic range (TTR) for patients on warfarin
- Mobile app drug-taking reminders and avoidance of complicated warfarin regimes
- Inter-professional collaboration (e.g. warfarin clinics) and system enhancements to help INR monitoring



In the Warfarin Safety Campaign 2022, we received a total of 189 submissions. Notable ideas from our colleagues include:

- Standardized warfarin regime
- Mandatory input of INR target
- Smart INR display
- AI dosage calculation
- Mobile app patient reminders and many more!



Latest result from ePR within 7 days

Test	Result	Date
INR	1.2	05/05/2022 07:28

Warfarin Sodium Tablet

Indication
 AF CHA2DS2-VASc score
 Others

Intention
 INR Intensity 2 - 3
 ≥
 ≤



A lunchtime Webinar will be held on 19 August 2022 (Friday), and our 6 finalists will present their bright ideas to us all! Participate by casting your votes!

Last but not least, follow our [PS&RM Instagram page](#) and stay tuned to stories from our finalists!



Proposed Workflow

Warfarin tablet oral: 1mg nocte

System would have a preset therapeutic range, e.g. Give if INR <= 3.5

INR: 1.5 → INR: 4.0

*The images are modified from the user interface from IPACE utilized in Hospital Authority Hong Kong (3).

Illustrations and ideas from Top 6 finalists

- Display INR Value in drug administration system
- Digital warfarin stickers/ blood on CMS
- Add warfarin alert to eHRSS
- Provide funding and resources to warfarin clinic
- Provide warfarin card to patient

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Suggestion or feedback is most welcome. Please email us through HA intranet at address: [HO Patient Safety & Risk Management](#)