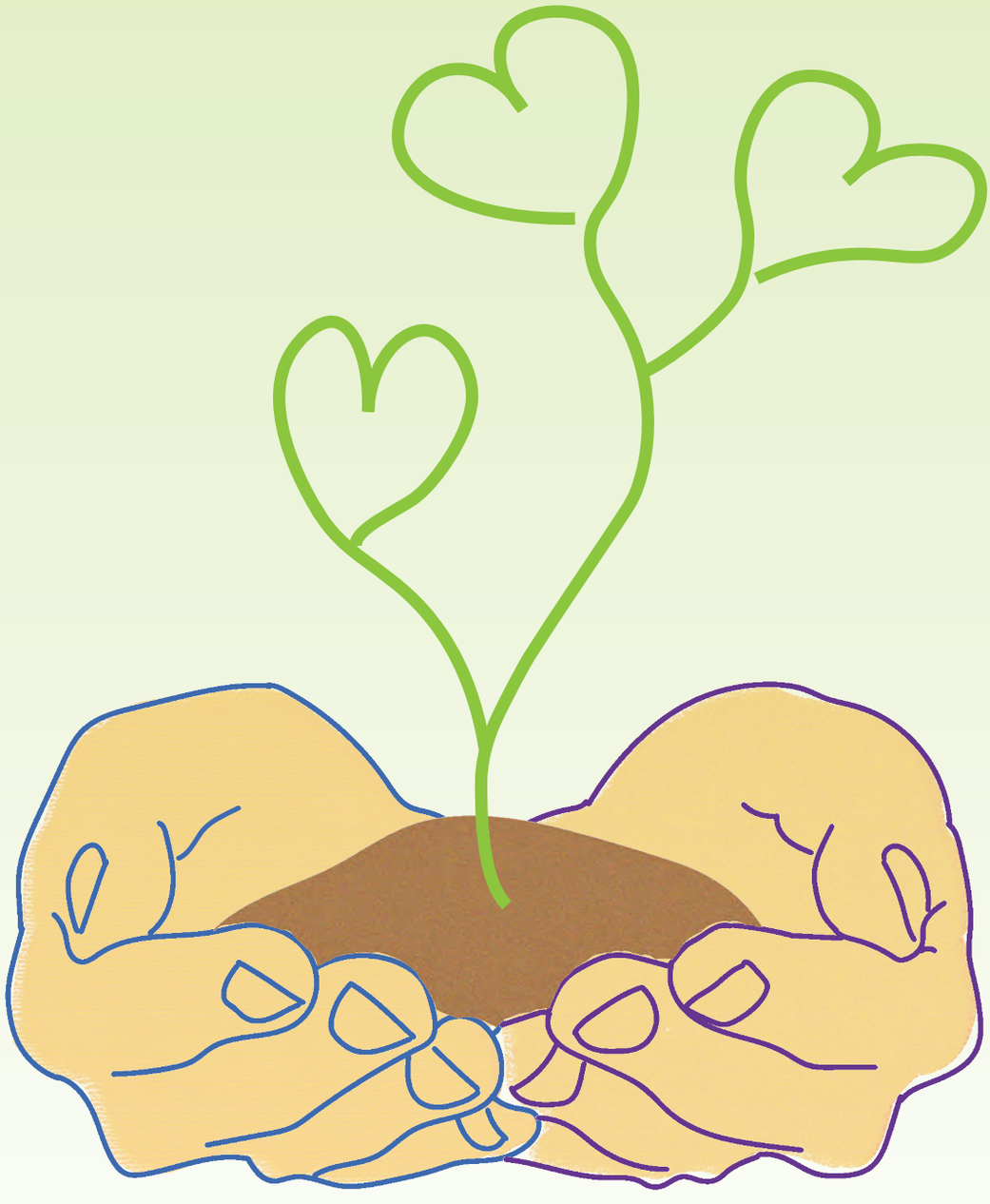
Quality and Safety

Annual Report

2019



醫院管理局
HOSPITAL AUTHORITY

Acknowledgement

As with previous years, the Hospital Authority (HA) Quality and Safety Annual Report relies on submissions from our colleagues. We have continued the trend from last year to include contributions from each of the seven Clusters, the Quality and Safety (Q&S) Division of Hospital Authority Head Office (HAHO), as well as the Coordinating Committees (COC) and Central Committees (CC). We are grateful for each contributor team sharing with us and the wider public their quality initiatives in 2019.

The Hospital Authority has been stretched and under the pump with the COVID-19 pandemic. Yet the dedication and diligence of our colleagues in pursuing quality healthcare services for our patients enable them to overcome the many pressures they face. We would like to express our appreciation to all colleagues for their endeavours in providing a quality and safe service to our patients throughout these very challenging times.

Our heartfelt gratitude is also extended to those who have contributed their valuable input and feedback to make this publication a success.

Quality and Safety Division
Hospital Authority

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Opening Message

Hong Kong and the Hospital Authority has endured a turbulent period, with mass social events in 2019 and the ongoing COVID-19 pandemic challenging our capacity and responsiveness. Whilst not trying to jinx ourselves, it is probably not unreasonable to suggest that HA has so far responded to these challenges with dignity and grace, maintaining quality care to our patients throughout these times.

The countless hours of preparations, trainings and drills that our staff undergo during normal periods have fine-tuned our response capabilities and strengthened our system's resilience. These are the kinds of situations the health system has engrained into its DNA through painful past experiences; to anticipate, to prepare for, to respond to, to build and continually strengthen system capabilities.

Underpinning this system however, is our most important asset. **Our staff.** Throughout these challenges, our staff have dedicated themselves to serving our patients, continuing to provide safe and quality care during uncertain and testing environments. Regardless of what any health system looks like, if it does not have staff who are committed, it is bound to fail. More than ever, I feel our HA Values resonating strongly: People-centred Care, Professional Service, Committed Staff, Teamwork.

We are health care providers first and foremost. Whether you are a nurse, physiotherapist, biomedical engineer, technician, porter, chef, doctor… every day we come together to provide the best care we can to our patients. Witnessing this dedication from our staff over the last few months, I have never been more proud to serve our community through the HA family.

"The flower that blooms in adversity is the most rare and beautiful of all."

K L Chung

Director of Quality and Safety

HOSPITAL AUTHORITY
HEAD OFFICE

Clinical Effectiveness and Technology Management

Introduction

The Clinical Effectiveness and Technology Management Department is organised into two teams:

• Clinical Effectiveness Section: Research ethics oversight, innovation/invention management, clinical outcome monitoring, clinical audit and clinical indicator

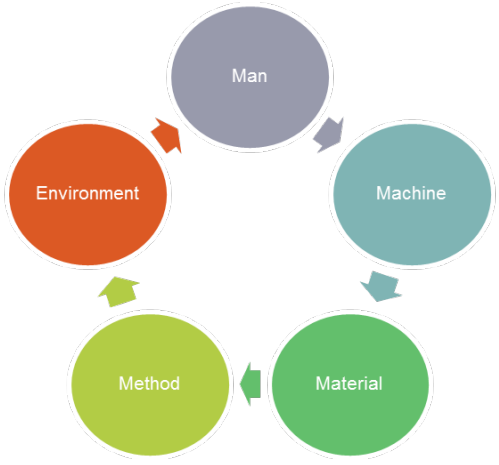
• Central Technology Office (CTO): Healthcare technology management including planning, assessment and monitoring, medical device management, real-time integration of radiology images in supporting clinical procedures project.

The department also provides executive support for various committees in Head Office level, such as, Coordinating Committee in Radiology, Coordinating Committee in Pathology, Central Committee on Genetic Services and Central Committee on Transfusion Service, Radiation Safety Committee, Positron Emission Tomography (PET) Steering Committee and Point-of-Care Testing (POCT) Committee, etc.

Management of Advanced Technology with Additional Government Funding

The delivery of healthcare is complex. Clinical pathway is disease-specific and time critical, starting from initial symptom presentation, through clinical assessment, investigations and examinations, diagnostic conclusion, timely treatment, monitoring of treatment outcomes and evaluation of complications, to patient recovery. Advanced technology plays a crucial role in rendering quality healthcare services, which is important to the holistic patient management process for supporting diagnosis and treatment, as well as rehabilitation and palliative care. To support a sustainable development in medical technology, it is important for HA to invest in new equipment in addition to replacing the backlog of aged ones.

The 2019-20 Government Budget announced the allocation of extra HK$5 billion for HA to acquire and upgrade medical equipment, in order to keep up with contemporary standards of medical care and enhance the quality and safety of patient care.



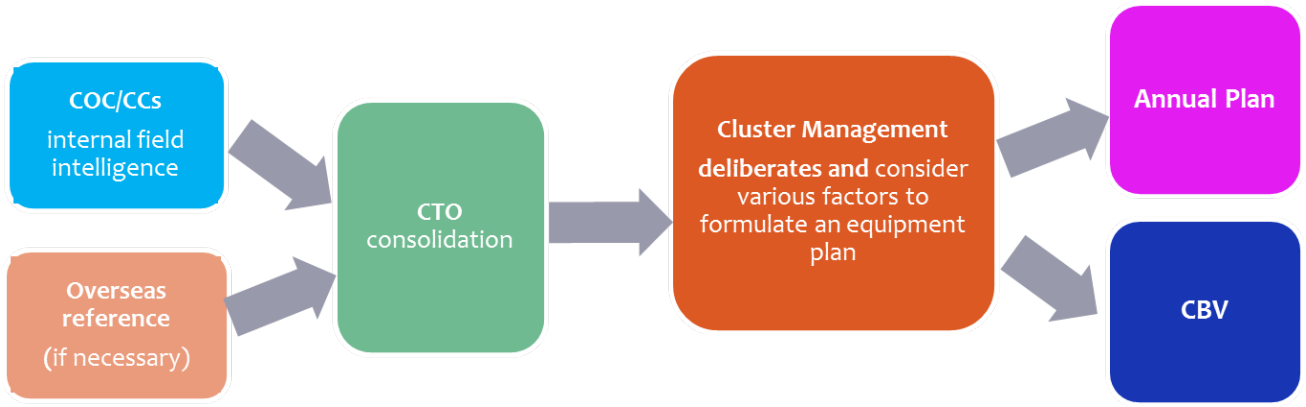
Overall Approach

New technology/medical equipment planning cannot be considered in isolation. It should be considered in the context of service planning, service sustainability and improvement, and strategic integration into HA systems to support patient care.

The Central Technology Office (CTO) coordinates COC/CCs to develop medical equipment rolling plans for cluster management's reference. As of early 2019, 30 COC/CCs

have submitted their rolling plans. Through the current mechanism, HA conducts health technology assessment prior to the introduction of new technology items. Cluster management considers various factors, deliberates and formulates annual medical equipment requirement plan to meet clinical and operational needs, and also ensures that new technology introduced will improve clinical outcomes in a cost-effective way. Colleagues are encouraged to discuss with department management and propose new technology or equipment which can enhance the delivery of quality healthcare services. With the additional Government funding, besides COC/CCs, CTO further coordinates and meets with a number of key stakeholders, including cluster management and different Head Office (HO) divisions, to promulgate the overall approach and devise a mechanism for the management of advanced technology.

Moreover, HA will take into account advice from healthcare professionals and make reference to overseas practice to facilitate planning for medical equipment, and consider the availability of expertise, manpower and facilities. The annual planning process and procurement of equipment under Capital Block Vote (CBV) is robust and sustainable, and HA takes the opportunity of this additional funding to enhance the deliberation process in planning for introduction of advanced technology.

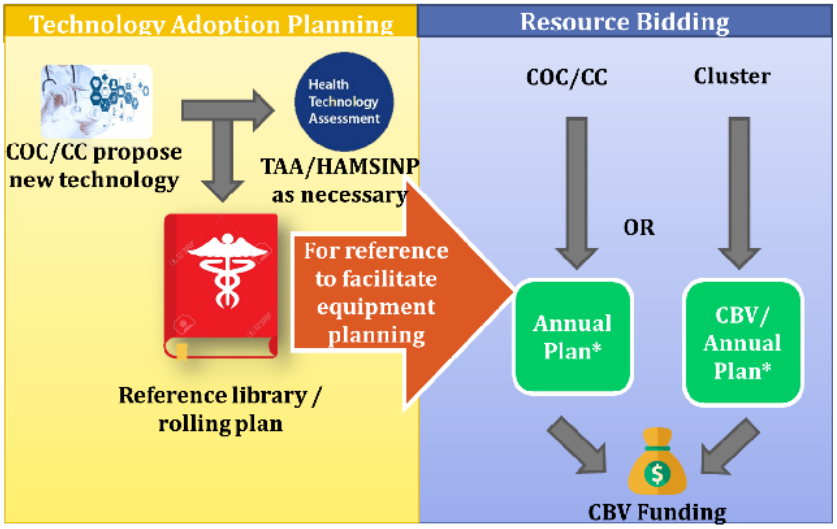


Example of Planned Advanced Technology for 2019-20

Next generation sequencing (NGS) is a high throughput technology that can interrogate multiple genetic targets in the clinical specimens. It may replace several existing molecular platforms and achieve a higher diagnostic sensitivity with a shorter turn-around-time. This technology is applicable in cancer investigations, for example, solid tumors and blood cancers, as well as microbiological studies and other subspecialties in pathology.

Way Forward

Assessment of new purchases to upkeep and modernise equipment is an ongoing process. HA has an established mechanism for assessing the introduction of new technology and conducting relevant evaluation before its diffusion. While the utilisation of major equipment in clusters and HA overall would be monitored, the evaluation of advanced technology would be more important, especially for the introduction of those technology that are totally new to HA. CTO will further collate input from COC/CCs and to establish a reference library on advanced technology, so as to provide more information for cluster management's reference. The reference library will be updated regularly and made available to various stakeholders to facilitate communication and feedback between COC/CCs and Clusters.



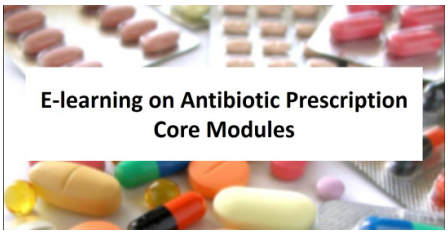
**Consider annual plan if there is recurrent or other resources requirement on top of CBV.*
***TAA** – Technology Adoption Assessment*
***HAMSINP** – Hospital Authority Mechanism for the Safe Introduction of New Procedures / Technology*

Infectious Disease Control Training Centre

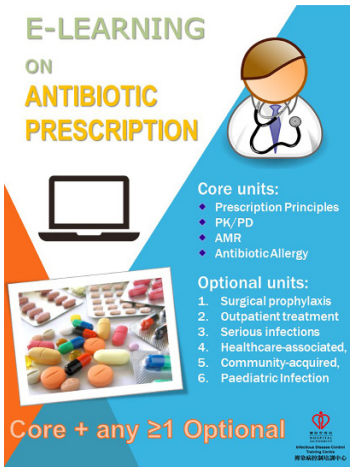
Developing an E-Learning Programme for Antibiotic Prescription

Introduction

The importance of prudent antibiotic use cannot be overstated, particularly at times of rising antimicrobial resistance. Among the various activities within an antibiotic stewardship programme (ASP), training and education remain the most fundamental components, through which we can understand and internalise the principles supporting the clinical decisions.



E-learning on Antibiotic Prescription
Optional Module 1



Project Highlights

A series of e-learning modules have been crafted to summarise and elaborate the principles on antibiotic prescription in different scenarios. The modules were developed under the guidance of the ASP working group while the contents were contributed by Infectious Disease Control Training Centre (IDCTC), cluster microbiologists, infectious disease physicians and pharmacists. Comprising core and optional components, the scope of topic spans from basic pharmacology to treatment of healthcare-associated infections. The learner can choose topics of interest according to his/her relevant specialty.

The greatest challenge during the production of the programme was to provide up-to-date information to learners, e.g. the recommended dosage of drugs may change from time to time. Therefore, the flexibility to allow editing on the e-learning system is essential for administrator updates. The content modules are presented in PowerPoint format; and the master record is kept at IDCTC for future modification as required. For better sound quality, the audio system of a lecture theatre was used for recording, followed by manual editing of the audio file to match the presentations. The programme was launched on 23 December 2019.

Way Forward

All professional staff are encouraged to take part in this e-learning programme. Let us join hands in ensuring rational use of antibiotics!

Raising the Awareness of Antimicrobial Resistance in Public Hospitals

Introduction

The Infection Control Branch of the Centre for Health Protection launched a series of publicity actions in November 2019 to echo the World Health Organisation's annual World Antibiotic Awareness Week.

Project Highlights

Publicity activities were launched with a view to raise the public's awareness on antimicrobial resistance (AMR) and to encourage the public, especially patients, to use antibiotics properly, perform personal hygiene practice including hand hygiene, and keep vaccinations up-to-date. Examples included display of "Never take antibiotics without a prescription. Consult your doctor first." poster and broadcasting of a new episode of an animation featuring "Act Together Now to Combat Antimicrobial Resistance" with an earlier episode "Safe Use of Antibiotics Animation" in all General Out-Patient Clinics (GOPCs) and Specialist Out-Patient Clinics (SOPCs).

Way Forward

Efforts will be continued to increase awareness of AMR amongst patients, relatives and staff concerned.

Infection, Emergency and Contingency

Introduction

The Department of Infection, Emergency and Contingency (IEC), assembled in 2006 after the reform of the Hospital Authority Head Office, endeavors to combat infectious diseases, coordinate and enhance emergency response as well as planning for contingencies. The department consists of 3 teams:

- Head Office Major Incident Control Centre (HOMICC) – Coordinates HA's emergency preparedness and response measures. It also acts as an information hub in relaying information during HA-wide major incidents or disasters.
- Chief Infection Control Officer (CICO) Office – Provides professional advice on infection prevention and control, and supports emergency response in infectious disease outbreaks.
- Corporate Clinical Psychology Services (CCPS) – Promotes psychological well-being of staff so that they could provide high quality and person-centred services for our patients.

Project Highlights

Emergency Response for Mass Gathering Events

Since June 2019, multiple mass gatherings occurred in many districts. HOMICC was activated with HO Duty Officers (HODOs) closely monitoring the events 24/7, as well as maintaining constant communication with Accident and Emergency (A&E) Departments and the Fire Services Communications Centre (FSCC) for possible casualty diversion and operations. Situation updates and reports related to the events were also issued regularly for strategic response planning.

In addition to A&Es and ICUs, our close partners in emergency response, HOMICC also sought advice from experts of various specialties, such as the Burns unit, Trauma, Neurosurgery and Toxicology for casualties management, diversion and to strengthen preparedness in case of potential adverse events. Besides, special transportation arrangements, especially during times of traffic disruption, were explored between HOMICC and the Government Flying Services for cases requiring urgent conveyance or hospital transfer. Training for the participating hospital colleagues were organised. HOMICC also kept a close monitor on all A&Es' service to ascertain the emergency services available.

HOMICC will always stay prepared and ready for any future eventualities, and will continue to work with relevant departments for emergency management, as well as disseminating timely information to relevant stakeholders for appropriate responses.

Staff Psychological Services

Following the ongoing social events since June 2019, Oasis - Center for Personal Growth and Crisis Intervention ("Oasis") recorded a monthly increase of 15% on average in the number of individual counselling services provided for HA staff between June and September 2019. In view of the increase in psychological needs, Oasis launched a series of psychological services to enhance staff's psychological resilience and provide professional support for staff in crisis.

The "Caring for Ourselves" Series

The "Caring for Ourselves" Series (The "Series") was issued in July 2019 with hands-on psychoeducational tips on overcoming information overload, tackling insomnia, relieving distress and tension, and supporting oneself and others.

The Series were published in pamphlets and calendars with QR codes for distribution to different clusters. They were also accessible online. Along with other services related to the social events, the hit counts recorded were over 12,000.

A3 Calendar

Calendar Card

Relaxation Workshop & Treatment Groups

Oasis launched 60 classes of 45-minute relaxation workshops in the Head Office and 34 hospitals since September 2019 to promote relaxation techniques and to provide colleagues with a break from work. Over 1,000 colleagues attended the workshops. The majority of participants enjoyed the short break and acknowledged its practicability in relieving stress.

At the same time, Oasis continued to support specific staff/departments' psychological needs by providing treatment groups on various topics, such as insomnia, mindfulness and self-compassion, positive psychology etc. Over 10 treatment groups were successfully organised from June to December 2019 with about 400 attendances. Encouraging feedback was received on the treatment groups' effectiveness for prevention/ alleviation of various mental health issues.

Relaxation workshop at PWH

Quantitative Feedback	
Questions	**Score (out of 5)**
Was the workshop helpful?	☺4.2
Did the workshop bring you new perspective, knowledge and/or skills?	☺4.2
Would you recommend the workshop for other colleagues?	☺4.3
Qualitative Feedback	

Feedback on relaxation workshops (n=470)

Respite Centres/Stations

Oasis also joined hands with the Critical Incident Psychological Services (CIPS) Centre and Critical Incident Support Teams (CISTs) in clusters to set up Respite Centres/ Stations in over 30 hospitals since November 2019. Staff could take a break and have a moment of peace by taking part in focusing activities (e.g. mindful colouring, calligraphy), accessing self-help information, or doing tea meditation. As at 31 December 2019, 33 sessions of Respite Centre/Stations were arranged and about 500 staff enjoyed the service.

Mindfulness Station of Respite Centre, Head Office

Participants remarked that the activities at Respite Centres/Stations were helpful in relaxation, providing respite for the mind, providing information for handling problems, and understanding own mental conditions. They also hoped for a long-lasting respite centre/station at a fixed venue.

Questions	Score (out of 5)
Were the activities helpful?	☺4.3
Did you enjoy the activities?	☺4.3
Would you recommend respite centre/station for other colleagues?	☺4.3

Quantitative feedback on respite centres/stations (n=257)

Crisis Intervention Services

Oasis continued to provide timely crisis intervention services for staff/departments with imminent psychological needs. From June to December 2019, Oasis provided crisis intervention services to about 600 staff across clusters within HA. Psychological support was also extended to the community in critical situations outside of HA premises.

Clinical psychologists joining the Emergency Medical Team

"Tough Minds Tender Hearts"

'Tough Minds Tender Hearts' resilience program course materials

Positive psychology aims at cultivating individuals' sense of meaningful, flourishing and fulfilling life. Based upon the extensive research literature on positive psychology and existing evidence-based resilience training programs, a team of clinical psychologists in the CCPS developed the "Tough Minds Tender Hearts" (TMTH) resilience program in 2019 to support HA staff to build resilience and mental toughness in facing work and life stress.

Integrating major psycho-social therapies such as cognitive behavioral therapy, compassion-focused therapy and mindfulness, the course covers a variety of emotions, cognitive and behavioral skills to develop staff's resilience, character strengths, and communication competence in challenging relationships in 4 modules.

As at December 2019, 48 sessions of TMTH module 1 were rendered to nursing staff across 6 clusters with over 1,200 attendances. Encouraging feedback was received. In the coming years, the course will roll out to all clusters for staff of different ranks and disciplines to enable more HA staff to benefit from this science of happiness.

"Tough Minds Tender Hearts"

	Modules				
	Main Theme*	Frontline staff	Managerial staff	Preceptors/ mentors	Duration (2.5 hr/session)
1.	Cognitive & Emotional Wellbeing	Developing Mental and Emotional Toughness (Part 1)			2 sessions
2.	Character Strength^	Thriving with Strength and Purpose	Strength-Based Management	Cultivating Strengths & Well-being of Mentee	1 session
3.	Positive Connection^	Building Resilient Relationships	Communication Skills for Growing a Resilient Team	Building Effective Mentoring Relationships	1 session
4.	Cognitive & Emotional Wellbeing^	Developing Mental and Emotional Toughness (Part 2)			1 session

*Essential components of "Mindfulness" & "Self-compassion" are also incorporated in different modules
^Pre-requisite: Module 1: Developing Mental and Emotional Toughness
No of participants per group: 15-50

Course outline of "Tough Minds Tender Hearts" resilience program

Positive feedback of the program

Disaster Psychosocial Services Website

Disaster Psychosocial Services Website

To raise public awareness of disaster preparedness and emergency response, the first website in Hong Kong promoting disaster psychosocial knowledge to disaster workers and the public was launched in April 2019.

The website includes information on psychological impacts of disasters and advice on disaster preparedness, response and recovery, such as tips on self-care and finding community resources. It aims to equip people to withstand the impact of disasters and cope with the trauma of aftermaths. Meanwhile, information and analysis of recent local or overseas disasters and major incidents are continuously reviewed to highlight the lessons learned and suggest future improvements. "DPST Corner", an exchange platform for Disaster Psychosocial Services Team (DPST) members of all acute general hospitals, was established to facilitate communication, professional exchange and resource sharing among members.

The website has received positive users' feedback with nearly 10,000 view counts since its launch. To optimise user experience, a smartphone version, as well as graphic and functional enhancements are being developed and are expected to be in place by 2020.

Way Forward

In view of the increasing expectations and demand on public healthcare services, HA will continue to uphold its strategy of "Prevention-Preparedness-Response-Recovery" in crisis management. In this respect, the Department of IEC will remain vigilant and maintain its effort as well as professionalism on strengthening infection prevention and control, providing timely response during major incidents, enhancing contingency planning for various incidents, reinforcing staff resilience in response to crisis and adversity via collaboration with different departments and organisations.

Patient Relations and Engagement

Introduction

Obtaining feedback from service users is one of the effective ways to enable HA and its hospitals to achieve the objective of providing quality patient-centred healthcare services to meet the needs of the community. Complaints and appreciation serve as useful indicators of patient satisfaction.

Since its inception, HA has established a two-tier system in handling public complaints with the aim to provide a readily accessible mechanism to deal with all complaints received from the public. All first-time complaints are handled by the respective hospitals/clinics. Complainants who are dissatisfied with the outcome of their complaints handled by the respective hospitals/clinics can appeal to the Public Complaints Committee (PCC) for a review of their cases. The PCC is established under the HA Board to independently consider and decide on all appeal cases. The Patient Relations and Engagement Department (PRED) of Quality and Safety Division oversees the corporate complaints and feedback management work. It also provides executive support to the PCC and the Central Committee (Complaints Management and Patient Engagement) (CC(CM&PE)).

The CC(CM&PE), comprising clinical leaders and management from seven Clusters, was established to enhance the overall management of patient relations. It advises on the strategic direction of complaints management of HA and is tasked to align the policies, standards and practices of various aspects of patient relations and complaint management of public hospitals.

Project Highlights

Patient Experience Survey (PES)

Employing experience/satisfaction survey to proactively gauge patients' experience has become an international trend. HA commenced the first Inpatient Survey in 2010, which was also the first territory-wide PES, using a structured and validated tool in the Chinese community in Asia. Significant progress has been made for systematic planning, development and follow-up on PES in HA. The following PES projects and follow-up actions were undertaken in 2018/19:

PES on Specialist Outpatient Service

Following the Corporate PES Service Plan, the PES on Specialist Outpatient Service was launched in July 2018 and its results were reported to the public in December 2019. Covering around 14,000 patients from 26 Specialist Outpatient Clinics with an encouraging overall response rate of 78%, the survey results were positive and encouraging. On a scoring scale of 0 to 10, the overall score on the inpatient service was 7.9, with outstanding performance on provision of clear information about medications (9.4), explanation on how to take medications (9.3), and being

treated with respect and dignity (9.8). Areas for service improvement identified included provision of post-discharge information on danger signals and contacts.

The survey results have suggested sustained momentum with a high degree of engagement for both staff and patients towards PES and patient-centred care.

Future Corporate Survey Plan

To ensure a structured longitudinal monitoring of patients' views, HA will continue to conduct corporate-wide Inpatient Surveys at regular intervals. In between, there will be Surveys on Specialist Outpatient Service or Specialty-based Service to address specific areas or issues. The field work of the PES on Inpatient Service started in October 2019, and was completed in April 2020.

Enhanced Follow-up Mechanism

At both the Cluster/Hospital and Head Office levels, structured mechanisms are in place to drive improvement action plans. The mediation skills training and Patient Discharge Information Summary are two important projects developed to address the consistent findings and patient feedback for want of "better communication with healthcare workers" and more "information giving upon discharge".

Enhancing Capacity and Staff Competencies in Conflict Resolution

For healthcare workers, complaints management is challenging as it requires competencies other than clinical skills. Training programmes and activities to enhance staff capacity and competencies in conflict resolution in 2019 included:

Complaint Management and Conflict Resolution Training

i. Complaint Management Workshops for Staff of Patient Relations Offices

To promote learning and sharing on effective management of patient relations and conflict resolution, three half-day seminars were organised in March, June and October 2019 for staff of Patient Relations Offices with different years of experience. The seminars were well received by over 150 staff with very positive feedback. The core values of complaint management in helping complainants and supporting front-line staff were affirmed, in addition to learning and sharing of practical tips in managing challenging interactions with clients.

ii. Commissioned Training on Mediation and Conflict Management for Nursing Staff in Kowloon East Cluster (KEC)

With the support of the KEC, commissioned training on mediation skills and conflict management was arranged for 90 nurse leaders in United Christian Hospital. In addition to effective communication skills to prevent conflicts in hot scenes, sharing of tips in handling difficult complaints had made this training a great success to address the needs and challenges of front-line healthcare workers.

iii. Sponsorship Programme on 40-hour Accredited Mediation Courses

The objective of the training is to empower and sharpen the skills of front-line staff in conflict resolution at the point of care. In 2019, 97 healthcare workers received sponsorship to attend these courses organised by universities and tertiary institutes.

iv. Nursing Attachee Programme on Complaint Management

With the support from HO Nursing Services Department, arrangement has been made for middle to senior nursing staff to attend the Panel Meetings of PCC as observers on a voluntary basis to gain exposure on HA's complaint management work.

Patient Engagement Forum in HA Convention

A patient engagement forum entitled "What Matters to Patients and Staff in Good Healthcare Professional-Patient Relations" was held in HA Convention in May 2019. The role plays and interactive discussions were well received by an audience of over 500 participants. There were also fruitful exchange and sharing with over 30 patient group representatives to explore ways for effective communication and conflict resolution in difficult interactions.

Way Forward

A key element of good patient care is a good and harmonious healthcare professionals (HCP)-patient relation. However, with the current situation of the public healthcare system - the tremendous workload with inadequate resources and workforce to cope with the demand on the provision of services, HCP-patient relationship is inevitably challenging, if not at times, strained and difficult. Patient relations, particularly complaint management, has been playing a pivotal role in bridging the communication and resolving differences between the parties. Riding on the existing framework, continued efforts will be made to strengthen the two-tier complaints system; and engaging patients and staff through PESs for quality improvement. To ensure good succession and development of the future generations of competent complaint management personnel, there will be structured training courses, rotation programme and grade management to foster a closer tie and partnership between HO and Patient Relations Offices of the Clusters.

Patient Safety and Risk Management

Introduction

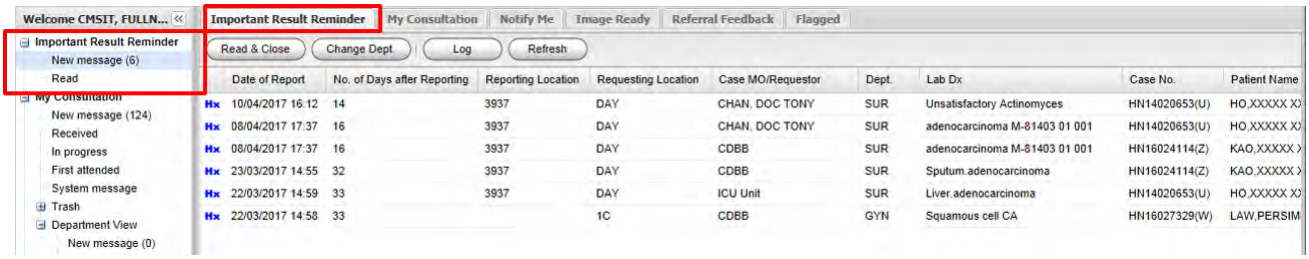
The Patient Safety and Risk Management Department (PS&RM) was established to coordinate improvement in patient safety and quality of care across the Hospital Authority. Through analysing reported incidents, the department identifies risks in the patient care process, introduces various risk reduction measures and organises education programmes. Highlights of these measures from 2019 are described below.

Project Highlights

Diagnostics

Management of Important Histopathology Reports

To address the risk of delay in managing important histopathology and radiology reports where positive test results (mostly in relation to malignancy) were not communicated in a timely manner, the HA set up a "Task Force on Handover of Important Investigation Results". As an interim solution recommended by the task force, an Important Result Reminder (IRR) feature was added to the Clinical Management System (CMS). IRR at "Clinical Inbox" is a reminder for cancer-related histopathology results which will be pushed to the department folder in the "Clinical Inbox" (as shown below) two weeks after the report is available.



The IRR feature (for cancer-related histopathology results) was first implemented in the 4th quarter of 2017 and was rolled out to 4 hospitals in 2017 and 7 hospitals in 2018. IRR is on track to be implemented at all 42 HA hospitals by January 2020. The tool provides an additional safety net for picking up important histopathology reports related to malignancy in a timely manner in order to provide appropriate care to patients. Going forward, extending the IRR feature to radiology reports with 'Special Attention' will be explored.

Missed Findings on Chest X-Rays

In late 2018, a number of cases were reported by HA hospitals where patients with lung lesions visible on Chest X-Rays (CXR) were missed by case doctors. To address this issue, an investigation panel reporting to the Director of Quality and Safety was formed to review the cases. The panel came up with a number of recommendations and the following management actions were subsequently taken.

In the short-medium term, HA will ensure that all high risk CXRs are reviewed by senior medical practitioners. All adult patients with CXRs taken in Accident & Emergency (A&E) Departments and discharged home without being admitted currently have their CXRs reviewed by a specialist medical practitioner.

HA has also developed web-based training modules to decrease perceptual errors in interpreting CXRs and will embark on an HA-wide training for clinicians.

A feasibility study in incorporating the capabilities of AI in supporting CXR assessments is being conducted at Tuen Mun Hospital. How AI can be integrated into frontline clinicians' workflow as a clinical decision support tool is also being considered.

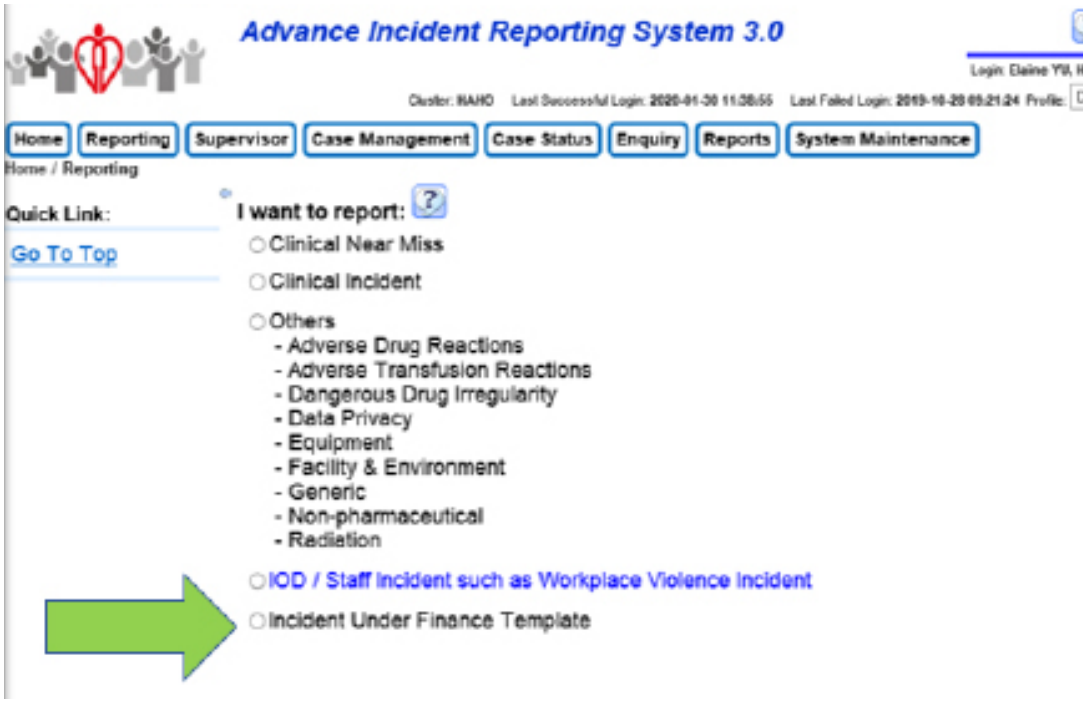
HA is also exploring the utilisation of overseas teleradiology reporting services for reporting or clinical decision support. This includes understanding of the technological, financial, legal and stakeholder barriers to adoption.

Incident Reporting

Advance Incident Reporting System (AIRS) Finance Template Implementation

The Group Internal Audit (GIA) team compiled a report on "Payroll Management of Temporary and Part-Time Staff" which identified non-compliance with submitting incident reports in accordance with reporting timeline requirements as one of the issues. Following up on GIA's recommendation, and to help develop the reporting culture among the organisation, the Task Force on AIRS Operations supported (in March 2018) the proposal to explore leveraging AIRS to improve the timeliness of reporting finance related incidents.

Full electronic reporting of finance related incidents using the AIRS "Finance Incident Template", as shown above, was piloted at KCC & KEC in September 2019 and was fully implemented at the end of December 2019.



Breastfeeding Promotion

The Baby-Friendly Hospital Initiative (BFHI) was first launched in 1991 by the World Health Organisation (WHO) and the United Nations Children's Fund (UNICEF) to give every baby the best start in life. The aim is to remove breastfeeding barriers in health facilities such as hospitals, clinics, maternity centres and mother-child care centres. The program encourages health facilities, especially maternity hospitals, to implement the "Ten Steps to Successful Breastfeeding".

Since the adoption of the Breastfeeding Promotion Policy in 2010, HA has actively promoted, supported and protected breastfeeding to achieve optimal health for infants and their mothers following BFHI recommendations. Since 2013, we have been supporting our maternity hospitals to obtain BFHI accreditation, and as of 31 December 2019, 3 out of 8 maternity hospitals have achieved accreditation. Queen Elizabeth Hospital was the first HA hospital to be awarded the "Baby-Friendly Hospital" designation in May 2016 under BFHI. Queen Mary Hospital and Prince of Wales Hospital were subsequently awarded the designation in January 2018 and July 2019 respectively. The effort that all the staff have put in certainly deserves our recognition.

Phasing Out the Reuse of Singe Use Devices (SUDs)

In order to mitigate the health risks associated with the reuse of SUD, HA issued the "HA Guidelines on the Reuse of Single-Use Medical Devices" in April 2006. The Guidelines aimed to provide a framework to guide hospitals in establishing a system for reprocessing and reuse of SUD. We have now stopped reusing all high risk critical items and are phasing out the moderate and moderate-high risk items. The time frame for the cessation of the reprocessing of single use devices (SUD) in all HA hospitals is financially dependent and HA is continuously trying to secure additional resources to stop the reuse of SUDs, especially during this period of heightened infection control concerns. Meanwhile, to mitigate health risks and safeguard patient safety, the organisation has developed a tracking and tracing system for higher risk reprocessed SUDs in case of any product recalls.

Promulgation of Advance Care Planning (ACP) / Advance Directive (AD)

Decisions on withholding or withdrawing life-sustaining treatment are amongst the most difficult decisions in clinical medicine. During these situations, the healthcare team, patient and family members may have conflicting opinions in treatment, and the decision to withhold or withdraw treatment needs to be made in the context of ethical, legal, as well as institutional standards.

ACP is an overarching process of proactive communication *regarding but not limited to end-of-life (EOL) care. It enables patients with advanced progressive disease, together with family members and health care providers, to consider ahead of time what kind of care is appropriate when he/she can no longer make decisions. It also helps to prepare the patient and family emotionally, minimising conflicts with caregivers when the patient's condition deteriorates.*

AD is a legally binding tool used in advance care planning. *Using this tool, a patient can specify the treatment(s) that he/she is going to refuse in case he/she becomes mentally incapacitated and cannot make decisions with disease progression.*

While ACP & AD are common in settings such as palliative care (with oncology), geriatrics, or caring for patients with terminal or advance irreversible illness, recently, the public has been voicing their needs for better EOL care in HA. Through the promulgation of the ACP Guidelines, HA is supporting these needs through education of clinicians and supporting them to respect the patient's autonomy. HA has also been closely involved in the Government's public consultations for AD legislation and relevant EOL care. A designated HA Task Force was established in March 2019 to oversee the initiative and assist the Government with this undertaking.

Press release to launch public consultation (Sep 2019)

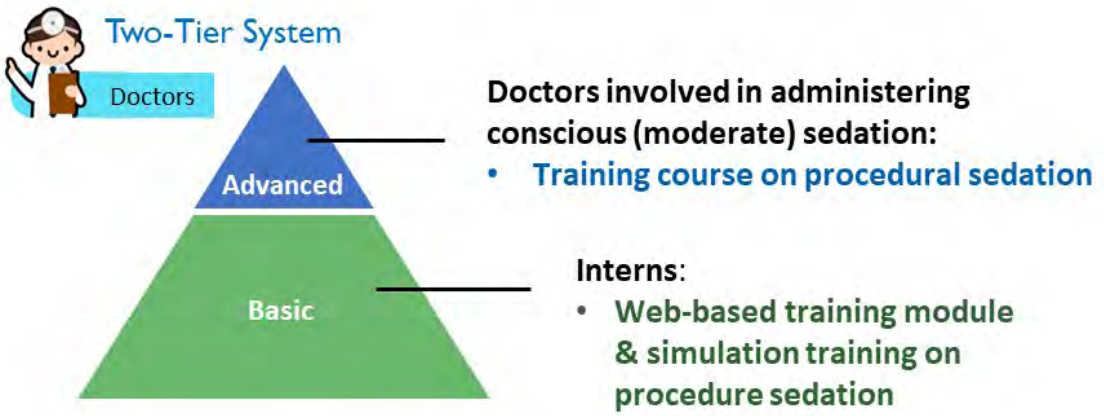
HA particupation in public consultation forum (Oct-Nov 2019)

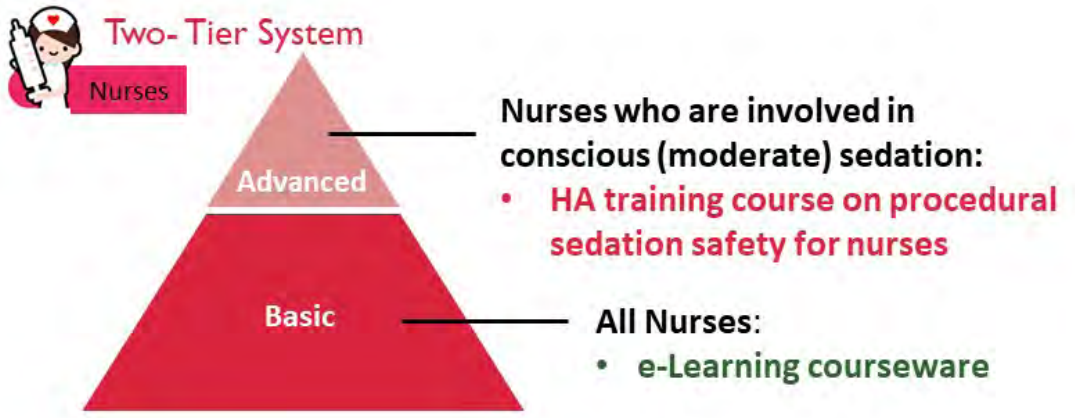
Procedural Sedation Safety Improvement

Over the years, there has been pockets of work across various domains to enhance procedural sedation safety. For example, accredited training for various clinical specialties, train-the-trainer courses, scenario-based simulation trainings for doctors and nurses, etc.

In 2019, the HK Academy of Medicine (HKAM) released its revised procedural sedation guidelines, with a greater emphasis on moderate procedural sedation requirements for adults. It recommended that capnography (CO_2) monitoring is necessary for high risk patients receiving conscious (moderate) sedation or any deeper level of sedation. HA saw this as an opportunity to try and meet best practice, and embarked on a process to procure state-of-the-art monitoring equipment, and enhance sedation training for doctors and nurses.

A two-tier training curriculum framework for doctors and nurses was established.





A HA training framework for doctors was developed and provided to the HKAM for accreditation. This would enable medical staff to be trained in-house, increasing our training capacity to address the needs of various specialties. A training plan for nurses is also currently being developed. We aim to have all the building blocks necessary to enable best practice within 2 years.

Way Forward

In 2020, PS&RM will be supporting our frontline colleagues by providing further training in root cause analysis. There will also be a strong focus on reducing missed diagnosis on radiological investigations.

PS&RM will continue to work closely with hospitals to continue the journey of phasing out the reuse of single use devices, while also leading the development of advanced directive and advanced care planning in HA.

Breastfeeding accreditation for the remaining 5 hospitals will continue with the aim of having all HA maternity hospitals accredited by 2021.

To reduce the risk of medication errors, we will explore the feasibility of compiling the most up-to-date list of patient's medications and will also review the peri-operative management of novel oral anticoagulants.

Quality and Standards

Review of Hospital Accreditation

In 2019, the Task Force on the Review of Hospital Accreditation continued to conduct its comprehensive review on the existing hospital accreditation programme, and to explore a possible framework for future quality improvement measures with internal and external consultation of stakeholders, including:

Internal

- HA senior management from both HAHO and Clusters;
- HA Staff Group Consultative Committees; and
- Cluster Focus Groups (a total of 25 groups were conducted in all seven Clusters with more than 350 staff from medical, nursing, allied health and supporting grade participated)

External

- Hong Kong Public Doctors Association;
- The Australian Council on Healthcare Standards representatives;
- Patient representatives; and
- Overseas accreditation teams (including Singapore and Denmark)

Overall, the majority of participants in the consultation exercises recognised the importance of a healthcare quality improvement framework to achieve continuous quality improvement and enhance patient safety. The hospital accreditation programme significantly improved the healthcare system in Hong Kong at the initial stage. As time went by, HA faced sustainability issues of the hospital accreditation programme similar to some other countries. The results generally supported the termination of the hospital accreditation programme, and HA would continue to work on formulating a new quality improvement framework. In December 2019, the HA Board approved the termination of the Australian Council of Healthcare Standards hospital accreditation programme in HA and the exploration of a new corporate-wide quality improvement framework with reference to local context.

Access Management – Specialist Outpatient Clinic (SOPC)

In 2019-20, HA introduced a SOPC Support Program (the Program) at corporate level to provide policy and funding support to Clusters for implementation of Special Honorarium Scheme (SHS) programs to open additional SOPC sessions.

The Program was applicable to eight major specialties in specialist outpatient services with the highest patient volumes and waiting times of new case bookings, namely Ear, Nose & Throat (ENT), Gynaecology, Medicine (MED), Ophthalmology (OPH), Orthopaedics & Traumatology (ORT), Paediatrics, Psychiatry (PSY) and Surgery (SUR). Upon review of local situation and approval by Cluster management, Clusters arranged additional SOPC sessions in six of the eight major specialties, namely ENT, MED, OPH, ORT, PSY and SUR. Between March and September 2019, over 8,600 SOPC first attendances were provided through the Program.

An interim review of the Program was conducted in 4Q2019. Clusters' feedback reflected that the Program was an effective short-term measure to treat SOPC new cases. HA plans to extend the Program to 2020-21 with enhancements on SHS allowance rate and operational flexibility to facilitate implementation.

Corporate Credentialing

In 2019, the HA Central Credentialing Committee reviewed the development of credentialing in HA in view of the recent development in the Hong Kong Academy of Medicine (HKAM) and other professional bodies. The review included the mechanism of endorsing credentialing activities at corporate and Cluster levels as well as the communication platform for deliberation of credentialing activities between HA and HKAM.

In July 2019, the representative of HA met HKAM and preliminarily agreed to set up a communication platform in HKAM for enhancing collaboration and deliberation of future credentialing activities between HA, HKAM and other stakeholders at an earlier stage before relevant credentialing guidelines are developed to upkeep the standards of clinical practice of Hong Kong medical professionals.

Meanwhile, HA would continue reviewing the HA Policy on Credentialing and Defining Scope of Clinical Practice and update relevant stakeholders on the future direction of credentialing in HA.

Informed Consent

Upon the launch of the Web-based Custom Print Informed Consent Form (ICF) System in 2015 and the interface of ICF System with Clinical Management System (CMS) in 2017, there has been a steady growth in the system utilisation. As of December 2019, over 2,800 procedures had been aligned in the database and over 3.6 million consent forms were generated from the ICF System, of which 94% were in Chinese.

As part of the CMS IV redevelopment project and also a long-term enhancement of the ICF system, the eConsent project kicked off in 2018. The new eConsent system will improve the consent process and enhance the quality of documentation on consent forms. The prototype of the eConsent is under

development and target to be implemented in all Clusters by phases starting 2020-21 onwards. Further enhancement of the eConsent system and interface with other IT systems will be explored in order to facilitate data transfer for analysis purposes and cater for eConsent workflow of high volume procedures, such as colonoscopy and bronchoscopy, etc.

Screen capture of eConsent system prototype

Viral Hepatitis Management

In line with the direction of the Steering Committee on Prevention and Control of Viral Hepatitis (the Committee) on eliminating hepatitis C virus (HCV) by providing direct-acting antiviral (DAA) treatment, HA has expanded the indication of DAA in the drug formulary in April 2019. Together with additional drug funding and enhanced laboratory capacity, it is anticipated that 1,000 HCV-infected patients will benefit from the initiative each year.

Furthermore, the Committee supported the direction of micro-elimination of HCV in patients undergoing dialysis in September 2019. HA has engaged various stakeholders to discuss the detailed logistics and implementation plan. The initiative will start in 1Q2020 and is planned for completion in 2Q2021.

To enhance the service on preventing mother-to-child-transmission of hepatitis B virus (HBV), HA is preparing the set-up of hepatitis nurse clinics, with QMH and PWH as pilot sites, to manage pregnant women with HBV infection. To dovetail with the service, the widened indications for Tenofovir in HA Drug Formulary would be effective from January 2020.

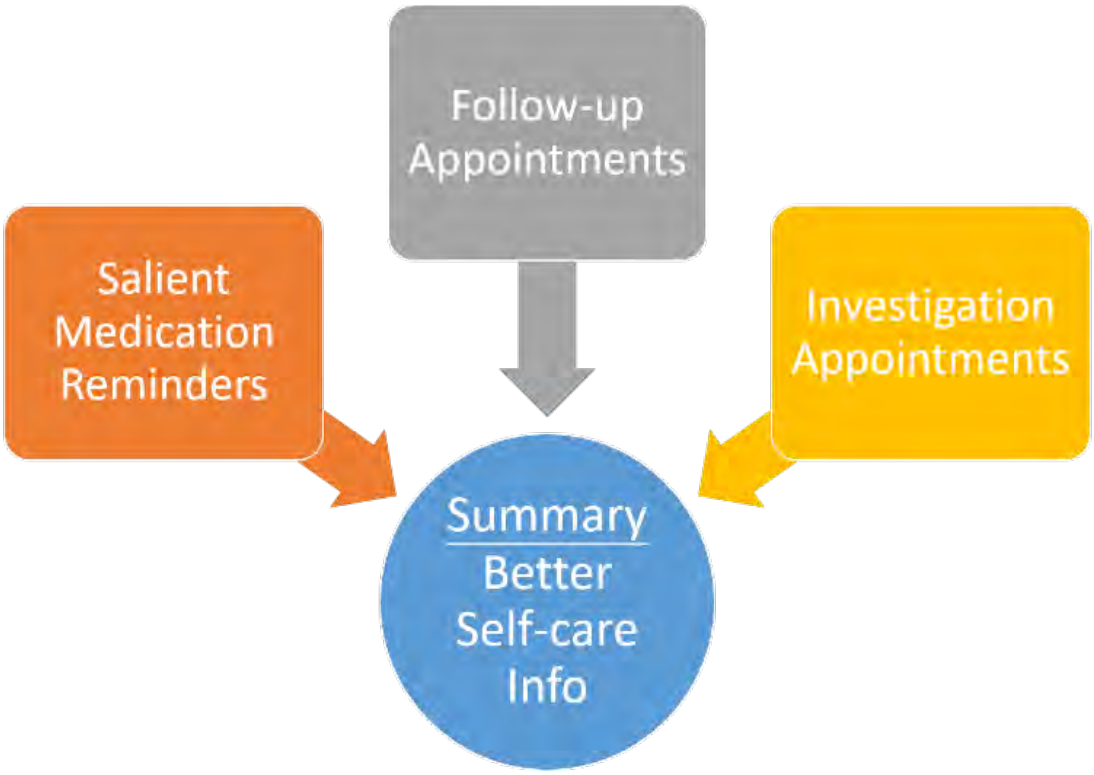
Patient Discharge Information Summary (PDIS)

Introduction

HA strives to provide quality healthcare services to patients and entrusts the Jockey Club School of Public Health and Primary Care of the Chinese University of Hong Kong to conduct patient experience surveys on an ongoing basis. The surveys consistently revealed patients' needs for better self-care information upon discharge. To address the information gap, the PDIS was piloted in 2018 and rolled out to more hospitals in 2019.

Project Highlights

The PDIS consists of two major parts. Salient Medication Reminders (SMR) provide salient reminders on the side-effects of commonly prescribed medications. In addition, an appointment list shows follow-up and investigation appointments within HA detailing date, time and address. Having successfully piloted in four hospitals in 2018, the PDIS was further rolled out in the Medicine and Geriatrics wards in NTEC, HKEC and HKWC in 2019. A survey was conducted on the pilot which indicated positive findings from patients and care-givers in all survey areas including overall impression, better self-care, more information and support for carers, etc. Moreover, HA staff members generally welcomed the initiative with concrete suggestions for further enhancements.



醫院管理局
威爾斯親王醫院
病人出院資訊摘要

病人姓名: 陳大文　　性別 / 年齡: 男/ 80歲
身份證號碼: AXX0001(X)　　出生日期: 1939年6月18日
住院編號: HN12000292(V)　　出院專科(病房): MED (IP01)
住院日期: 由 2019年9月10日至 2019年9月26日

醫護人員給您有關此次出院的重要藥物提示：

1. Frusemide (LASIX) tablet
(利尿藥；利尿藥/降高血壓藥)
- 服用此藥可能會導致血液中的礦物質缺乏（如鉀或鈉），導致心悸（俗稱心跳）、肌肉無力、酸痛、抽筋
- 此藥物可能引起血壓過低，若感到暈眩或頭昏眼花，起身站立時須緩慢進行

2. Methyldopa (ALDOMET) tablet

3. Lansoprazole orodispersible tablet

4. Hydralazine HCl tablet

5. Paracetamol (PANADOL) tablet

6. DAILY 1 PLUS tablet

7. Amlodipine Besylate (NORVASC) tablet
- 服用此藥可能導致手足或腳踝腫脹 (輕微腳腫)，血壓過低；若感到頭昏、眼花或暈眩時，起身站立時須緩慢進行

8. Amoxycillin (Sodium) + Clavulanic Acid (AUGMENTIN) injection

如欲獲取更多藥物資訊，請以手機掃描右方的二維條碼，下載醫院管理局「e藥通」應用程式；然後，再掃描藥物標籤上的條碼，獲取藥物資訊。

iOS　Android

覆診預約如下：

2019年10月23日　下午　2時 00分　威爾斯親王醫院 李嘉誠外科專科門診 血管/普通外科4 VASCULAR / SURGERY TEAM 4 專科診所北翼二樓,2/F SOPC (NW)

檢查預約如下：

2019年10月17日　下午　6時 15分　威爾斯親王醫院 - CT / Brain plain

重要註釋：

「病人出院資訊摘要」內重要藥物提示，只涵蓋病人獲處方的藥物之重要副作用或併發症以供參考，並不能盡列有關症狀。病人可能出現其他不常見、罕見或未能預見的副作用或併發症。不風險則因人而異。覆診預約日期及時間或會因臨床、行政或其他原因而更改或取消。病人應遵從醫護人員給予的特定指示。如閣下有任何疑問，請向醫護人員查詢。為保障病人私隱，請小心處理及保存。

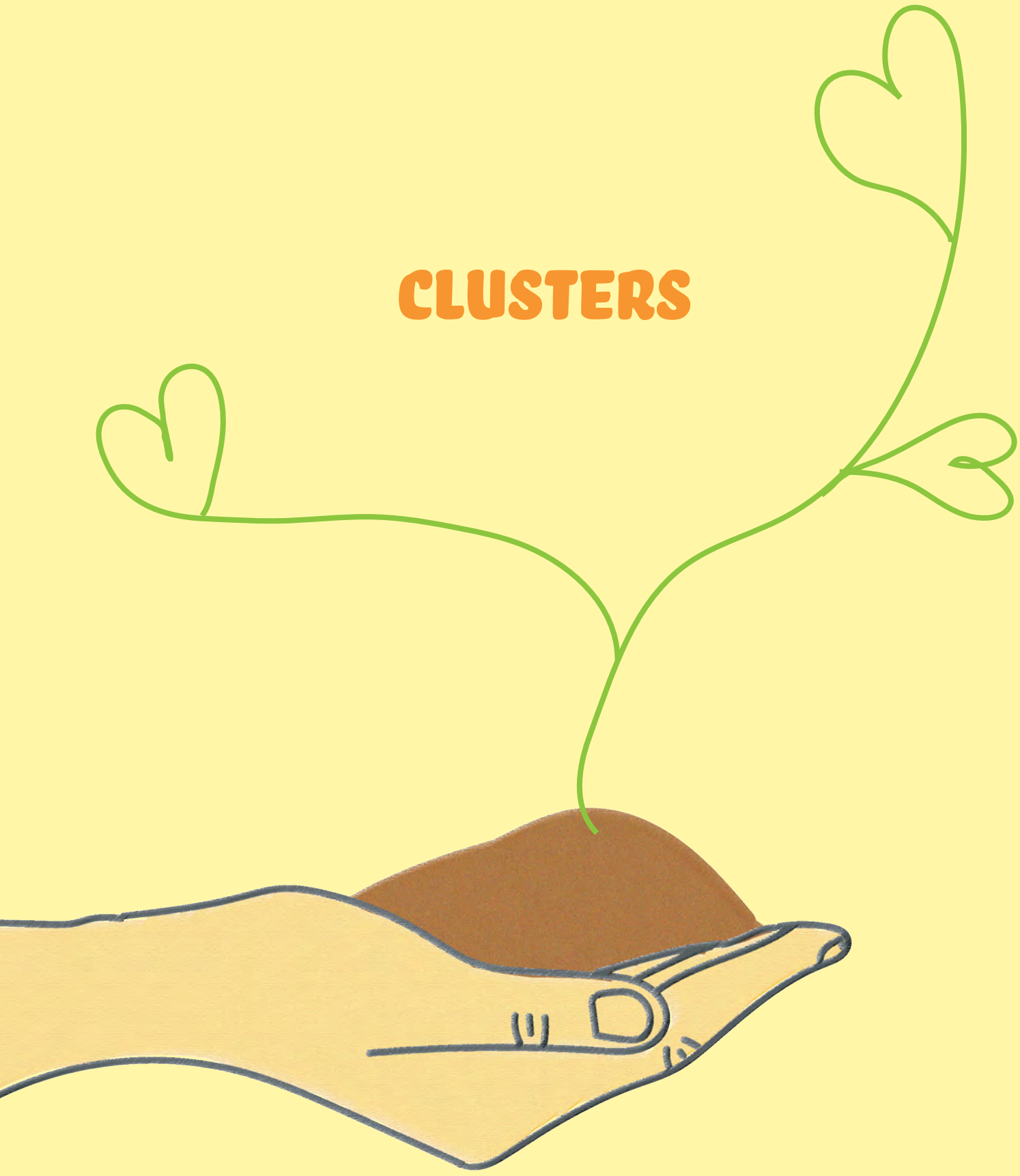
列印時間：2019年09月26日 14:48　　第 1 頁, 共 1 頁
列印者：CHAN, Ming Sum

Demonstration Screen for Reference Only

Way Forward

The PDIS will be further rolled out to Medicine and Geriatrics wards in other HA hospitals in 2020 according to local needs. Developing a mobile version will be studied to dovetail with HA's corporate direction.

CLUSTERS



Hong Kong East Cluster (HKEC)

Pilot of Soft Meals in HKEC

For safety concerns, patients with swallowing problems can only be prescribed with traditional dysphagia diet which many patients find to be bland and dull. With the hope of letting patients experience a real taste of festivities, the Working Group of Nutritional Care collaborated with a soft meal provider to celebrate the Mid-Autumn Festival with Pamela Youde Nethersole Eastern Hospital (PYNEH) medical patients with swallowing difficulties by providing soft moon cakes. The consistency of the moon cakes was tested thoroughly by speech therapists to ensure that they are suitable for safe swallowing by these patients. Patients indicated that the soft moon cakes tasted the same as real moon cakes. Feedback was positive and we received broad media coverage too.

Further to the trial of soft moon cakes in September, we invited speakers from non-governmental organisations to introduce us to more soft meal options at our monthly Q&S Journal Club. The Nutritional Care Working Group, comprising clinical staff, speech therapists, dieticians and caterers, are exploring potential soft meals for patients and extending the pilot to other HKEC hospitals with a much wider variety of food choice.

Soft moon cakes

Moon cake tasting with dysphagia patients

Installation of Automated External Defibrillators

St John Hospital (SJH) has installed two Automated External Defibrillators (AED) within the hospital compound in 2019. Overall, four training sessions, conducted by an Advanced Cardiovascular Life Support (ACLS) trainer, on the operation of AED were organised to ensure that staff are competent to use the machines.

Training on use of AED

Patient Safety Month

The Patient Safety Month 2019 was held in February with a series of lunch forums organised throughout the month and rounded off in a climax with the HKEC 10th Quality and Safety Seminar. The theme of this year was "Past Present Future: A Journey of Quality Healthcare". A record high of 84 abstracts were received, reflecting the growing momentum of learning and sharing of good practice towards a patient safety culture throughout the Cluster. The keynote speech and presentation topics surrounding technological innovation in healthcare enlightened us on our future development. Participants were able to learn about some of the latest technology trends for healthcare improvement.

The HKEC 10th Q&S Seminar (28 Feb 2019)

Publicity Committee

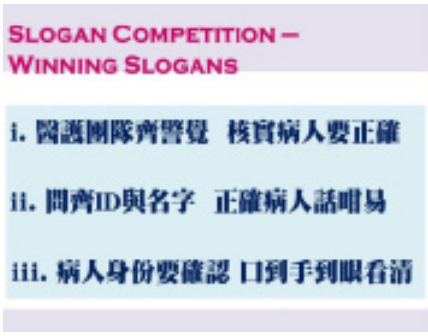
To crowdsource innovative ideas and to promote good practice in quality and safety, a Q&S Publicity Committee has been established since 2018. An open recruitment exercise for staff volunteers was conducted in August 2019. The Committee has now recruited 25 elites from HKEC hospitals with expertise in arts and multi-media. These volunteers will work with different teams to enable effective promulgation of quality and care improvement projects.

Volunteers of Publicity Committee

Publications by Publicity Committee

Patient Identification Campaign

With the aim of raising staff awareness on correct patient identification, HKEC Q&S Office held the 2nd Patient Identification Campaign in February 2019. This campaign was kicked off by an online quiz tailor-made for different staff groups, followed by a slogan competition, Comics Week and game booths. We held an Award-presenting Ceremony on 21 February to winners of the above activities. Participation from different disciplines was overwhelming, and we received lots of positive feedback. We hope the campaign can become a constant reminder of the importance of up-keeping the highest standards in all the procedures of patient identification in our cluster.



Top three winning slogans

PYNEH game booth (1 Feb 2019)

Award-presenting Ceremony (21 Feb 2019)

Tung Wah Eastern Hospital (TWEH) game booth (13 Feb 2019)

Staff Training and Sharing Forums

On top of regular training, we organised various fall-related "Train-the-trainer" workshops and briefing sessions as a periodic update of knowledge and for better succession planning for nurses and supporting staff.

Lunch forum on legal concerns in using social media (23 Sep 2019)

Workshop on the hoist usage (27 Nov 2019)

Workshop on fall risk assessment & prevention (6 Sep 2019)

Lunch forums organised by HKEC Q&S Office on a regular basis.

2019	Q&S Trainings	
11 Feb	Forums	Automated External Defibrillation: Save Life, Everyone Can Do
12 Feb		How to Transfer a Critically-ill Patient Safely?
25 Feb		Exoskeleton for Stroke Rehabilitation
26 Feb		Up-to-date IPMOE
7 May		Consultation Forum and Review on DCMS
19 Jul		Fall Prevention
9 Aug		Careful Hand Feeding
29 Aug		Procedural Sedation Safety
23 Sep		Legal Concerns in Using Social Media
10 Oct		Sentinel Events (SE) & Serious Untoward Events (SUE) Cluster Sharing Session
4 Apr	Briefing Sessions	HKEC Clinical Services Plan
22 Nov		Safe Mobilisation of Fragile Patient System

Breast Cancer Prevention and Treatment

The Breast Care Express Team has been set up since August 2017 in the Department of Surgery, Ruttonjee and Tang Shiu Kin Hospitals (RTSKH) to streamline the complex care journey for breast cancer patients with Cancer Case Manager (CCM) as the single contact point. The service model was continually enhanced and refined in these two years. Patients' imaging and investigations are closely tracked and day ward breast clinic follow-up is arranged within one week after breast imaging. CCM coordinates pre-treatment activities by different specialties including oncologists, surgeons and allied health personnel to facilitate the formulation of personalised treatment plans. Post-operative care is also streamlined among different disciplines including physiotherapists, occupational therapists, prosthetists and orthotists with the lymphoedema prevention and treatment program, to get our patients back to normal living as soon as possible. The ultimate goal of our development is to set up a Dedicated Breast Clinic with a one-stop diagnostic service, multi-disciplinary experts, pre- and post-operative care by different expertise all in one place.

The Breast Care Express Team of Department of Surgery, RTSKH

Annual Continuous Quality Improvement(CQI) Forum in RTSKH

The theme of this year's Forum was "Quality & Safety – Everyone's Business". The Assistant Chief Ambulance Officer from Fire Services Department was invited as the Keynote Speaker to share the keys to success in raising awareness on cardiopulmonary resuscitation. Use of the AED in the community was demonstrated by the virtual character - "Anyone" (「任何仁」). The speeches gave us new positive perspectives toward CQI and project management. Overall, 33 teams had submitted their creative and constructive projects on improvement of healthcare services.

Keynote speaker Mr. WONG Ying Keung, Alex from Fire Services Department and Senior Management Team (19 Mar 2019)

Encouragement from Staff Appreciation

To encourage an atmosphere of staff appreciation among our working environment, RTSKH Q&S Office and Patient Relation Office have collaborated and commenced showcasing appreciation letters / cards from patients and relatives through various channels since July 2019. We hope to affirm our colleagues' effort in providing quality and intimate care services. Additionally, selected appreciation statistics and letters / cards have been published regularly on Q&S Newsletter and Patient Relations Office.

Appreciation statistics and selected letters & cards published on Q&S Newsletter

HKEC 4 Hospital IPMOE Implementation to Enhance Medication Safety

The kick-off ceremony of the HKEC 4 Hospital IPMOE Implementation was held on 20 February 2019. Training and live run in TWEH, Wong Chuk Hang Hospital (WCHH), Cheshire Home, Chung Hom Kok (CCH) and SJH were conducted according to the schedule. IPMOE was fully implemented in HKEC Hospitals on 25 Sep 2019. The IPMOE team was awarded as the HKEC Outstanding Team on 30 Oct 2019.

The IPMOE team as HKEC Outstanding Team 2019

Bed-side Movement Therapy

To maintain blood circulation of fragile bed-bound patients and to prevent them from developing odema or contracture, the WCHH Physiotherapy Department trialed bed-side movement therapy with passive mobilisation equipment with 100 attendances. Meanwhile, the Occupational Therapy Department has offered enhanced power wheelchair training to young infirmary patients with lower limb disability for 390 patients. After receiving individualised powered wheelchair training by occupational therapists, selected infirmary patients and their relatives were invited to attend the Hong Kong Flower Show 2019 which served as an opportunity for community engagement and to enjoy happy moments with the families.

Trial of bedside movement

Enhanced power wheelchair training

Multidisciplinary Care Bundle for Pressure Injury Prevention

To enhance the quality of care to patients with high risk of developing pressure injuries, CCH has adopted a "multi-disciplinary care bundle" for pressure injury prevention and management. It includes regular skin inspection, standardised patient repositioning schedule and direction, non-rinse skin cleaner and a new protection skin product for the buttocks, prophylactic dressings and tailor-made heel protector. In addition, we have increased the number of low air-loss mattresses with turning function available.

The team also conducted a CQI program, Incontinence Associated Dermatitis (IAD) management. Through the programme we have improved nursing staff's knowledge on prevention and management of IAD in order to reduce pressure injuries, a related complication. With staff empowerment and contribution, pressure injury prevalence associated with Dermatitis have dropped significantly to zero.

Regular skin inspection

Patient reposition schedule

Protective foot devices

Hong Kong West Cluster (HKWC)

HKWC Medication Safety

HKWC Patient Safety Awareness Week: Medication Safety

HKWC held the 3rd Patient Safety Awareness Week from 27 to 31 May 2019. This year, our focus was on learning about medication safety through stories. The program included three luncheon seminars and five afternoon workshops in Cluster hospitals.

In the afternoon seminars, we were honored to have Dr. CHUNG Kin Lai, Dr. SIN Ngai Chuen, Dr. TANG Kam Shing, Mr. William CHUI, Dr. Simon LI, Dr. Marco HO and Dr. Veronica LAM as our speakers. We had a wide range of topics such as “Relationship Between Human Error and Design Error”, where it was pointed out that one of the reasons for our error is due to the use of the “System 1” model to act. Another topic was “The Importance of Safety Culture: Speak Up「敢言」、Bold to ACT「敢做」、Audit/ Measure「敢度」及Benchmarking「敢學」!”, and it was explained why it is worthwhile for us to put these ideas into actions.

We are grateful to our HKWC colleagues for participating in the production of a number of videos. Five videos were produced to simulate medication incidents in order to raise the importance of medication safety focusing on areas, such as independent double checking for high risk medications, asking a pharmacist if in doubt, tracking back infusion lines to injection site for multiple intravenous infusions, etc.

Ten Practical Tips for Doctors

Ten practical tips regarding medication safety were suggested for doctors via CMS screen saver and Queen Mary Hospital (QMH) Pharmacy Bulletin.

Body Weight and Dosing

A "Quality Reminders: Body Weight Does Matter in Dosing Adult Patients?" was issued to raise staff awareness. The subsequent Quality Reminder providing useful tips and suggestions would be issued in 2020.

Handling of Dangerous Drugs (DD)

In view of the recently noticed DD irregularities (DDI), two smart drug cabinets had been purchased to enhance security and monitoring of DD handling. As a pilot test, these two drug cabinets will be installed in two acute wards at QMH in which DDI were found and met the selection criteria.

To ensure the key of DD cupboard is kept by the shift in-charge of each clinical area in HKWC hospitals, a keychain is provided to each clinical area to ensure the key of DD cupboard remain attached to the shift-in-charge.

Apart from standardisation of documentation for DD transactions in DD register by HAHO Nursing Quality & Safety Subcommittee, HKWC Medication Safety Committee also standardised documentation on physical stock inspection, trace back and running balance of liquid DD on completion of each bottle. Chops for different documentation purposes were also issued to all clinical areas in HKWC to facilitate staff documentation in the DD register.

	Routine checking		checking running balance of liquid DD		for trace back			
Hospitals	Checked & Correct (Monthly)	Checked & Correct (Twice Weekly)	Overage in original pack: ____ml	Wastage of liquids as a result of repeated measurements: _ _ml	DD Register is traced back to MAR Form : Patient Name & ID: Date & time of Administration:	DD Register is traced back to e-MAR Form : Patient Name & ID: Date & time of Administration:	Request Form no: is traced back to DD Register	Total
QMH	**140**	**150**	**96**	**97**	**99**	**121**	**130**	**833**
DKCH	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**70**
FYKH	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**56**
MMRC	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**14**
GH	30	30	40	40	30	30	30	**230**
TWH	16	14	11	11	18	10	18	98
Cluster Total	**206**	**214**	**167**	**168**	**167**	**181**	**198**	**1301**

All clinical areas had reviewed their own DD stock and will only keep the lower strength format of each DD unless approval was sought to avoid picking up wrong strength of the drug from the DD cupboard.

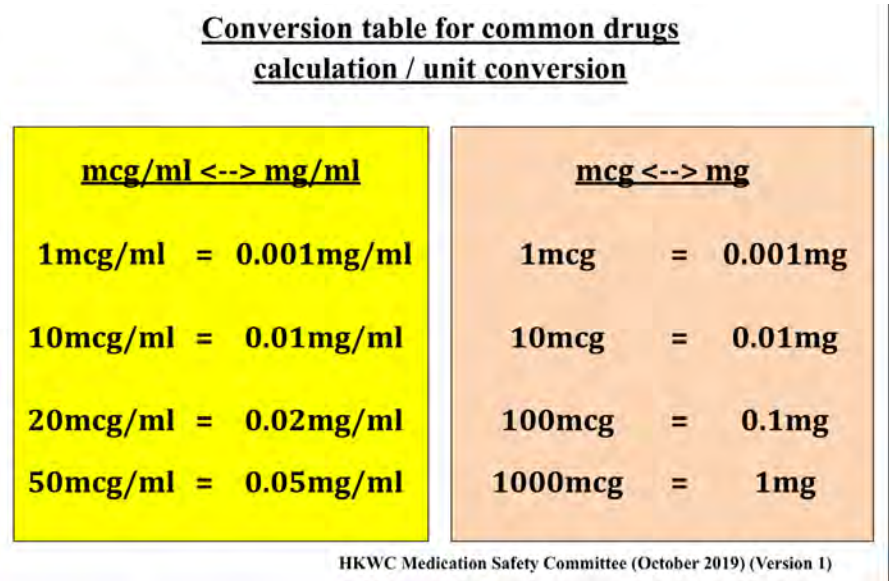
In line with annual plan of HAHO Medication Safety Committee, each clinical area had completed the self-assessment guide on handling of DD. The overall compliance was satisfactory.

In order to better communicate and alert staff, we have introduced a standardised signage for situations where a cold chain breach is discovered:

Signage for quarantined drug

Signage for pharmaceutical refrigerator

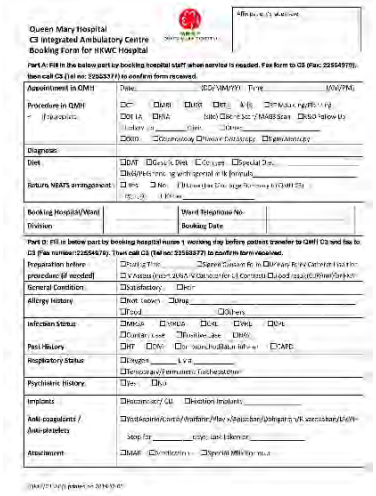
To facilitate medical staff and nursing staff to convert drug units between *mg* and *mcg*, a conversion table was created for staff's reference:

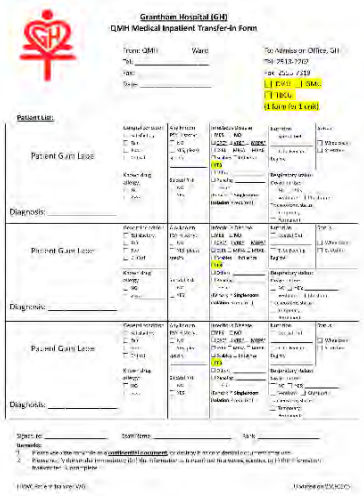


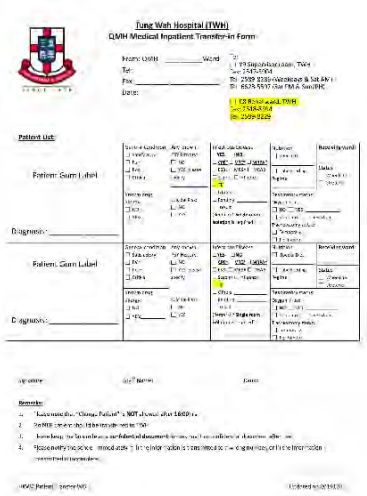
Strengthening Patient Safety During Inter/Intra-Hospital Transfer

Standardise Patient Risk Information on Bed Booking Forms

Bed booking forms of each department need to contain certain information to ensure the receiving hospital/department has adequate information to take appropriate actions, such as bed arrangement, diet ordering, infection control and care of tracheostomy prior to transfer. The information required have been standardised in these sample forms:


Queen Mary Hospital
CI integrated Ambulatory Centre
Booking Form for HKWC Hospital


Grantham Hospital (GH)
QMH Medical Inpatient Transfer-in Form


Tung Wah Hospital (TWH)
QMH Medical Inpatient Transfer-in Form

Standardised Oxygen Regulators for Patient Transfers

To ensure staff are familiar with the operation of oxygen regulators while transferring patients in need of oxygen therapy, in December 2019 all clinical areas changed their practice to use a standardised oxygen cylinder in FX size which is equipped with a built-in oxygen regulator for patient transfer. The Q&S team will maintain 100 regulators for one year as a contingency plan in case there is a lack of supply of oxygen cylinders in FX size.

Wheelchairs with Oxygen Cylinder Holder for Patient Transfers

Staff hang the oxygen cylinder on the back of the wheelchair. In order to ensure patient safety and proper hanging of oxygen cylinder on wheelchairs, we have equipped wheelchairs used for patient transfer with oxygen cylinder holders:

Before

After

Capnometer for Transfer of Patient with Ventilator

A total of five capnometers for end-tidal CO_2 monitoring and four hand held suction devices for airway clearance were equipped within HKWC to ensure patient safety during transfer.

Safety for Specimen and Laboratory Results Handling

Important Result Reminder (IRR) in Clinical Inbox

In order to improve the handling of important histopathology and radiology reports, IRR was launched by HAHO in 2018. This is a function in the clinical inbox of the Clinical Management System (CMS) to alert clinicians about important histopathology and radiology results in a timely manner.

Along with HAHO, HKWC implemented IRR in clinical inbox in 2019 after a massive promulgation effort. After implementation, we collected feedback from end users and reflected back to HAHO Q&S. After HAHO collected our feedback, enhancements of IRR will be implemented in 2020 in order to address some of the loopholes in IRR.

Pilot Program: Tracking System for Precious Specimen in Integrated Endoscopy Center (IEC)

The objective of the tracking system is to enhance the traceability of precious specimen and to minimise incidents of precious specimen loss. The system included handheld scanners, scanner and web-based programs to track the specimen flow from IEC to laboratories in real time.

All staff including nurses, porters and laboratory staff who handle specimens are required to perform scanning. Information including date, time, location and staff number are captured and uploaded to the web-based system for tracking.

At the end of each day, the system automatically generates an alert to supervisors of IEC, porter team, and laboratories about outstanding specimens. Prompt searching can be conducted to precisely identify the location where the specimen had disappeared from the system. With this information there is a much improved chance of recovering the lost specimen.

Critical Result Alert System (CRAS) and Remote Laboratory Result Printing (RLRP) in HKWC

CRAS is an automated alert system complementary to CMS in clinical area to alert staff about critical laboratory results of the patients under their care. It replaced the laborious act of laboratory staff phoning staff in clinical areas about critical laboratory results.

RLRP is another complementary system to CMS in clinical areas. Laboratory results from various laboratories are sent to printers in clinical areas directly where they can be printed. This avoids the unnecessary internal transfer of the results by an in-hospital porter.

CRAS & RLRP phase 1 implementation, covering all in-patient clinical areas, commenced on 4 November 2019 and 2 December 2019 respectively. Four briefing sessions were held to explain these two systems to our clinical staff. Promotion screen saver was shown in CMS. Quick guide about the operation of these system was distributed and posted in clinical areas. Positive feedback was received from our front-line staff after implementation.

Phase 2 implementation, covering out-patient areas, Community Geriatric Assessment Team (CGAT) and day centres/clinics will commence in 2Q 2020.

Promotion of CRAS and RLRP

Briefing Sessions

CRAS 懶人包

Laboratories	Schedule ward printing time (Everyday)
AP	5am (once daily)
Chemical Pathology	6am
Haematology	7am
Microbiology	8am
Haematology	9:30am
Chemical Pathology	12pm
Haematology	1pm
Microbiology	2pm
Chemical Pathology	3pm
Chemical Pathology	4:30pm
Haematology	4pm
Microbiology	5pm
Chemical Pathology	8:30pm

Preliminary reports ward printing for urgent requests shall remain status quo

Schedule ward printing time

CRAS reminder

The Duchess of Kent Children's Hospital at Sandy Bay (DKCH)/ Tung Wah Group of Hospitals Fung Yiu King Hospital (FYKH)/ MacLehose Medical Rehabilitation Centre(MMRC) Continuous Quality Improvement Forum 2019

The Continuous Quality Improvement (CQI) Forum 2019 cum Best CQI Project Award Contest was held in The DKCH, Tung Wah Group of Hospitals FYKH, and MMRC on 1 February targeting all professional colleagues.

Nine teams had given their oral presentations and project posters were showcased. Through involving outside guest speakers and adjudicators from other hospitals, we were able to learn and share CQI notions and pragmatic ideas in clinical practices between healthcare professionals and also between different hospitals.

Dr Derrick AU, Director of the Chinese University of Hong Kong Centre for Bioethics, our keynote speaker of the day, shared with us how healthcare quality could be enhanced by respecting patient's autonomy and engaging the family throughout the patient journey.

Grantham Hospital

CQI Forum

To promote continuous quality improvement (CQI) and a culture of sharing, GH organised the 7th CQI Forum on 25 April 2019. Mr. H L HUI, Chief Systems Manager of Head Office Information Technology team, was invited to deliver an enlightening presentation on the concept of "Smart Hospitals". The event also served as recognition of the hard work and contribution of fellow colleagues in furthering quality and safety improvements. For the CQI campaign, seven projects out of 18 submissions were selected for oral presentation. Posters were also displayed to showcase each project and the event concluded with a panel of judges selecting the winners.

The two champion projects included (i) Setting Up Measurements of Novel Biomarker: NT-proBNP for Management of Advanced Heart Failure (by CMU); and (ii) A Team Approach to Reduce the Usage of Concentrated Potassium Chloride Injections – A High Alert Medication (by GH Medication Safety Subcommittee).

Promotion of Medication Safety – Pain Medications

To promote medication safety, GH launched its 2nd Medication Safety Promotion Fortnight in May 2019 with the theme of "Pain Medication". Both doctors and nurses were engaged to disseminate educational materials within individual departments. After a series of educational activities, a paper quiz was dispatched to all doctors, nurses and pharmacy staff to join the game. Overall, more than 260 colleagues participated in the quiz and prizes were presented to the participants by members of the Medication Safety Subcommittee.

Crew Resource Management Training for Operating Theatre Staff of Tung Wah Hospital (TWH)

Crew Resource Management Training is aimed at enhancing patient safety by considering the role of played by human factors in the delivery of healthcare services. Two identical training sessions were organised in January 2019 in collaboration with the HKEC Training Centre for Healthcare Management & Clinical Technology for TWH staff who were serving in operating theatre (OT) settings. Through scenario-based simulation training, we hope to enhance multi-disciplinary teamwork amongst TWH's OT staff, improve inter-disciplinary communication and assure quality services in OT settings. Over 90% of OT staff completed the training. Staff feedback was overwhelmingly positive. A briefing on the optimised workflow for patient transfer was given to all OT staff. A pocket cue card and checklist were produced for staff's quick reference, which is particularly useful in situations where a patient's condition is deteriorating while arranging transfer to QMH.

To uphold the safety culture, the team made it a habit to initiate an in-depth debriefing session to discuss lessons learnt from each incident and run experience sharing sessions among the team members. Moreover, TWH's OT staff continues with the practice of "Speaking up" in perioperative settings as part of sharpening their leadership skills to improve decision making and teamwork.

Kowloon Central Cluster (KCC)

Queen Elizabeth Hospital (QEH)

Quality and Safety Bulletin

The QEH Q&S Bulletin has been published monthly since 2017 in QEH to strengthen staff's alertness on various quality and safety related topics. A series of bulletins focusing on medication safety was also published to remind clinical staff about the correct practices and common traps when handling medication.

Q&S Workshop on Introduction to Design Thinking for Healthcare Professionals

Two identical sessions of Q&S Workshop on Introduction to Design Thinking for Healthcare Professionals were organised at QEH. In recent years, design thinking has been promoted in the healthcare industry worldwide as a new way of thinking and working. It is a human-centred approach for solving a problem in an innovative way. It can empower our staff to embrace and overcome the evolving and dynamic challenges they are facing in their daily work. We also aim at cultivating an organisational culture to transform the way we think and turning our hospital into an innovation incubator. After attending the workshop, staff's responses were overwhelming with positive feedback. They commented that design thinking was a powerful and useful tool to approach problems in different ways.

Hong Kong Buddhist Hospital (HKBH)

Hospital-wide Cardiopulmonary Resuscitation Drill

Timely and effective cardiopulmonary resuscitation (CPR) increases the chances of saving lives. Regular CPR drills improve resuscitation skills and reduce anxiety among the staff when encountering CPR. Hong Kong Buddhist Hospital and The Hong Kong Buddhist Association - The University of Hong Kong Clinical Centre for Teaching and Research in Chinese Medicine (BHCMCTR) jointly conducted an annual hospital-wide CPR drill on 26 March 2019 to assess staff competence on handling medical emergency situations and to test staff competence on performing Basic Life Support (BLS).

The CPR drill provided an opportunity for HKBH and BHCMCTR staff to familiarise themselves with the workflow of handling medical emergencies and review current practice. The participants provided rapid response to medical emergenies in accordance with established guidelines. Good practices and areas for improvement were shared in the debriefing session after the drill.

Hong Kong Red Cross Blood Transfusion Service (BTS)

Sustainability of Blood Supply to Meet Demand in Hong Kong

The ageing population of Hong Kong has put significant pressure on our public health system. At BTS, we are committed to ensuring a safe and sustainable supply of blood for our patients in need of blood transfusions.

Reaching Out to the Community

Throughout the year, BTS has worked to foster closer ties and cooperation with Government bureaus and departments, business organisations, community groups, shopping malls, residential estates, and tertiary institutions. The 'Give Blood Alliance' Award Program has been put in place, so as to increase the frequency of group donations and visits by blood donation mobile teams to different sectors of the Hong Kong community.

A new mobile blood collection vehicle has been in service since April 2019. The vehicle gives BTS much greater flexibility in recruiting donors from the community.

Strengthening Education for the Next Generation of Donors

To encourage young people to become donors, BTS launched a Blood Donation Experience Tour during which BTS visited schools for blood donation drives. By explaining and demonstrating the blood donation procedures to young students, we hope to alleviate any worries or misunderstandings they might have about giving blood.

BTS also teamed up with tertiary institutions to launch the "Programme Young Blood" which incorporates blood donation knowledge into the curriculums of different faculties and raises students' awareness of the importance of giving blood.

Hong Kong Eye Hospital (HKEH)

Enhancement on the Ophthalmic Examination Booking Process

Previously at HKEH, seven different ophthalmic examination booking forms were being used in 20 consultation rooms and four laser rooms. Patients had to carry their own medical records for examination appointment bookings. Problems with the existing booking process and risk of losing medical records were identified.

A task force was formulated to review all the booking forms and the whole examination booking process. A newly designed All-in-One Ophthalmic Examination Booking Form with Out-Patient Appointment System code was implemented on 1 April 2019 to streamline the booking process and mitigate the risk of missing medical records.

Multiple benefits were realised after the implementation of the All-in-One Ophthalmic Examination Booking Form:

Hospital	• Mitigate the risk of missing records • Relieve constraint of storage space for booking forms • Save printing cost from reducing the number of booking forms from seven to one • Reduce wastage of outdated forms is environmentally friendly
Doctor	Only one single form required for ordering various examinations
Nurse/Eye Care Assistant(ECA)	Avoid transcription errors. Nurse/ ECA just needs to provide the copy of the form to the patient for appointment booking instead of writing the booking instructions on an appointment slip
Appointment Staff	Clear instructions for investigation booking
Patient	• Shorten waiting time as the booking process is simplified • No need to carry medical record for examination appointment booking

A staff satisfaction survey was conducted after the implementation of the All-in-One Ophthalmic Examination Booking Form. The majority of staff were satisfied with the new booking process as it reduced their workload.

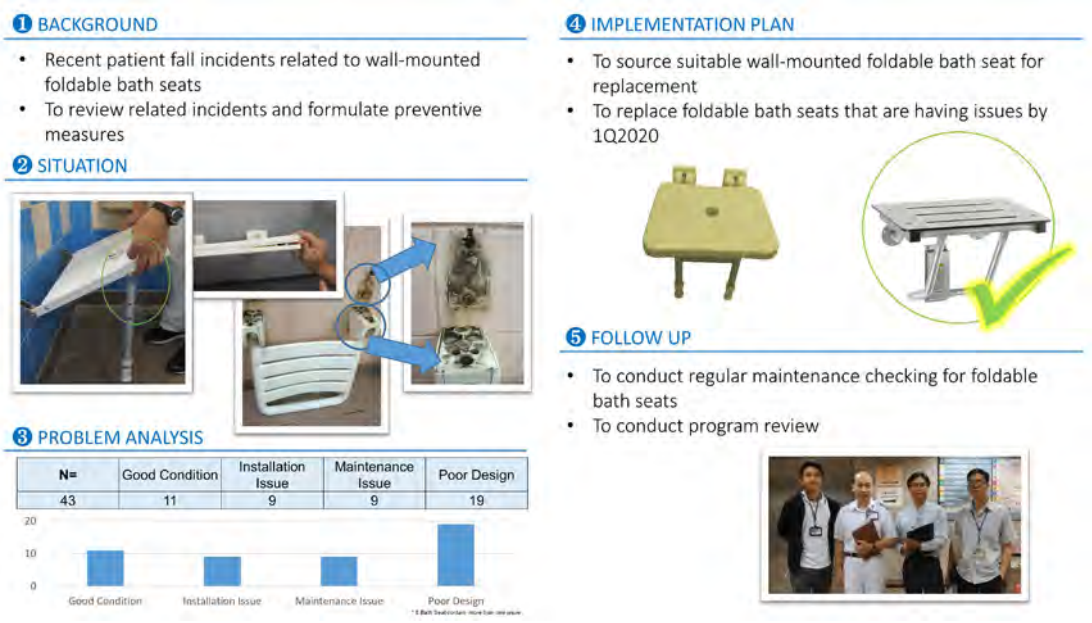

Hong Kong Eye Hospital
Ophthalmic Examination Booking Form
Patient's Label

All-in-One Ophthalmic Examination Booking Form

Kowloon Hospital (KH)

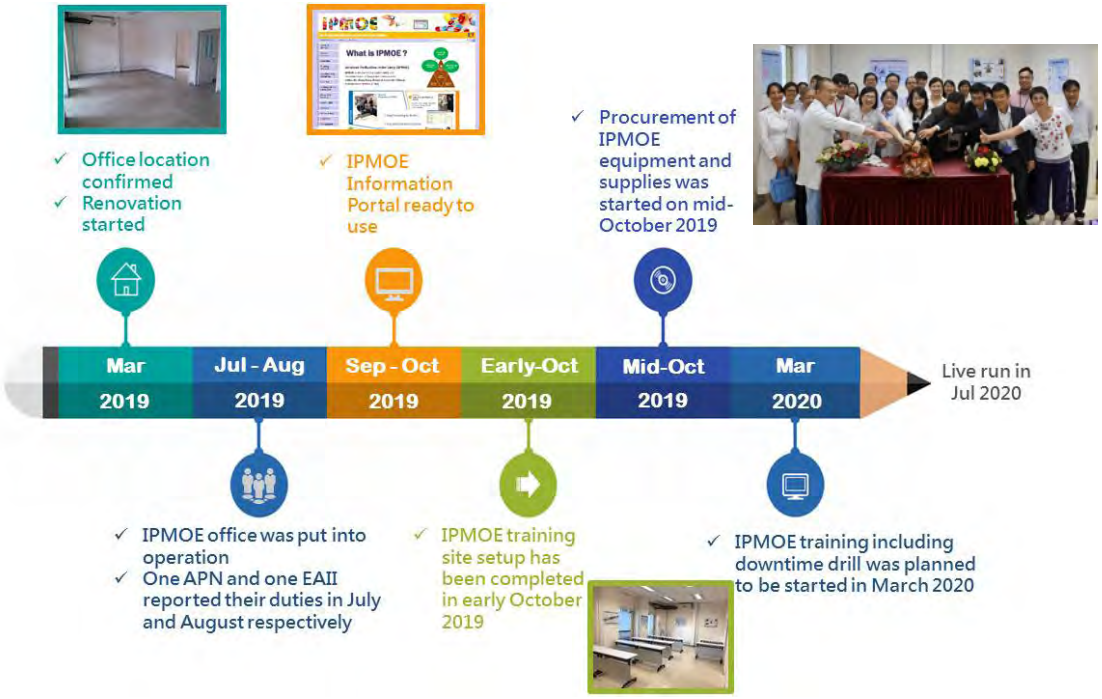
Review of Wall-mounted Foldable Bath Seats

Two fall incidents related to foldable bath seats were identified where the supporting limbs of the bath seats shifted or collapsed, causing patients to fall when bathing. Investigations were conducted by colleagues from the Operating Theatres (OT), Family Medicine (FM) and Quality and Safety (Q&S). All foldable bath seats were reviewed with three perspectives in mind: design, installation and maintenance. It was found that about 25% were in good condition and a replacement plan was devised and implemented.



IPMOE Implementation in Kowloon Hospital

The Inpatient Medication Order Entry System (IPMOE), which links up inpatient prescribing, drug administration and pharmacy dispensing modules, was scheduled to "Live Run" in July 2020. Our clinical workflow was also reviewed and revised to facilitate the implementation of the new system.



Pharmacy – Smart Cabinet (Omnicell)

A smart cabinet was installed at KH to enable nurses to safely retrieve medications for patients during non-operating hours of the pharmacy. Prior to the installation of a smart cabinet, nurses had to manually check for cross-allergies using cross-allergy reference tables which is both time consuming and prone to human error. Medication safety was enhanced by the use of this smart cabinet which has allergy-checking features which prevents inadvertent retrieval of medications that the patient may be allergic to.

Training on the use of the smart cabinet for KH nursing staff had completed and subsequent bi-monthly trainings for new comers were organised. Relevant procedures and training materials on the use of the smart cabinet is readily available for staff on the KH Pharmacy webpage & the 2D barcodes posted on-site.

Kwong Wah Hospital (KWH)

Journey Towards Medication Safety

A one-day promotion activity – "Journey Towards Medication Safety" was held on 30 September 2019. This activity reviewed a number of initiatives on medication safety in 2019:

- Nurses had completed the e-learning on "Adminstration of Medications (AOM)-Patient Identification" and "Handling of Dangerous Drugs (DD) on Wards and Other Clinical Areas".
- Nursing audit on administration of DD was conducted.
- Cross-inspection on handling of DD in wards/units was performed by Department Operations Mangers (DOMs), Q&S and Pharmacists.
- Tallman lettering for Look-Alike Sound-Alike drug names and DD was standardised for KWH. Additionally, Tallman lettering shelf labels are using in clinical departments.
- Simulation trainings on medication incidents were held.

- Medication Safety Slogan Competition and Award Ceremony was held, and 30 slogans were submitted for the competition.
- Quick reference guides on “Independent Double Check”, the workflow on “Vetting of drug orders for patients with allergy/severe adverse drug reaction before drug administration” and “Oral Dosage Forms that should NOT be crushed”, etc. are available on the Nursing and Pharmacy webpages.

Slogan competition

Journey Towards Medication Safety

Enhancement of Surgical Safety

A number of initiatives to enhance surgical safety were undertaken, including:

- The hospital’s revised and standardised version of the “Interventional/Bedside Procedures Safety Checklist” was promulgated to all departments.
- Wards and units conducted real-time bedside, interventional and surgical procedures safety audits.
- “Speak Up” culture was promulgated via Crew Resources Management (CRM) Training with specific scenarios designed for simulation training.

CRM classroom and scenario training

HOSPITAL AUTHORITY
Kwong Wah Hospital
Interventional /
Bedside Procedures Safety Checklist

(Please use Block letter or affix label)
Name: _____ Sex/Age: _____
Hospital No: _____ Ward / Bed No. _____
Team / OPD No. _____

(Please tick / fill in / circle* as appropriate)

Date: _____
Procedure (name of procedure): _____) to be performed in:
Interventional suite: ☐ Cardiac Catheterization Laboratory ☐ Endoscopy Unit
(Nurse completes the safety checks before patient is transported to suite) ☐ OT (*Local / NA / IVLA) ☐ D&R, Department
☐ Urology Center ☐ Others: _____
Ward: ☐ Bedside ☐ Minor OT ☐ Treatment Room

Items to be checked	Ward: Pre-interventional (Before Transport to suite)		*Interventional Suite / Ward: Sign-in (On arrival in suite)		Time out (Closely to the start of the intervention)		Post-procedure		Remarks
	Yes	NA	Yes	NA	Yes	NA	Yes	NA	
Correct Patient									
Valid Informed Consent									
NPO									
Assessment done by Anaesthetist / MO									
Site marking: “Y” on the operative site									Reason if no site marking:
Vital signs checked									
Allergy / Alert history checked									
Pre-medication given as prescribed e.g. Steroid cover									
Denture removed									
Blood Tests, e.g. Bleeding Profile and T&S									
Withhold anticoagulant / antiplatelet drug									
Resuscitation trolley/ equipment									
Imaging/ films relevant to the procedure or patient’s condition									
Correct procedure and type of anesthesia as stated on the informed consent									
*Equipment/ Instrument/ Medication/ Blood/ Specimen Bottle									
Integrity of equipment, instrument and countable items									
Correct counting of *instrument and countable items (e.g. gauze/ sponge/ guide wire/ blade/ needle / tourniquet)									
Correct labeling & sending out of specimen									
Document number of gauze that packed into cavity									
Review key concern for recovery/ post-interventional management									
Name & Rank of Nurse									
Signature of Nurse									
Name & Rank of Doctor									
Signature of Doctor									

Revised in Jan 2018
Endorsed by KWH QRS Committee

Interventional / Bedside Procedures Safety Checklist

Our Lady of Maryknoll Hospital (OLMH)

Fall Awareness Week

Fall awareness week was launched on the week starting 9 September 2019. It was one of the activities in the "Fall Prevention Care Bundle" to raise the awareness of fall prevention among healthcare workers, patients and relatives. A range of fall prevention strategies were adpoted, including a proactive patrol rounding presentation, scenario-based demonstrations, discussion by different parties on fall prevention, games booths and patient and relative education on fall prevention. 99% of staff agreed that the fall prevention awareness week was effective in raising fall awareness among healthcare workers.

A total of six sessions on patient and relative education on fall prevention were conducted with a total of 82 attendees. Among these 82 attendees, 35 were patients while 47 were relatives. 66 of the attendees (80.4%) agreed that the education talks were useful.

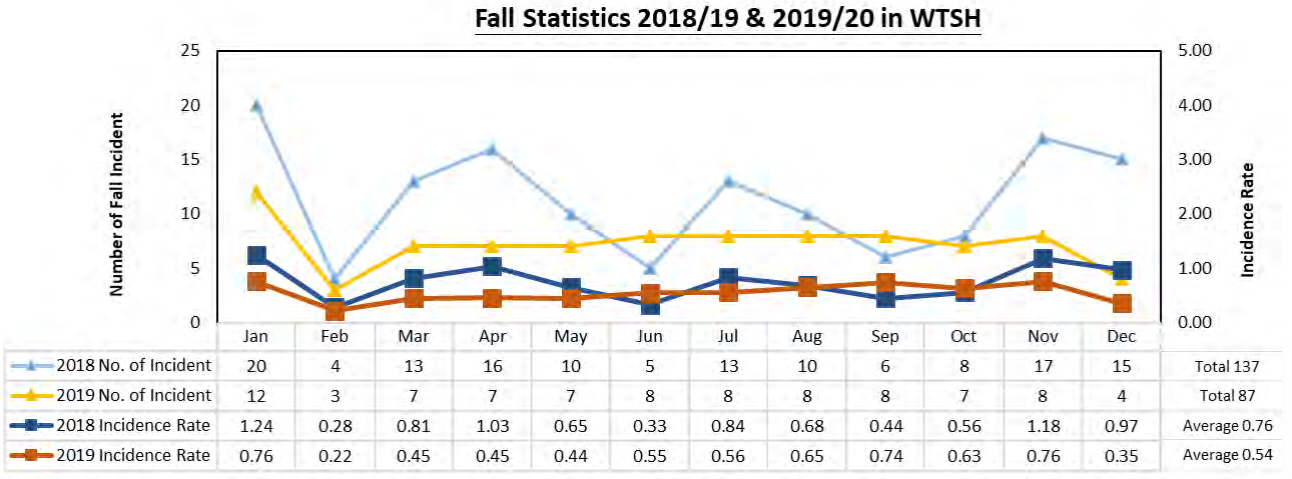
TWGHs Wong Tai Sin Hospital (WTSH)

Fall Prevention

Starting from 2018, WTSH has introduced a number of fall prevention initiatives:

- Standardise the assessment and regularly monitoring fall risk of patients
- Develop care plan for patients with different levels of fall risk in wards
- Reinforce supporting staff to patrol rounds to address patients' needs
- A series of preventive strategies across a number of departments, including signage for high risk patients for staff to supervise closely in the Occupational Therapy Department; encouraging relatives to accompany cognitively impaired patients to attend training in the Physiotherapy Department; using fall prevention devices; and patient engagement in fall prevention in wards
- Staff Awareness in Fall Prevention Enhancement Program (SAFE) Program to enhance knowledge and alertness of nursing and supporting staff by education and assessment
- Share, Measure, Alert, Round, Team (SMART) project: Patient Fall Management in Palliative Care Wards
- Pilot program of Volunteer Visit Accompany Program in Rehabilitation Unit to enhance monitoring within visiting hours and refresher trainings for staff were rolled out in phases since January 2019
- As the equipment and interventions required to prevent falls are less expensive than the cost of treatment, fall alarm systems were piloted since January 2019 and were fully implemented in rehabilitation ward 3AB in November 2019
- For the promulgation of fall prevention in WTSH, the annual Fall Prevention Week was held from 9 to 13 September 2019. The 2019 Fall Prevention Week encompassed promotion booths, poster display, fun games, and workshops. Our slogan of the year was "防跌推廣九龍中, 老幼關懷樂融融!".

Coinciding with the implementation of these initiatives, the hospital acquired fall incident rate (incidents per 1,000 inpatient bed days occupied) gap between WTSH and same Group 2 hospitals (hospitals with a mix of acute and non-acute services) overall narrowed in 2019. WTSH attained a fall incidents rate of 0.54 in 2019, a 29% reduction as compared with a rate of 0.76 in 2018. The enthusiasm of WTSH colleagues involved in fall prevention and management paid off and was well recognised by the encouraging result.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
2018 No. of Incident	20	4	13	16	10	5	13	10	6	8	17	15	Total 137
2019 No. of Incident	12	3	7	7	7	8	8	8	8	7	8	4	Total 87
2018 Incidence Rate	1.24	0.28	0.81	1.03	0.65	0.33	0.84	0.68	0.44	0.56	1.18	0.97	Average 0.76
2019 Incidence Rate	0.76	0.22	0.45	0.45	0.44	0.55	0.56	0.65	0.74	0.63	0.76	0.35	Average 0.54

Hong Kong Children's Hospital (HKCH)

Safety on the Finger Tip: Electronic Surgical Safety Checklist in Operating Theatre Services in HKCH

Background

The WHO Surgical Safety Checklist was developed with the aim of decreasing errors and adverse events, and increasing teamwork and communication in surgery. The use of this checklist has led to significant reductions in both morbidity and mortality and is now used by the majority of surgical providers around the world.

In HKCH, we have adopted the electronic Clinical Information System (CIS) as a total solution for perioperative management, documentation and communication. Therefore, the surgical safety checklist is incorporated into the CIS to ensure a seamless transfer of patient information between the Clinical Management System (CMS) of the Hospital Authority and during different phases of perioperative care in the patient's surgical journey.

Advantages of Using CIS for Surgical Safety Checklist

1. Seamless transfer of patient data

- From HA CMS to CIS (information includes patient demographics, allergy, alert and adverse reaction information, admission/transfer/discharge, diagnosis and surgical procedure planned, laboratory results) – this would minimise transcription errors and provide timely updated information for clinical management

- From pre-operative anaesthetic assessment to sign-in, time-out, sign-out, to Post Anaesthesia Care Unit Discharge to Ward and ICU

2. Customised checklists for different procedures and different locations

- To address all crucial elements which are important to surgical safety
- Additional items for specific procedures such as interventional radiology (IR) procedures

3. Verification of patient identify using 2D and 3D barcodes during sign-in and time-out

- Avoids human error during manual checking

4. Clear documentation of checklist and uploading of report to Electronic Patient Record

Process

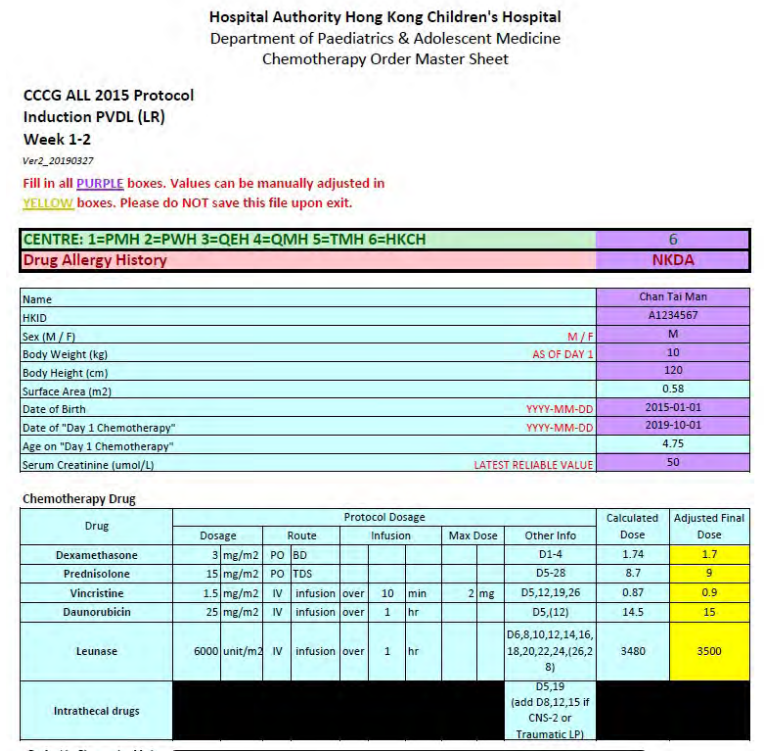
To encourage our OT staff to use the electronic Surgical Safety Checklist and to make it more useful for them, we worked with our OT staff to modify and customise the checklist. Furthermore, we provided training and support in the form of briefings, workshops, drills, and discussions.

Result

The electronic Surgical Safety Checklist has been successfully adopted in our perioperative clinical workflow. Modified versions of the checklist are used for various specific procedures such as sedation in wards and radiology procedures.

Implementation of Electronic Chemotherapy Order Form

With the opening of HKCH, five paediatric oncology centres originally located at Queen Mary Hospital, Queen Elizabeth Hospital, Princess Margaret Hospital, Prince of Wales Hospital, and Tuen Mun Hospital merged into one. Before moving to HKCH, an electronic chemotherapy order form developed by Dr. Vincent LEE was used in PWH and some other centres. For centres not using these forms, manual calculation was required when formulating chemotherapy regimen. Clinical practices also varied among different centres.



Hospital Authority Hong Kong Children's Hospital
Department of Paediatrics & Adolescent Medicine
Chemotherapy Order Master Sheet

CCCG ALL 2015 Protocol
Induction PVDL (LR)
Week 1-2
Ver2_20190327

Fill in all PURPLE boxes. Values can be manually adjusted in YELLOW boxes. Please do NOT save this file upon exit.

CENTRE: 1=PMH 2=PWH 3=QEH 4=QMH 5=TMH 6=HKCH	6
Drug Allergy History	NKDA

Name		Chan Tai Man
HKID		A1234567
Sex (M / F)	M / F	M
Body Weight (kg)	AS OF DAY 1	10
Body Height (cm)		120
Surface Area (m2)		0.58
Date of Birth	YYYY-MM-DD	2015-01-01
Date of "Day 1 Chemotherapy"	YYYY-MM-DD	2019-10-01
Age on "Day 1 Chemotherapy"		4.75
Serum Creatinine (umol/L)	LATEST RELIABLE VALUE	50

Chemotherapy Drug

Drug	Protocol Dosage									Calculated Dose	Adjusted Final Dose
	Dosage		Route	Infusion			Max Dose		Other Info		
Dexamethasone	3	mg/m2	PO	BD					D1-4	1.74	1.7
Prednisolone	15	mg/m2	PO	TDS					D5-28	8.7	9
Vincristine	1.5	mg/m2	IV	infusion	over	10	min	2 mg	D5,12,19,26	0.87	0.9
Daunorubicin	25	mg/m2	IV	infusion	over	1	hr		D5,(12)	14.5	15
Leunase	6000	unit/m2	IV	infusion	over	1	hr		D6,8,10,12,14,16,18,20,22,24,(26,28)	3480	3500
Intrathecal drugs									D5,19 (add D8,12,15 if CNS-2 or Traumatic LP)		

Chemotherapy order forms are in excel format. Once doctor inputs patient demographics in the purple boxes, chemotherapy regimen and treatment sheet are formulated automatically, avoiding error from manual inputs.

To minimise the risk of calculation errors and align different practices, it was essential to develop our own electronic chemotherapy order forms in HKCH. Our Clinical Pharmacy team, working in close collaboration with the Hematology & Oncology team*, formulated over 300 electronic chemotherapy order forms to standardise prescribing and administration practices. Practice alignments include standardising pre-medications and supportive medications in chemotherapy regimens, choices & suggested dosage of antiemetic drugs, hydration protocol for specific chemotherapy, using minibag for vinca alkaloids and standardisation of drug dilution. These forms have greatly enhanced the medication safety of chemotherapy in HKCH.

The form is easy to use and saves my time in prescribing chemotherapy. It helps to remind age-/weight-based dosage adjustment to improve medication safety.

Special thanks to all Hematology & Oncology team heads including Prof. Godfrey CHAN, Prof. C K LI, Dr. Alan CHIANG, Dr. Daniel CHEUK, Dr. S Y HA, Dr. Pamela LEE, Dr. Vincent LEE, Dr. C W LUK, Dr. Matthew SHING, Dr. Frankie CHENG, Dr. Terry CHOW, Dr. Eric FU, Dr. Dennis KU, Dr. Grace LAM and Dr. P W YAU.

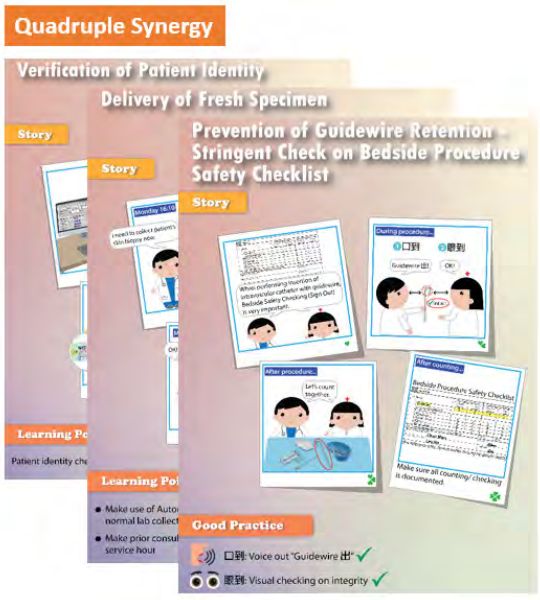
Kowloon East Cluster (KEC)

Continuous Quality Improvement in KEC

At the KEC, we take every opportunity to foster and nurture a culture of Continuous Quality Improvement (CQI). The KEC Quality & Safety (Q&S) Office has been promoting CQI as a core activity for all staff. With an aim to connect with different levels of staff and to encourage two-way communication, the Office has made use of various platforms, such as publications, instant messaging and seminars, to communicate with colleagues.

Quadruple Synergy/WhatsApp Intern in KEC

The "Quadruple Synergy" and "WhatsApp Intern" serve as useful tools for building a safety culture by promulgating good practices via publication and instant messaging platforms. Key learning points from incidents and practical safety tips were illustrated in the form of comics and publicised using instant messaging platforms such as WhatsApp. We envisage this "easy-to-read" initiative can facilitate continuous and effective learning among colleagues, especially for the younger generation.



KEC Quality and Safety Bulletin

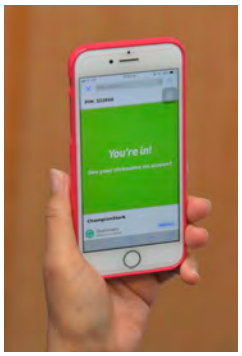
The KEC Quality and Safety Bulletin is a bi-monthly publication which aims to promote a safety culture in the Cluster by enhancing communication and knowledge sharing among colleagues. It also serves as a channel for keeping staff members updated about the latest development or issues related to quality and safety. Apart from the Q&S Office, the Patient Relations and Pharmacy teams are also invited to regularly share Q&S related information via this platform.

Quality and Safety Seminars

In addition to seminars and forums arranged by individual hospitals, KEC have also organised a series of quality and safety seminars for Cluster colleagues. Apart from clinical incidents sharing, topics which are of interest to frontline colleagues, such as Informed Consent, Surgical Safety and Occupation Safety and Health (OSH), were also covered. The aim of the seminars is to bring together all levels of staff in an intellectual environment to share and exchange ideas, knowledge and experience on quality and safety.

"九東CQI講場"

A small change can make a big difference! To gravitate and synergise endeavours of staff in their pursuit for Continuous Quality Improvement (CQI) in hospital service and day-to-day work, KEC launched a new sharing platform named "九東CQI 講場" in 2019. The event is organised quarterly with a specialised theme (e.g. medication safety, OSH, etc) that allows staff to share their good work. Departing from the traditional format, which was usually one-way communication in nature, the event was coupled with real time interactive games, allowing active participation of audiences from all three KEC hospitals. Overwhelmingly positive feedback was received on the first event which took place in July with colleagues eagerly looking forward to the next one.



Lecture and Workshop on CQI in Tseung Kwan O Hospital (TKOH)

In order to enhance staff understanding and skills in conducting CQI projects, a lunch lecture followed by a half-day workshop were arranged to provide in-depth training to staff who are responsible for department CQI programs in TKOH.

Speakers from the TKOH Q&S Office shared the principles of CQI, audit and quality assurance, and introduced some CQI Tools during the lecture. During the workshop, participants worked in groups to identify a risk area and analyse the contributing factors using the Cause and Effect (Fishbone) Diagram. They then came up with an improvement project using the Deming Cycle (Plan, Do, Check, Act) with a project timeline drafted. Each group presented their work, with comments from facilitators and classmates. The lecture and workshop were well received, and many participants found it both practical and useful.

CQI Forum in Haven of Hope Hospital (HHH)

The CQI Forum is held at the HHH every year for the sharing of quality enhancement programs and good practices, and to recognise colleagues' CQI efforts. Last year, the focus of the programme was on the enhancement of patient safety including fall prevention and medication errors reduction, and on the improvement of patient care such as care of dentures during hospitalisation. It is hoped that through these sharing and learning opportunities, the culture of quality and safety improvement will continue to grow in HHH.

Implementation of an Elderly Friendly Environment at Geriatric Ward in United Christian Hospital (UCH)

An elderly friendly environment is imperative for enhancing the quality and safety of care for hospitalised elderly patients. This idea was adopted in the renovation work of the geriatric acute ward in UCH.

Visual and spatial elements were emphasised to reduce the visual confusion of elderly patients, and the surroundings was enhanced to facilitate their safe navigation and activity around the ward:

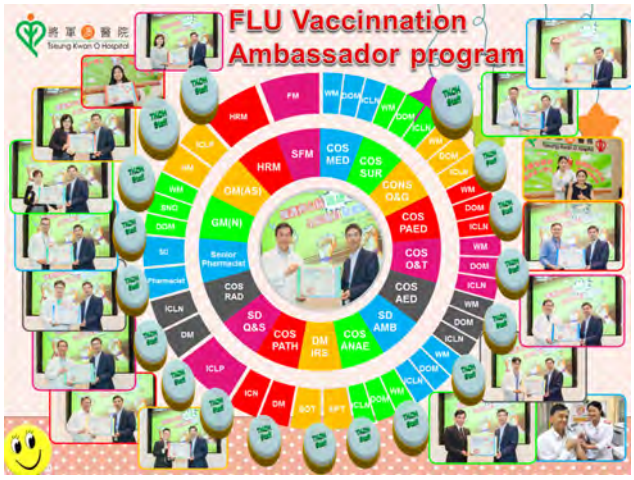
- Different coloured zones in individual cubicles were used
- High-contrast coloured handrails and walls were incorporated
- Polished floors were replaced with unwaxed floors

One of the cubicles was specifically designed to create a sense of calmness and relaxation in order to accommodate confused patients. A sky ceiling with adjustable lighting that can change throughout the day was installed to help patients with their natural Circadian Rhythms. A wall painting of nature was designed to create a less clinical environment, which stabilises patients' mood and prevents them from being agitated or distressed due to the unfamiliar environment.

The adoption of an elderly friendly setting not only improves the clinical environment and atmosphere, but also enhances the safety and quality of the ward's service and thereby providing a better experience to our patients.

Flu Vaccination Ambassador Program in TKOH

Vaccination is important for the healthcare workforce as it helps to protect patients and staff. The Vaccination Ambassador Program was implemented in TKOH to encourage staff to vaccinate against seasonal influenza. 50 infection control linked nurses/persons and 70 executives including Chief of Services, General Managers, Department Managers, Department Operation Managers and Ward Managers were appointed as Influenza Vaccination Ambassadors to promote vaccination in all clinical and non-clinical areas. As a token of appreciation, colleagues who were vaccinated were given a specially designed badge. Different promotion activities were also organised, including ambassadors from the areas of high vaccination rates sharing their experience. Overall, 60% of staff in TKOH were vaccinated and some units even achieved 100% vaccination rate.



Enhanced Management in Patients with Deteriorating Conditions in HHH

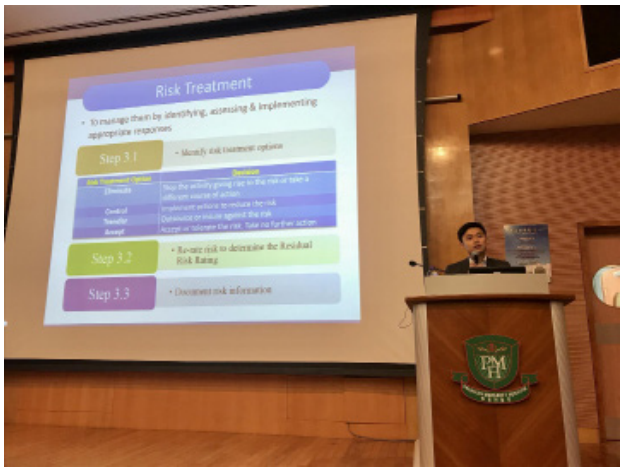
A total of 30 cases of patients who were transferred from HHH back to acute hospitals for management due to deterioration in condition were chosen for review in May 2019. Data including the timely attention of clinical deterioration, initial assessment, management and effective communication were analysed to identify gaps in management of cases with deteriorating conditions. Two cases were selected for a comprehensive case study and audit, and the results were shared and discussed at a training session to improve staff awareness on early detection of patients' deterioration. Training sessions on "Early Detection of Acute Deterioration of Patient Condition" for nurses were arranged and the concept of "TIME" for managing clinical deterioration was promulgated.

Kowloon West Cluster (KWC)

Revamp of KWC Electronic Risk Register (eRR) System

The eRR system in KWC was in use since 2006. The old system was revamped and rolled out in October 2019 with the aim of providing a more structured and user-friendly electronic platform for responsible colleagues to submit their departmental risk registers. In addition to the submission of risk registers, the system also allows the exporting of risk matrices and reports.

To prepare for the rollout, a briefing session was arranged on 18 October 2019 to outline the updates and to give a live demonstration of the new system. KWC Q&S department would continue to engage various stakeholders and obtain users' feedback in order to further enhance the system.



Quality and Safety (Q&S) Forum

The KWC Q&S Forum was held on 31 January 2019 at Princess Margaret Hospital (PMH). The Forum consisted of thematic speeches, Continuous Quality Improvement project presentations and posters exhibition.

The theme of the forum was "Crisis Management". Two renowned guests, Dr Shane LO (Assistant Director of Kowloon Command of the Hong Kong Fire Services Department) and Mr John LAMOND (General Manager of the Hong Kong Airport Authority) were invited to share on the topics "應急良策共享" and "HKIA Crisis Management" respectively.

The Caritas Medical Centre (CMC) Q&S Forum was also held on 28 October 2019. Teams from various clinical and allied health departments submitted posters, shared their valuable experiences and outcomes on their quality improvement projects. A panel of adjudicators, composed of staff from the Q&S Unit, Q&S Coordinators and representatives from different departments, selected six projects for oral presentation in the Forum.

Fall Prevention Program

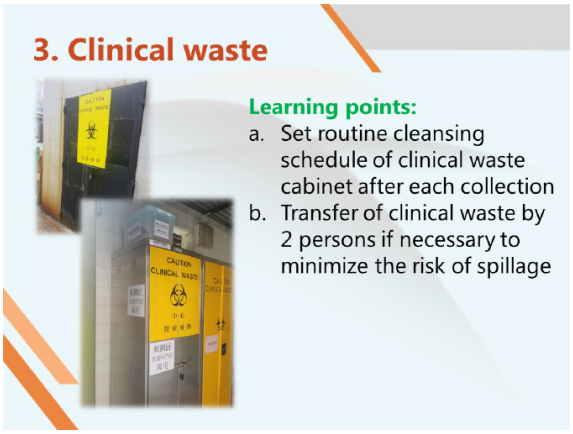
To enhance fall prevention measures in Yan Chai Hospital (YCH), safety rounds to clinical areas with high fall rates were conducted by a multidisciplinary team. Good practices were shared between departments and recommendations from different professionals were provided during the rounds.

In addition, a patient education pamphlet was provided to patients upon admission and discharge. In order to raise staff's awareness on fall prevention, two training sessions for nursing and care-related supporting staff were conducted in August 2019. The training materials were made available online to facilitate learning.

Meanwhile, a Co-production Fall Prevention Program in the Department of Psychiatric Rehabilitation was implemented in Kwai Chung Hospital (KCH). It composed of multiple fall prevention measures co-produced by patients and staff. The Program strengthened patient engagement via active participation by persons-in-recovery (PIRs) in formulating the workgroup, involving in slogan and poster design and attending the fall prevention educational talk. More than 90% of participants agreed that the program was useful, and felt they had developed a deeper understanding of fall prevention.

Safety Walk Round for General Out-Patient Clinics (GOPCs)

Clinic Safety Walk Rounds to 13 GOPCs in KWC had been conducted from August to September 2019 with different focus areas. The walk rounds provided opportunities for departments to share their good practices and also identify potential areas for improvement. Examples of the focus areas include patient flow for fever cases, concerns on infection control, clinical waste handling and compliance of Display Screen Equipment (DSE) in the GOPC setting.



iPad Management and Security

In the past few years, large numbers of iPads were deployed to improve healthcare services. However, the deployment might also incur security and other unintended risks. To ensure that iPads were distributed and managed in a secure and effective manner, a quality assurance check was conducted to review existing practices and make improvements as required. The results indicated that security measures had been properly applied to all KWC iPads. However, some potential improvements in asset records and documentation were identified and these improvements were implemented accordingly. Additionally, to promulgate appropriate use of iPads, an e-flyer was published by KWC Information Technology (IT) Department to all KWC staff to encourage good practices for data security.

Management of Security Risks

KWC hospitals had strengthened the preventive measures on security-related incidents. Coordinating meetings amongst KWC hospitals, Fire Services Department and Hong Kong Police Force were held regularly to enhance the liaison mechanism and exchange experiences in security risk management.

Additional CCTV facilities were installed at strategic security points to strengthen surveillance, including all lift lobbies of the acute block in CMC, general office of the Pharmacy in YCH and passenger lift lobbies of Main Block of YCH.

Besides, CMC was awarded the “Outstanding Managed Property” and “Outstanding Managed Public Carpark” in the Kowloon West Best Security Services Award 2018 and the awards were presented by the Hong Kong Police Force in May 2019.

New Territories East Cluster (NTEC)

Risk Mitigation and Continuous Quality Improvement (CQI)

The annual Quality & Safety Forum has been the major event leading the direction and focus of safety intervention in NTEC. The Quality & Safety Forum in NTEC this year was planned with the theme "Investigation Risk 精準穩妥ACTION!". The target of this forum was to increase staff alertness to the risks in the investigation process and stimulate exploration of mitigation actions. Hospital Q&S Forums on the common theme were held in October 2019. CQI teams were selected from these forums to represent their hospital at the NTEC Forum scheduled in November 2019. Although, the Cluster forum was deferred till further notice due to unforeseeable circumstances, our work towards minimising investigation risks was determined.

Training and Research

Training Workshop on Risk Management and Incident Management

A number of workshops had been established in NTEC to provide staff training on risk management and incident management.

We have run the Incident Management Workshop since 2012 while the RCA Workshop and Workshop for Risk Register were revamped from the previous "1 Nurse 1 Plan" training to multi-disciplinary training in 2018. In 2019, the workshops were further re-engineered to scenario-based training to minimise classroom didactic teaching and focus on simulations to deal with 'real life' situations in a practical manner. Participants not only treasured the 'experience' obtained, they also enjoyed the cross discipline discussion and collaboration. Some of our workshops were opened to delegates from HO and other clusters, and again, very encouraging comments were received from them. These workshops inspired them with more ideas to develop similar courses at their own Clusters.

NTEC EQUALSafe Incident Management Workshop I & II (21 May 2019)

Workshop on Risk Register and Root Cause Analysis (RCA)

NTEC Quality Workshop 2019- Research, We Search

Research entails systematic collection of information to form the basis of evidence-based practice. Sharing research findings with relevant stakeholders is the vital first step towards initiation of good practice.

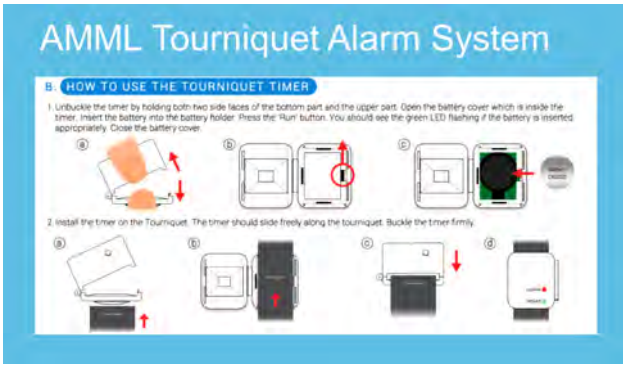
On 10 September 2019, NTEC Q&S had invited Professor Amanda CHU (EdUHK), Professor Calvin OR (HKU) and Dr. Geoffrey LAM (NTEC) to share their research findings on the research projects initiated by Q&S with university involvement and / or cross discipline collaboration.

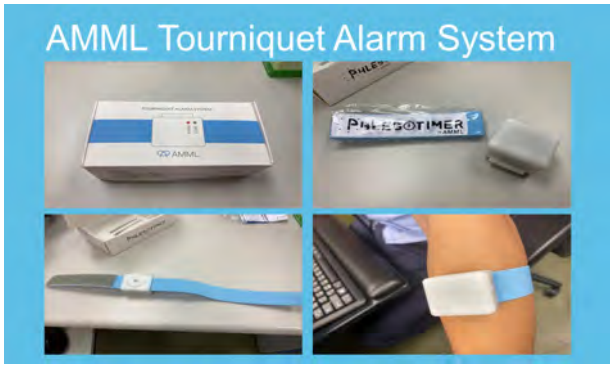
Research	Speaker	Findings
Understanding Nurses' Perceptions and Behaviour in the Drug Administration Process	Prof. Amanda CHU	• Nurses have good knowledge on drug administration process • Nurses are lack of confidence in equipping sufficient medication knowledge on common medication in use in their specialty
Understanding Nurses' Perceptions and Behaviour in the Drug Administration Process	Prof. Calvin OR	• Poorly designed medical devices can result in undesirable usage behaviours of healthcare staff • Testing of medical devices helps identify potential design of the devices and performance issues of healthcare staff • Conduct the test before the implementation of the devices is essential • High fidelity simulation setting may be needed to improve the external validity of the test
Healthcare Providers' Experience of Clinical Incidents in HK: Impact and Coping Strategy	Dr. Geoffrey LAM	• Second victim prevalence 24.2% • Peer & supervisor support are most important- Listening, seek support & advice • Need to know how to seek staff psychological services (OASIS, CIPS, or CIST)

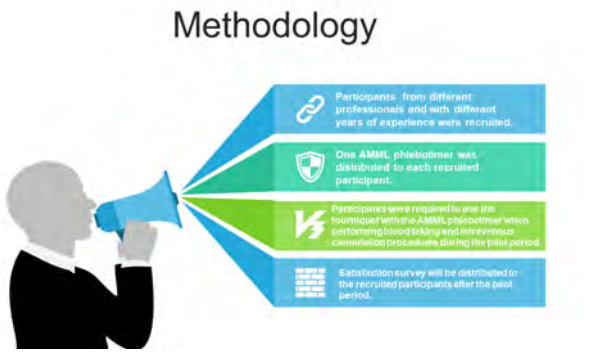
NTEC Quality Workshop (10 September 2019)

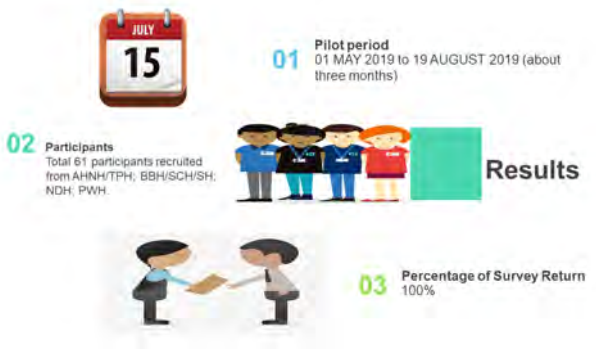
Trial of Tourniquet Timer Alarm System in NTEC

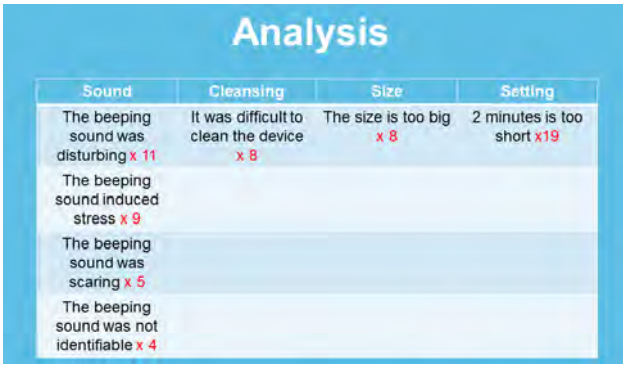
Retentions of tourniquet, after blood taking or insertion of intravenous cannulation procedures, are not uncommon in hospitals. A Cluster-wide pilot project using a locally invented tourniquet timer alarm system was on trial across seven hospitals from May to August 2019. Doctors, nurses and phlebotomists were invited to take part in the trial. The evaluation reflected that improvement in the design of the timer alarm would be required to make it more user friendly in terms of its size, alarm sound, durability and ease of cleaning.



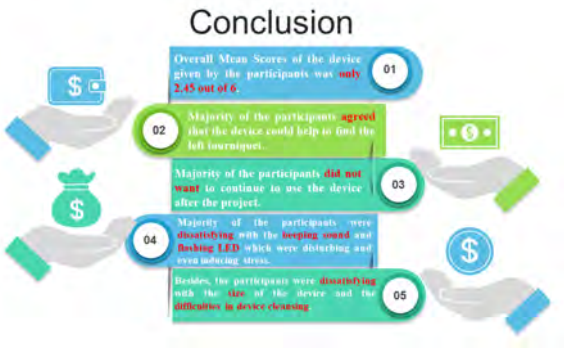








Sound	Cleansing	Size	Setting
The beeping sound was disturbing x 11	It was difficult to clean the device x 8	The size is too big x 8	2 minutes is too short x19
The beeping sound induced stress x 9			
The beeping sound was scaring x 5			
The beeping sound was not identifiable x 4			



"Near Miss" Sharing and Promotion

Near-miss events are often described as "free lessons" through which we can learn to improve patient safety without paying for the loss and suffering associated with incidents. In order to share with other colleagues these precious lessons, Prince of Wales Hospital (PWH) has been publishing a bi-monthly electronic comic flyer "阿姐提提你" since 1st March 2019 to alert staff on possible traps in the healthcare system.

PWH has also launched the "Nice Catch" programme in 2019 to show appreciation for our staff's efforts in stopping incidents before they reach patients. Reporters of the near miss were honored as "Nice Catcher" and presented with a souvenir to for their contribution to safeguarding patient safety.

Keeping the IPMOE Momentum

To keep the momentum of the "Medication Safety through IPMOE" initiative going, a number of safety strategies were introduced at different hospitals.

Medication Safety Forum at Alice Ho Miu Ling Nethersole Hospital (AHNH) and Tai Po Hospital (TPH)

The AHNH & TPH Medication Safety Forum was held on 8 March 2019 themed "Decoding IPMOE". Dr. Joanna PANG, Chief Manager, Health Informatics from Head Office shared the way forward for IPMOE development. Colleagues from Pharmacy also shared their Pharmacy-initiated medication safety measures. The Q&S team concluded by presenting their evaluation on medication incidents after IPMOE implementation and identified the folowing:

- Problems not currently prevented by IPMOE: Wrong route, wrong dosage, wrong rate, transcription error
- Lack of interface with Laboratory Information System (LIS)/ePR/CMS home leave
- No system checking for allergy/adverse drug reaction recorded in Electronic Health Record Sharing System (eHRSS)

Intern Orientation with IPMOE Scenario-Based Training at AHNH

Intern orientations are conducted quarterly to share and discuss incidents related to interns. A scenario-based training on IPMOE was conducted on 2 October. During the training, the interns experienced the common pitfalls in IPMOE and learnt the right approach to minimise medication errors. The feedback from the interns was very positive.

Medication Safety Release at NDH

The NDH Medication Safety Sub-Committee kept a close monitoring on medication incidents, especially on those related to IPMOE. Flyers called "Medication Safety Release" were issued regularly to share the common pitfalls and tips on using IPMOE.

New Territories West Cluster (NTWC)

Enhancing Correct Patient Identification (CPI)

The CPI Committee regularly reviews incidents related to patient misidentification in the NTWC. Learning points from the incidents are shared in regular CPI staff training sessions to enhance their awareness. An annual CPI Forum was hosted on 4 July 2019 where 289 staff attended. Regular training is also provided to doctors, nurses, supporting staff and new staff at NTWC.

Positive feedback was received in response to a CPI animation, which has been on display in the Accident and Emergency Department and Specialist Out-patient Clinics in Tuen Mun Hospital (TMH), Pok Oi Hospital (POH) and Tin Shui Wai Hospital (TSWH) since 3Q 2018 for patient education. A second version of the animation is being produced for General Out-patient Clinics and Tuen Mun Mental Health Centre which focuses on the importance of showing personal identity documentation for verification and empowering patients to cross-check the correct identities of their documents.

In August 2019, a NTWC Unique Patient Identification (UPI) Device Management Workgroup was formed to support the purchase of UPI devices, maintenance coverage and replacement exercises in the Cluster. The maintenance of all UPI devices and wristband printers are coordinated by the Quality and Safety Division annually. An annual preventive maintenance visit was arranged in September 2019 which covered all areas with UPI devices at NTWC.

A pilot project using a tailor-made UPI system to enhance the CPI on administration of expressed breast milk in postnatal wards of TMH was carried out in December 2018. An evaluation meeting was held with positive feedback and good compliance was noted in a subsequent audit. Enhancement of the checking process by eliminating the unnecessary steps in barcode scanning, enabling the function to customise the number of labels to be generated, and printing larger waterproof labels would be carried out in 2020. This project was selected for poster presentation in the International Society for Quality in Health Care in October 2019.

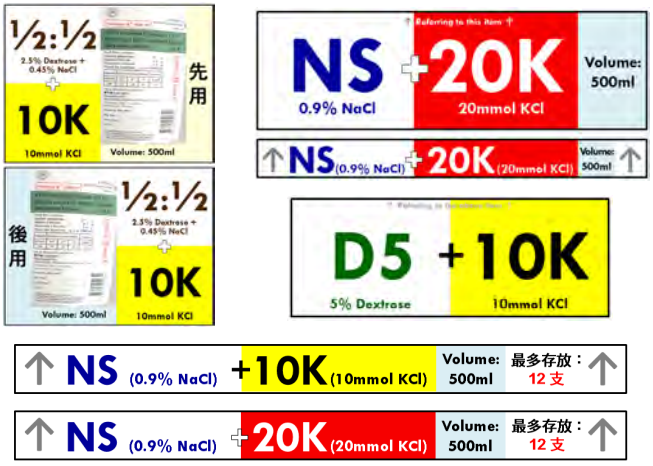
A similar programme will be carried out in the Department of Radiology by using handheld scanners to enhance identity verification of in-patients and out-patients in the Computed Tomography suite. A feasibility test was conducted in late 2019 and the programme will be piloted in TMH in 2020.

Promoting Medication Safety

The Drug Administration Safety Committee (DASC) is responsible for implementing risk mitigation measures to ensure medication safety. To allow more frontline staff to participate in medication incident management, clinical representatives are invited to join the quarterly DASC pre-meetings to discuss and to analyse medication incidents. Professional input and valuable comments from these stakeholders help the DASC to better identify key issues and understand the difficulties our frontline staff are facing when handling medications. The participants are also invited to share the learning points in the pre-meetings with their department staff.

A "Quality Improvement Workgroup on Storage of Intravenous (IV) Fluids with Potassium Chloride (KCl)" was formed in 1Q 2019. Visits to clinical wards were conducted to observe the existing practice in ward management of IV fluids with KCl. Guiding principles with consideration of human factors were introduced. Standardised labels on storage shelves were piloted in some wards in TMH in March 2019 and was fully implemented in TMH in 3Q 2019.

Sample of Labels *(with considerations of human factors)*



Before

After

With the aim of enhancing staff awareness in medication safety, the DASC organised three Medication Safety Seminars in 2019 with more than 500 attendees. The seminars included clinical scenarios of medication incidents in order to engage attendees during the interactive session. Positive feedback of this new format of training was received.

Preventing Falls and Promoting Restraint Safety

With the aim of synergising efforts in preventing patient falls and ensuring restraint safety, the Cluster management has orchestrated the combination of two committees managing falls and physical restraint, and an NTWC Falls and Restraint Management Committee was formed in 4Q 2018. This Committee has continued with the initiatives of the previous two committees and also started considering new initiatives.

Considering the application of correct-sized safety vests is crucial in both fall prevention and restraint safety, the committee has launched a questionnaire survey about the supply of safety vests in TMH, POH and TSWH. The results and recommendations were forwarded to the Cluster Linen Supply Unit to provide better alignment of size supply and requirement. Also, the committee has started regularly monitoring restraint-related incidents and proposing remedial measures to hospital management for consideration.

Building on positive feedback from a pilot study using a fall alarm mat system in three selected wards, the committee has secured further resources and planned to rollout a second phase pilot in collaboration with the Nursing Services Division. More than 30 wards have been selected to join the second phase pilot in 1Q 2020.

The committee continues its advisory role on fall prevention and on measures to ensure a safe environment in our hospitals. Following site visits to patient shower cubicles, the committee has made several recommendations to the Facilities Management Unit on the design of shower cubicles. These recommendations will be considered in future ward renovations.

Enhancing the Safety in Transferring Critically-Ill Patients

A Workgroup on Revision of NTWC Checklist for Intra-Hospital Transport and Escort of Critically-Ill Adult Patient was formed in June 2018 to review the checklist for transfer of critically-ill patients in hospitals. The critical steps in transfer and operation of portable ventilators were revised. The revised checklist was finalised and implemented in February 2019.

Continuous end-tidal carbon dioxide monitoring of intubated patients is an essential component to enhancing the safety of transfer. Standardised portable capnographs are now provided to all clinical wards by the Cluster Central Ventilator Service (CVS) when a transfer is arranged. Training sessions on the use of this device was also provided to all clinical departments.

NTWC Checklist for Intra-hospital Transport of Critically Ill Adult Patient

已經更新

為提升情況危急的成年病人在院內運送期間的安全，NTWC Checklist for Intra-hospital Transport of Critically Ill Adult Patient 和相應的 Guideline 已經更新，並於 2019 年 2 月正式使用。更新的 Checklist 包括以下 5 大部分：

1. **Category of Patient**
   選擇需要醫生 / 護士運送的病人類別
2. **Equipment Preparation**
   - 留意氧氣是否充足及氧氣瓶已開啟
   - 醫生需填寫 **Portable Ventilator / NIV** 的設定
3. **Before Departure**
   - 出發前再次檢查氧氣瓶是否已完全開啟
   - 確定 **Portable Ventilator** 已開機
4. **En-route**
   - 監察運送途中的 **Vital signs**
   - 如果需要運送病人回程，出發前需重新檢查氧氣供應和 **Portable Ventilator**
5. **Arrival/Handover**
   到達目的地時，記錄病人的 **Vital signs**

HOSPITAL AUTHORITY
New Territories West Cluster

Checklist for Intra-hospital Transport of Critically Ill Adult Patient

另外，為加強運送期間對病人的監察以提升病人安全，聯網正採購 Capnometer 以便監察已插喉之病人的 End-tidal CO2，詳情將於稍後公布。

參考資料： NTWC Guideline on Intra-hospital Transport of Critically-ill Adult Patients

Enhancing Bedside Procedural Safety

In accordance to the updated HA Safety Policy on Bedside Procedures, the NTWC Bedside Safety Checklist was updated on 1 July 2019. The revised checklist incorporated the checking of patients who are taking anticoagulants, so that early identification would alert the clinical teams for potential bleeding tendencies. We held a briefing session on the new checklist for clinical departments on 6 June 2019. Furthermore, in order to reduce the risk of guidewire retention, the Intensive Care Unit and Department of Clinical Oncology developed their departmental procedural checklists for abdominal / chest drain / central vein catheter (CVC) insertion with guide wires.

Retention of guide wires has been of great concern for bedside procedures like central vein catheterisation. NTWC worked with the HA Taskforce on Prevention of Guide Wire Retention in producing a teaching video demonstrating the procedures as well as focusing on the critical steps and safety tips on CVC insertion with guide wire using the Seldinger Technique. The video was produced in 3Q 2019 and will be promulgated in various Coordinating Committees and e-Learning Centre.

Improving Effectiveness of Root Cause Analysis (RCA) Reports

RCA is known to be time-consuming and resource intensive. The strength of recommendations identified in RCA reports directly affect their effectiveness. To study the strength and effectiveness of RCA recommendations and to identify ways for improvement, an analysis of RCA reports in the NTWC was conducted. All RCA reports, 111 in total, relating to incidents which occurred in the NTWC between January 2013 and November 2018 were analysed. The strength of the recommendations were classified as "strong", "medium" or "weak".

To allow recommendations with stronger strengths to be identified, two training sessions were conducted for the facilitators and Quality and Safety Division's staff. A "Useful RCA Kit for RCA Members" was also developed to provide tips to the RCA teams to facilitate them to better identify the root causes and recommendations.

Tips in Conducting an Effective Root Cause Analysis (RCA)

1) Finding the Root Causes

- ☐ Apply RCA techniques, e.g. Fishbone Diagram, 5-whys Technique, Flow Diagram, where appropriate.
- ☐ Refer to "Table 1: Types of Human Failures" to identify the type of human failures.
- ☐ Refer to "Table 2: Common Factors Leading to Human Failures" to identify causal factors and root causes.
- ☐ Apply the "5 Rules of Causation" to identify and write the root causes.
  1. Clearly show the "cause and effect" relationship.
  2. Use specific & accurate descriptors for what occurred. → Avoid negative or vague descriptors: e.g. Poor / Inadequate / Wrong / Bad / Failed / Careless
  3. Human errors must have a preceding cause.
  4. Violations of procedure are not root causes, but must have a preceding cause.
  5. Failure to act is only causal when there is a pre-existing duty to act.
- ☐ Beware of "Hindsight Bias" when making decision.

Table 1: Types of Human Failures

Types	Definitions	Examples of Possible Solutions
Errors	Resulting action is not intended / Carry out without much conscious attention • Slip – Actions not carrying out as planned • Lapse – Actions forget to carry out	• Human-centred design / automation • Manage fatigue, increase attention/rest, sufficient work time • Use of checklists/alarms, reduce interruption/distractions ** Errors are often made by experienced, highly- trained, well-motivated staff → Additional training is NOT valid.
Mistakes	Action carried out, as planned & consciously • Rule-based – Not understanding how thing works • Knowledge-based – Error in planning / diagnosis due to inexperience / incompetence	• Organisational learning (e.g. unusual event) to ↑ competence • Proactive supervision • Use diagnostic tools and decision-making aids • Regular drills / plan for 'what ifs' for upsets / emergencies
Violation	Deliberately deviate / break the rules / cut corner • Routine – "Norm" / General consensus • Situational – Situation-specific • Exceptional – Highly unusual circumstances	• Improve risk perception, promote understanding and raise awareness of 'whys', risks & consequences • Motivate staff, change attitude/behavior, eliminate cut-corner • Increase likelihood of getting caught

Table 2: Common Factors Leading to Human Failures

	Types	Common Factors	Definitions / Examples
Possible Causal Factors (Caused by ↓)	Human (Decision Making)	Anchoring bias	Tendency to rely on initial features in pt. assessment to make diagnosis
		Automatic behaviour	Skilled actions become automatic hindering rational thinking
		Availability heuristics	Rely on immediate examples on their mind to make decision
		Confirmation bias	Strong tendency to seek information that confirms already held beliefs
		Forgetting	Loss / modification of information in long-term memory
		Framing effect	How information presents will affect conclusion/decision making
		Diagnosis momentum	Diagnosis once made tends to become stickier and stickier
		Over/under-confidence	Unskilled/skilled individuals tend to over-/under-estimate themselves
		Premature closure	Tendency to accept a diagnosis before it has been fully verified
		Representative heuristics	Rely on prototype / stereotype / average on their mind to make decision
	Human (Memory / Attention)	Cognitive overload	Information/time exceeds cognitive capacity affecting attention & focus
		Fatigue / sleep deprivation	Cognitive tasks (esp. long & complex ones) are sensitive to sleep deprivation
		Forgetting	Loss / modification of information in long-term memory
		Interference (capture error)	Newer information prevents recall of older information or vice versa
		Selective attention	People tend to focus on one stimuli only and ignore irrelevant tasks
		Skimming	People skim (do not read all information) when reading
		Stress / fear / anxiety	Increase cognitive load and hinder memory recall
Possible Root Causes	Environment	Colour	Cool colours reduce distraction & higher concentration on difficult tasks
		Heat	Mental performance deteriorates with higher room temperatures
		Lighting	Poor lighting / glare affects reading of information
		Noise	Noise increases distraction and fatigue
		Room setting	Room setting may affect workflow and work performance
	Task, Team & Organisation	Boredom	Prolonged work in the same position may decrease attention
		Interruption / distraction	Increases use of divided attention and increases errors
		Leadership / teamwork	Stronger leadership/teamwork motivates staff and reduces errors
		Multitasking	Affects memory retrieval and increases errors during task switching
		Shiftwork	Higher error rates in $8^{th}/9^{th}$ hour of work / night shifts
		Situational awareness	Relationship between one's knowledge / mental state with surroundings. Involving non-technical skills incl. communication / hierarchical mgt. / attention
		Training / education	Inadequate training / education may lead to mistakes and violation
		Workflow / product design	Design and usability which match human behaviours can reduce errors
	Others	Patient factors / Unclassifiable / Unknown	

1 June 2019

Tips in Conducting an Effective Root Cause Analysis (RCA)

2) Making Recommendations

- ☐ Refer to the failure type(s) [Table 1] and root cause(s) [Table 2] to identify the most appropriate solutions.
- ☐ Suggest identifying at least 1 strong/medium recommendation (Table 3: Strengths of Recommendations).
- ☐ Apply SMART principles (Specific, Measurable, Actionable, Relevant, Time-bound).
- ☐ Identify responsible subject officer(s) and set completion timeline for each recommendation.
- ☐ Principles in error prevention and mistake proofing:
  1. Avoid reliance on memory
  2. Make things visible
  3. Review and simplify processes
  4. Standardize common processes and procedures
  5. Routinely use checklists
  6. Decrease the reliance on vigilance

Table 3: Strengths of Recommendations

Strength	Recommendation Types *	Examples
Strong (less reliance to human)	1. Architectural / physical plant changes	Remove crossbars in toilets to prevent hanging
	2. Engineering control/interlock/forcing functions (A)	Use of upper limits in smart pumps
	3. New devices with usability test before purchase	Perform usability tests on new POCT machines
	4. Simplify the process & remove unnecessary steps	Streamline admission process for pt. in emergency
	5. Standardize on equipment/process/care maps (B)	Standardise the use of barcode scanner for AOM
	6. Tangible involvement and action by leadership	Purchase needed equipment / Ensure staffing
Medium (reduce human reliance but not fully control)	7. Audit undertaken	Conduct regular hand hygiene audits
	8. Checklist / cognitive aid (C)	Use of Surgical Safety Checklist
	9. Eliminate look- and sound-alikes	Do not store look-alikes next to one another
	10. Eliminate / reduce distractions	Reduce distraction when programming IV pumps
	11. Enhanced communication	Standardise the items to handover
	12. Enhanced supervision	Assign a senior staff to oversee junior staff's work
	13. Increase in staffing / decrease in workload	Arrange more staff in AOM period
	14. Redundancy / back-up systems	Abnormal reports to be further screened by senior
	15. Review policy / guideline / documentation (D)	Review the guideline in falls management
	16. Review / re-evaluate use / appropriateness of equip.	Review the usability of oxygen regulators
	17. Simulation training with refresher	Conduct CRM training / in-situ simulation drills
	18. Software enhancements / modifications (E)	Use computer alerts for drug-drug interactions
Weak (mostly rely on human to remember to perform the task correctly)	19. Additional study / analysis	Analyse the proportion of affected patients
	20. Double checks (F)	One calculates dosage, another reviews calculation
	21. New procedure / memorandum / policy (D)	Develop a new blood transfusion policy
	22. Training and education (include counselling) (G)	Demonstrate use of a hard-to-use medical equip.
	23. Warnings and labels	Stick a warning of 'check patient ID' on desk

*** Advantages/Disadvantages of Some Recommendations in Table 3:**

	Advantages	Disadvantages
(A)	Effectively eliminates human error	May be expensive and resource intensive
(B)	Can prevent slip/lapse errors	Still require human vigilance for implementation
(C)	Reduces reliance on internal memory in recalling	Reactive (detection) rather than proactive (prevention)
(D)	May encourage adherence to standardized practices	Does not fix the system & depend on staff's proper implementation
(E)	Reduces reliance on human capacity and memory	- May introduce new errors and behavioural changes - May create workarounds and override key warnings
(F)	May reduce error by two people performing the task	Depend on proper implementation by staff
(G)	May improve knowledge to reduce mistakes due to insufficient education	- Relies purely on human performance and ability - Does not address latent system failures & may not be sustainable - Cannot prevent slip/lapse

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2 June 2019

SPECIALTIES

Allied Health Quality and Safety Committee

Quality Assurance Measurement of the Dose Area Product (DAP) Value for X-ray Machines in Diagnostic Radiology Departments

Introduction

In diagnostic X-ray examinations and interventional procedures, unwanted radiation may be absorbed by patients, especially from the extensive use of fluoroscopy in complex angiography procedures. The delivered radiation dose should be made as low as possible for patients' safety. Dose area product (DAP) is a quantity to assess the radiation risk to patients. DAP means the absorbed dose integrated over the area of the dose field. In digital radiology, quantities such as patient dose, scatter dose, X-ray output and scan field of view (FOV) are related to DAP. Therefore, it is very important to maintain an accurate DAP value which helps to optimise radiation protection and minimise radiation dose for patients.

Because of the significance of DAP, most manufacturers provide real-time radiation dose meters on modern X-ray machines. Despite meters having been calibrated in the manufacturers' test labs, different protocols and procedures will also affect the DAP accuracy. A universal quality assurance (QA) of DAP measurement is necessary for cross-cluster comparison of DAP values. The Medical Physics (MP) Subcommittee have reviewed the current method of DAP measurements for fluoroscopes and general X-ray machines, to provide measurement guidelines and criteria for this DAP QA project. A broader MP Workgroup also assists departments with X-ray machines to perform necessary QA.

The QA measurement results are submitted to the MP Subcommittee for audit and evaluation purposes. This QA project gives an overview about the accuracy and calibration of DAP meters in X-ray machines. The variations in DAP accuracy among clusters and manufacturers are investigated. Reference Level or benchmarks can be established if necessary. The DAP measurement method is reviewed and incorporated into regular QA tests. If the DAP value is out of tolerance during the test, a calibration is required. Through the regular monitoring and QA of X-ray machines, a high accuracy of DAP values can be maintained for patient dose estimation.

Accessibility to Service

A total of 106 X-ray machine data were collected from 7 clusters over 30 hospitals. The distribution can be referred to in the table below.

Cluster	Hospital	Number of X-ray	Sub Total
HKEC	PYNEH	5	8
	RH	2	
	TWEH	1	
HKWC	DKCH	2	13
	FYKH	1	
	GH	2	
	QMH	6	
	TWH	2	
KCC	BH	1	20
	HKCH	2	
	KH	3	
	KWH	6	
	QEH	8	
KEC	HHH	2	16
	TKOH	7	
	UCH	5	
	YFS	2	
KWC	CMC	6	19
	KCH	1	
	NLTH	2	
	PMH	7	
	YCH	3	
NTEC	AHNH	2	13
	NDH	3	
	PWH	8	
NTWC	CPH	1	17
	POH	5	
	TMH	6	
	TSWH	4	
	YOP	1	

Outcomes

The DAP measurements follow the American Association of Physicists in Medicine (AAPM) Task Group 190 method. AAPM recommends a maximum of ±35% deviation from measured values which is set as the benchmark for this QA test. The performance of DAP meters is analysed across seven Clusters and six X-ray machine brands. A reference level at third quartile (75%) is also set for relative comparison.

Averaged DAP meter discrepancies of displayed DAP in each Cluster is summarised in Figure 1. KEC has the best performance with a 3.1% deviation while KWC has the largest discrepancy of 12%. A box plot is drawn in Figure 2 showing the statistics of individual hospitals. All X-ray models are under 35% deviation limit of AAPM standard. KEC is the only Cluster with all X-ray models below the reference level. Hospitals with discrepancies above third quartile reference level should consider improvement plans to prevent potential deterioration.

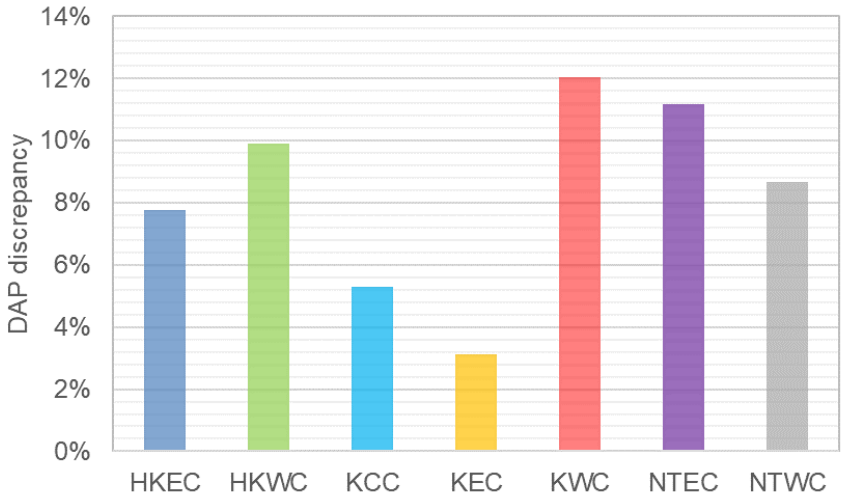


Figure 1. Mean DAP discrepancy chart of Clusters

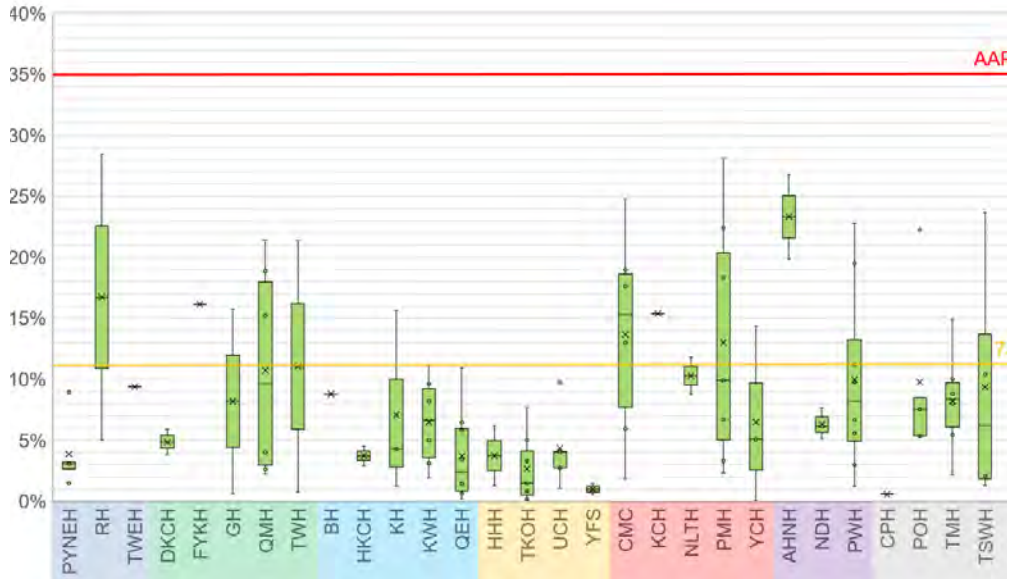


Figure 2. DAP discrepancy box plot of hospitals

X-ray machines tested in this project are produced by six manufacturers. The percentage of each brand is displayed in Figure 3. CareStream is the dominant brand with a total of 49 X-ray machines while QST is the least common brand with only 4 machines. In particular, CareStream DRX evolution is the most employed model.

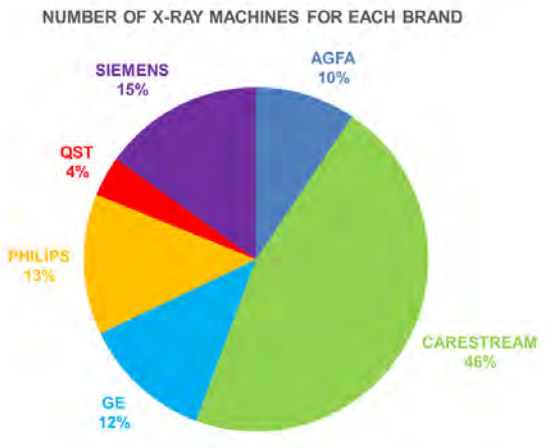


Figure 3. Number of X-ray machines percentage pie chart

AGFA has the best performance with a 5.3% deviation. Meanwhile QST has the highest discrepancy of 11.4%. A box diagram is plotted in Figure 4 showing that AGFA is the only brand with all X-ray models below third quartile reference level.

A large variation is seen in Siemens models that both the best and the worst models are from Siemens. Multix Fusion model has the highest discrepancy of 25% while the discrepancy of Aristos MX is merely 0.63%. The standard deviation (STD) of Siemens models is found the highest of 9.18% among six brands. Meanwhile, STD of AGFA is only 3.78% which indicates AGFA models are both accurate and precise.

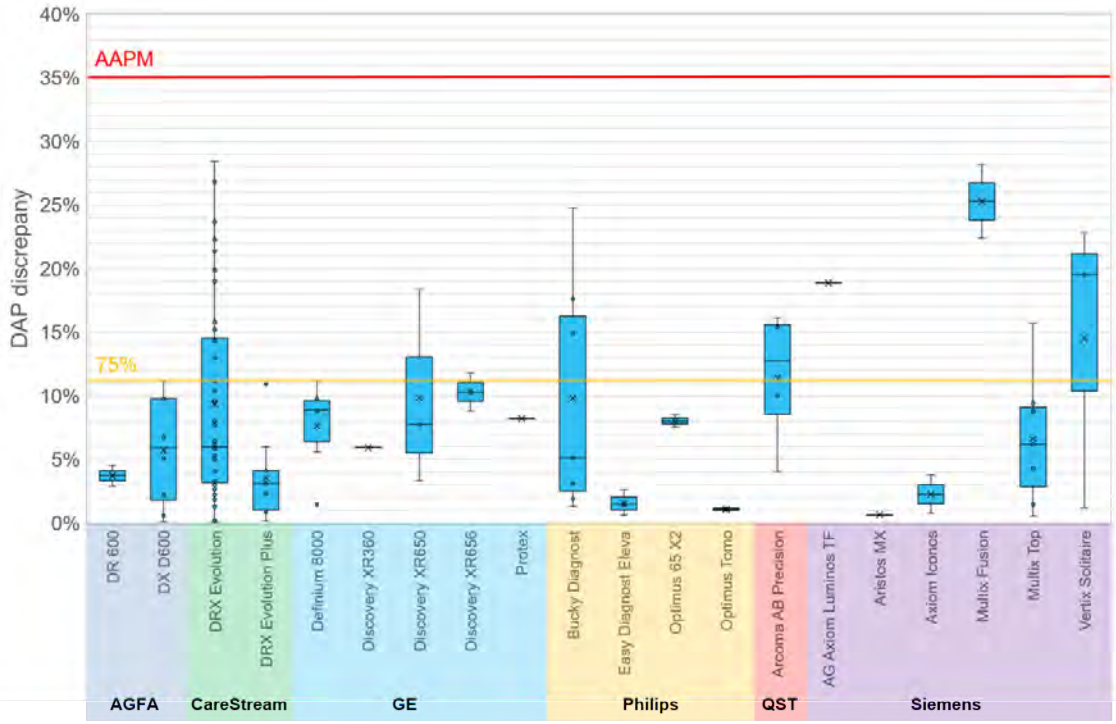


Figure 4. DAP discrepancy box plot of X-ray models

Project Highlights

In this project, DAP QA measurement result shows all HA X-ray machines reported have complied with the AAPM standard of 35% discrepancy. The difference in the mean DAP discrepancy between Clusters is less than 10%. However, variation in DAP discrepancy is seen among machines. This QA result forms a DAP database of major fluoroscopes and general X-ray machines in HA for future calibration reference. An annual QA of DAP meters is recommended and should follow AAPM standards. A reliable DAP value is essential for an accurate estimation of patient dose afterwards.

Way Forward

An accurate estimation of patient doses becomes possible after a reliable DAP value is obtained. This QA project has reviewed DAP meters' accuracy of X-ray machines across HA hospitals. To evaluate the effectiveness of DAP values, analysis may be taken on phantom or patient data. Besides, different procedures and patients require different setup. It is advised to plan different methods to monitor DAP and different DRLs for different procedures. Thus, we can then build a comprehensive database which is essential for accurate estimations of patient doses in the long term.

CC (Toxicology)

Introduction

The Hospital Authority Toxicology Services (HATS) was established in July 2005 with core units including the Hong Kong Poison Information Center (HKPIC), Prince of Wales Hospital Poison Treatment Centre (PWHPTC), the Toxicology Reference Laboratory (TRL) in Princess Margaret Hospital, the Chief Pharmacist's Office (CPO) along with the Infection Emergency and Contingency (IEC) Department in HA Head Office as the executive arm. On top of providing poisoning advice and necessary toxicology support, HATS also collaborated with the Toxicovigilance Section under the Department of Health (DH) to form the Hong Kong Poison Control Network (HKPCN) (Figure 1) and to prevent, manage as well as control of poisoning in Hong Kong. Over the past years, HATS has been involved in and providing expert advice in various major poisoning events, such as 'Melamine Tainted Milk' (2008) and 'Lead in Drinking Water' incidents (2015).

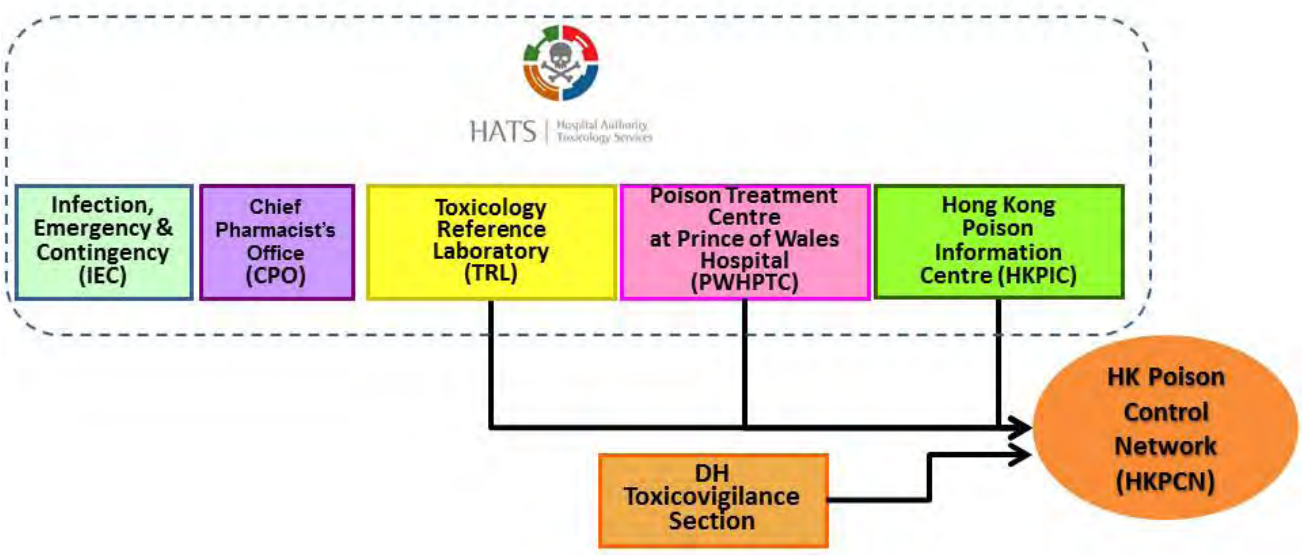


Figure 1 Composition of HATS and HKPCN

HATS formed the backbone of the Central Committee on Toxicology Services (CCTox) which was established in 2009 with terms of reference as below:

- To provide strategic advice on matters relating to clinical toxicology services in HA in order to ensure the quality of services
- To monitor progress of the work plans for the participating organisations, namely the HKPIC, PWHPTC and TRL
- To consult and share information among various specialties

In addition to the heads and representatives of the HATS units, CCTox membership also included representatives of other relevant specialties, namely, Paediatrics, Psychiatry, Pathology, Medicine, Accident & Emergency (A&E), Intensive Care Unit (ICU), Pharmacy and Toxicovigilance Section of DH.

Project Highlights

Electronic Poisoning Notification System

In order to prevent the recurrence of similar poisoning events and to avoid more people from getting poisoned, frontline clinicians are advised to notify the Department of Health early, via the poisoning reporting form, of any poisoning events that have potential public health implications, irrespective of the agents involved. While specimens could be tested in respective Chemical Pathology Laboratories, the completed reporting forms would be sent to the Department of Health for investigation. Each year, an average of 155 cases are reported via this poisoning reporting mechanism (Table 1).

	2013	2014	2015	2016	2017	2018	2019
Total no. of cases	**149**	**128**	**205**	**188**	**170**	**129**	**117**
Type of suspected poisoning agents							
Pharmaceutical	38	49	48	60	40	42	39
Chinese Medicines	58	45	96*	58	53	42	32
Non-Pharmaceutical	17	9	39	45	43	25	27
Alternative medicines	14	9	9	10	23	13	14
Others	22	16	13	15	11	7	5
Remark: *Proprietary Chinese Medicines outbreak with additional 41 cases							

Table 1: Statistic of HA poisoning reporting between 2013-2019

In collaboration with the HO IT&HI Department, CCTox took the initiative to develop an electronic form in the Clinical Management System (CMS) in order to enhance the poisoning reporting mechanism. While making reference to the existing practice, the new system, as planned to be launched in 2020, would streamline the reporting process, assist clinicians to provide case updates, as well as facilitate investigation and management.

Enhancing the Availability and Accessibility of Antidotes

It was observed that frontline clinicians had encountered difficulties when accessing antidotes upon request over the past years. CCTox therefore took the initiative to review and enhance the availability (quantity and location in hospital) and the accessibility (time needed to access) of antidotes.

The Antidote Working Group under CCTox was formed to oversee the project and had identified five Rapidly Available Antidotes (RAAs) among the Level I antidotes, for example, activated charcoal and hydroxocobalamin, for close monitoring. With support from the pharmacy departments, all acute hospitals compiled an inventory list with the stock level and locations of the RAAs in 2019. The inventory lists were made accessible to medical, nursing & pharmacy staff on the respective hospital's pharmacy webpage (Figure 2) and would be updated regularly.

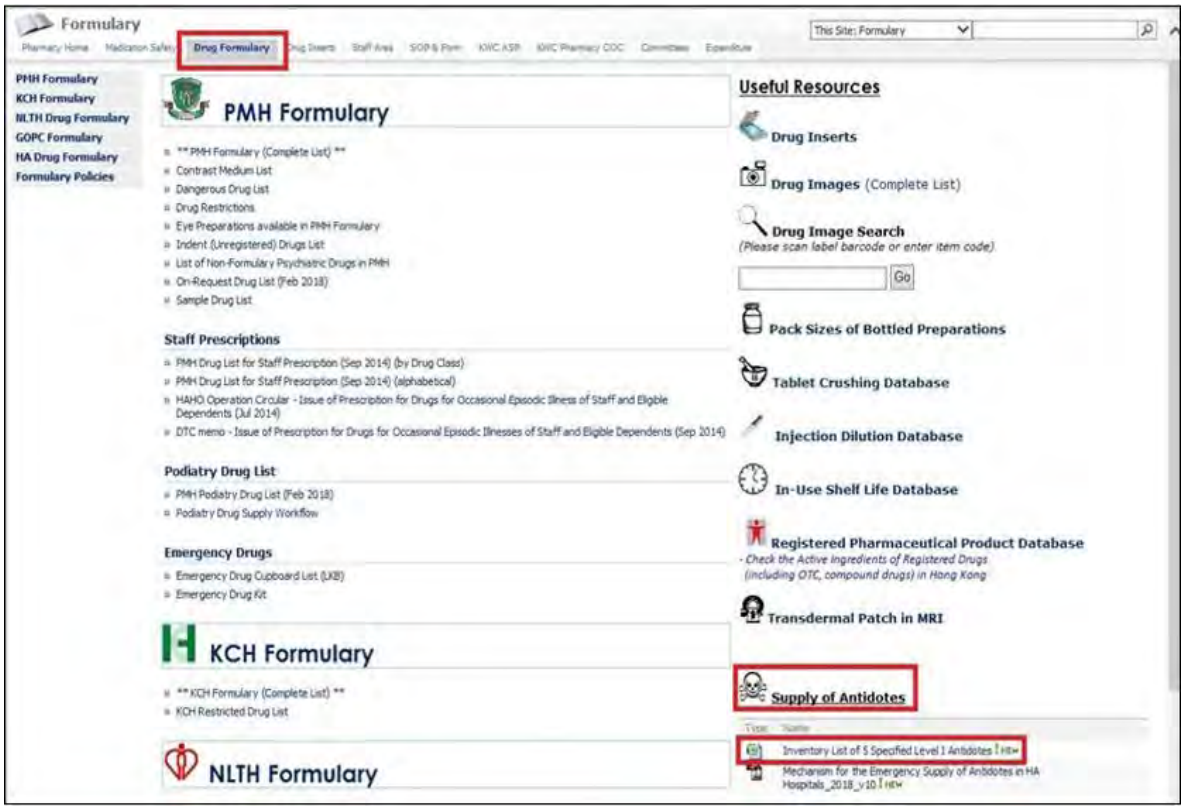


Figure 2. Example of the RAA inventory list available on hospital Pharmacy webpage

Table-Top Exercise on Mass Poisoning Incident

CCTox organised an inter-departmental poisoning drill, namely "Exercise Cobra", in early 2019. The exercise aimed to examine casualty management, responses and collaborations among departments during a mass poisoning event.

Apart from HATS units, specialties including A&E, ICU, Medicine, Pathology and Toxicovigilance Section of DH were invited to participate. The exercise simulated a mass casualty poisoning incident with an unknown chemical reported inside a busy MTR station. Participants were asked to verbally demonstrate their responses in accordance with the inserted event scenarios, such as decontamination, service capacities and antidote treatment in HA.

Figure 3 & 4: Photos from the Exercise Cobra

Debriefing was also conducted immediately after the exercise for evaluation and enhancement on areas such as communication and casualty handling in hospitals. The overall feedback for the exercise was positive and encouraging.

Response Plan for Poisoning Incident

The Response Plan for Poisoning Incident, with input from toxicology experts, as a framework for managing poisoning outbreaks in HA, was updated in 2019.

Besides outlining the governance structure and the responsibility of the involved stakeholders, the plan also included the actions and notification flow under the three tiers of poisoning response in HA (Figure 5). Other useful poisoning related documents such as the latest poisoning reporting forms and mechanism for the emergency supply of antidotes were also included. The Response Plan could be accessed by staff easily on HA's designated contingency plan intranet site.

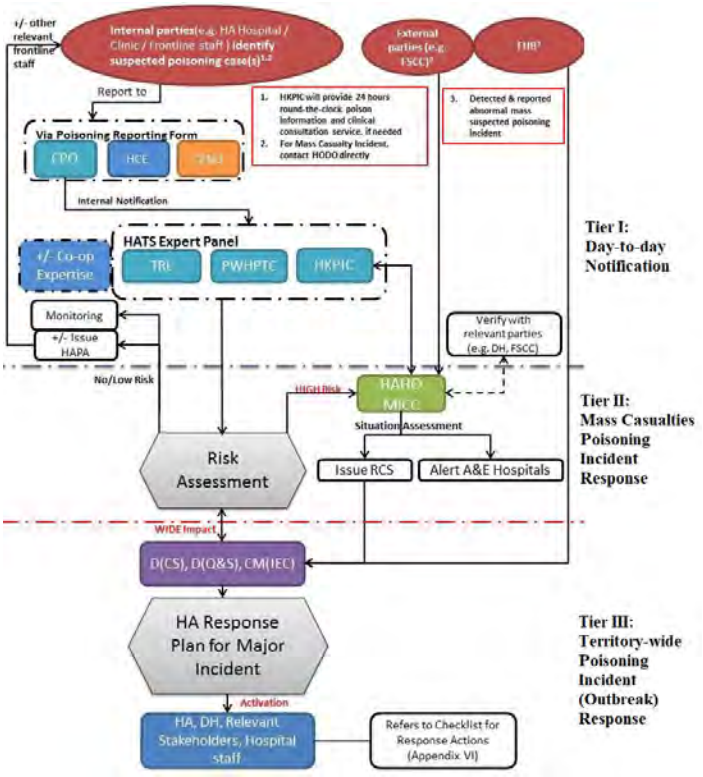
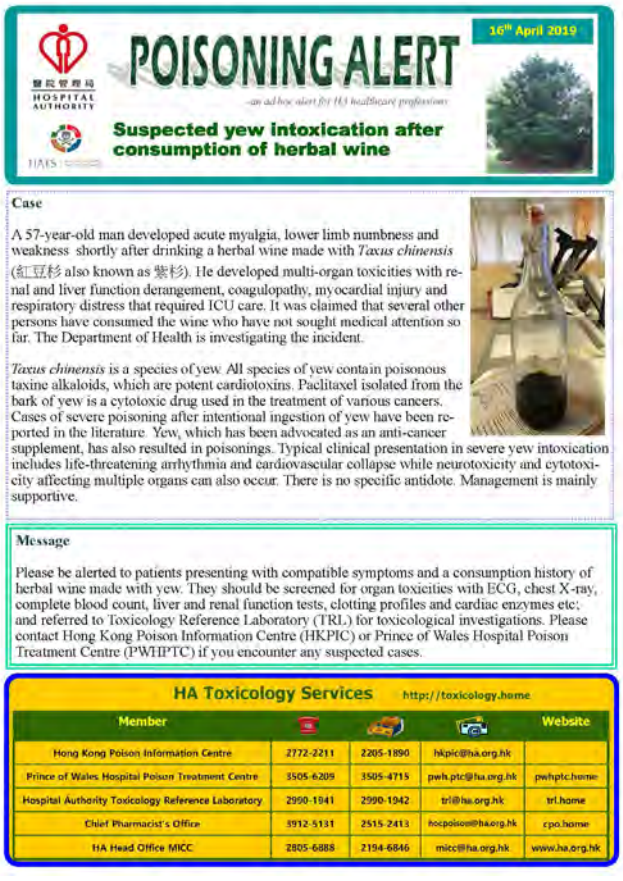


Figure 5. Notification flow for poisoning incident

HA Poisoning Alert



HOSPITAL AUTHORITY

POISONING ALERT

16th April 2019

an ad hoc alert for HA healthcare professionals

Suspected yew intoxication after consumption of herbal wine

Case

A 57-year-old man developed acute myalgia, lower limb numbness and weakness shortly after drinking a herbal wine made with *Taxus chinensis* (紅豆杉 also known as 紫杉). He developed multi-organ toxicities with renal and liver function derangement, coagulopathy, myocardial injury and respiratory distress that required ICU care. It was claimed that several other persons have consumed the wine who have not sought medical attention so far. The Department of Health is investigating the incident.

Taxus chinensis is a species of yew. All species of yew contain poisonous taxine alkaloids, which are potent cardiotoxins. Paclitaxel isolated from the bark of yew is a cytotoxic drug used in the treatment of various cancers. Cases of severe poisoning after intentional ingestion of yew have been reported in the literature. Yew, which has been advocated as an anti-cancer supplement, has also resulted in poisonings. Typical clinical presentation in severe yew intoxication includes life-threatening arrhythmia and cardiovascular collapse while neurotoxicity and cytotoxicity affecting multiple organs can also occur. There is no specific antidote. Management is mainly supportive.

Message

Please be alerted to patients presenting with compatible symptoms and a consumption history of herbal wine made with yew. They should be screened for organ toxicities with ECG, chest X-ray, complete blood count, liver and renal function tests, clotting profiles and cardiac enzymes etc; and referred to Toxicology Reference Laboratory (TRL) for toxicological investigations. Please contact Hong Kong Poison Information Centre (HKPIC) or Prince of Wales Hospital Poison Treatment Centre (PWHPTC) if you encounter any suspected cases.

HA Toxicology Services http://toxicology.home

Member				Website
Hong Kong Poison Information Centre	2772-2211	2205-1890	hkpic@ha.org.hk	
Prince of Wales Hospital Poison Treatment Centre	3505-6209	3505-4715	pwh.ptc@ha.org.hk	pwhptc.home
Hospital Authority Toxicology Reference Laboratory	2990-1941	2990-1942	trl@ha.org.hk	trl.home
Chief Pharmacist's Office	3912-5131	2515-2413	hcpoison@ha.org.hk	cpo.home
HA Head Office MICC	2805-6888	2194-6846	micc@ha.org.hk	www.ha.org.hk

Figure 6. Example of the HA Poisoning Alert

Through conducting day-to-day monitoring on poisoning signals and events, the HA Poisoning Alert (HAPA) (Figure 6) is published should there be any serious or potentially serious toxicity / adverse events that would likely lead to more people being poisoned after assessment by toxicology experts. With CCTox endorsement, the document would be disseminated to all frontline clinical colleagues as well as senior management in order to enhance their vigilance of the poisoning event and for proper treatment where necessary. The HAPA is also advised to be posted in hospital departments for staff alertness.

Since 2006, over 30 HAPAs were issued by HATS. Recent issuances included: "Suspected Yew Inoxication After Consumption of Herbal Wine" (April 2019) and "Cluster of Aconite Poisoning After Taking Chinese Herbal Medicine" (January 2017).

Commissioned Training

The annual HA Toxicology Scientific Conference organised by CCTox invited overseas and local experts to provide the latest insights on toxicology. The conference welcomed all Medical, Nursing and Allied Health colleagues to attend as well as to exchange expertise on poisoning prevention and intervention.

A spectrum of toxicology topics such as methanol poisoning, gaseous poisoning & treatment, etc. were covered by two overseas speakers (from Malaysia and Norway) and eight local speakers in the Conference held in 2019. Over 300 colleagues attended the conference with positive feedback received.

Way Forward

While the latest development with enhancing antidotes availability and accessibility, and launching an electronic notification system would undoubtedly benefit the communication and management of poisoning cases, CCTox, with the HATS units as the core component, would continue to strengthen the toxicology service as well as to work closely with different Specialties and Departments to safeguard the community from unforeseen poisoning events. In addition, regular meetings and trainings would be conducted in order to share poisoning information as well as expertise with frontline colleagues.

COC (Accident and Emergency)

eAED

Introduction

Gaps of the Old--Traditional AED Workflow

The Accident and Emergency Department (AED) is one of the clinical areas with complex workflows, together with high patient volumes of more than two million attendances annually in the Hospital Authority (HA). Traditional workflow model in AED was paper-based. Clinical tasks of each individual patient would be following the flow of the AED documentation sheet (the AED card). There were series of limitations in the traditional paper-based workflows, including:

- Heterogeneity in standard and quality of handwritten documentations, and the associated communication errors
- Clinical communication through paper-based documentation is not close-looped
- Incompatibility with multi-tasking resulted in inefficient workflows and prolonged AED stay of patients.
- Lack of system checking and alarms

Project Highlights

The Pilot, Development and Implementation of an Electronic AED (eAED)

A special feature of AED workflow is that there are multiple carers at different caring sites throughout the patient journey, together with fast-paced patient flows. The paper-based workflow model was unable to meet fast-growing standards and expectations.

Digitalisation of AED workflows has been the trend of AED management worldwide. The eAED project aimed to establish Smart AEDs in HA, aligning with the direction of "smart hospitals" of HA. The pilot project commenced in the AED of North Lantau Hospital (NLTH) and Tin Shui Wai Hospital (TSWH) in 2013 and 2017 respectively. Prior to 2017, various building blocks which facilitated the implementation of an eAED workflow model were established. The basic eAED workflow model had established the digitalisation of medical records in the AED. Although the throughput of patient attendance in the AED of TSWH is heavy, the eAED demonstrated a smooth workflow in a busy AED.

COC(A&E) reached consensus that eAED is the direction to revolutionise AED workflow. A timeline was set for the migration of traditional workflow to eAED workflow for all AEDs under HA in the coming years (Figure 1). In May and October 2019, the brand-new eAED system was successfully implemented in the another two AEDs, namely Ruttonjee & Tang Shiu Kin Hospitals and Pok Oi Hospital respectively. The eAED workflow had been tested and processed in reality for various clinical scenarios such as mass causality incidents and winter surge.

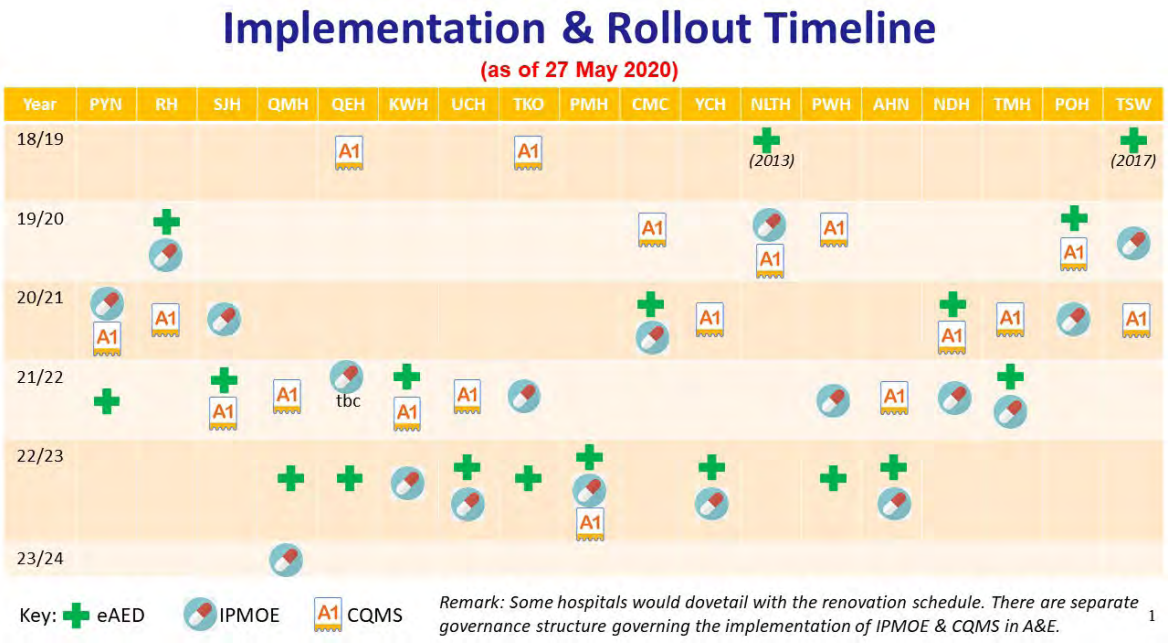


Figure 1. Implementation & rollout timeline of eAED in AED of Hospital Authority

Functionality of eAED and the Added Value

As technology is continuously advancing, development of eAED is incessant. With the unfailing support from the HAHO IT&HI, the on-going development of eAED focuses on e-workflow. E-workflow is one of the features which most frontline clinical staff are eager for, with the potential double-win outcome of improving both workflow efficiency as well as quality and safety. E-workflow enables simultaneous clinical tasks for each patient. For example, a patient requires X-rays and electrocardiogram (ECG) after physician's consultation. Patients could be directed to X-ray after completion of ECG, while the ECG will be under a 'pending reassessment' list to be reviewed by the in-charge physician. The workflow efficiency is enhanced by designated electronic patient list (eList) and e-notification. The building blocks of eAED that would strengthen the quality and safety of patient care include:

- Closed-loop communication – all clinical communications will be based on 'request-done-acknowledged' loops which are mandatory and workflow-integrated. All imaging, point-of-care tests and laboratory results will be acknowledged and documented. The patient cannot be discharged. (Figure 2)

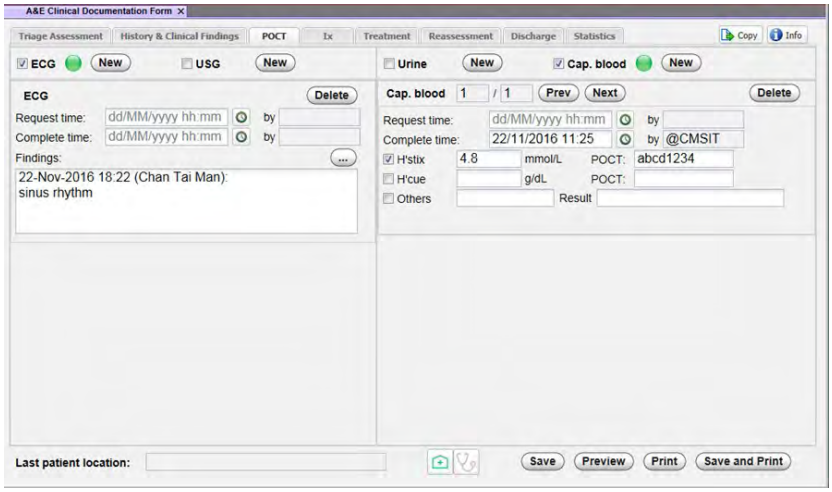


Figure 2. Closed-loop communication of Point-of-care investigations – the "Request-complete-acknowledge/finding" workflows

- Accurate and clear electronic clinical documentation starts from patient triage to discharge (Figure 3). Integrated with clinical drawings and clinical camera in mobile Clinical Management System (CMS) suite to provide gadgets for clinicians to document the clinical information accurately and efficiently. (Figure 4)

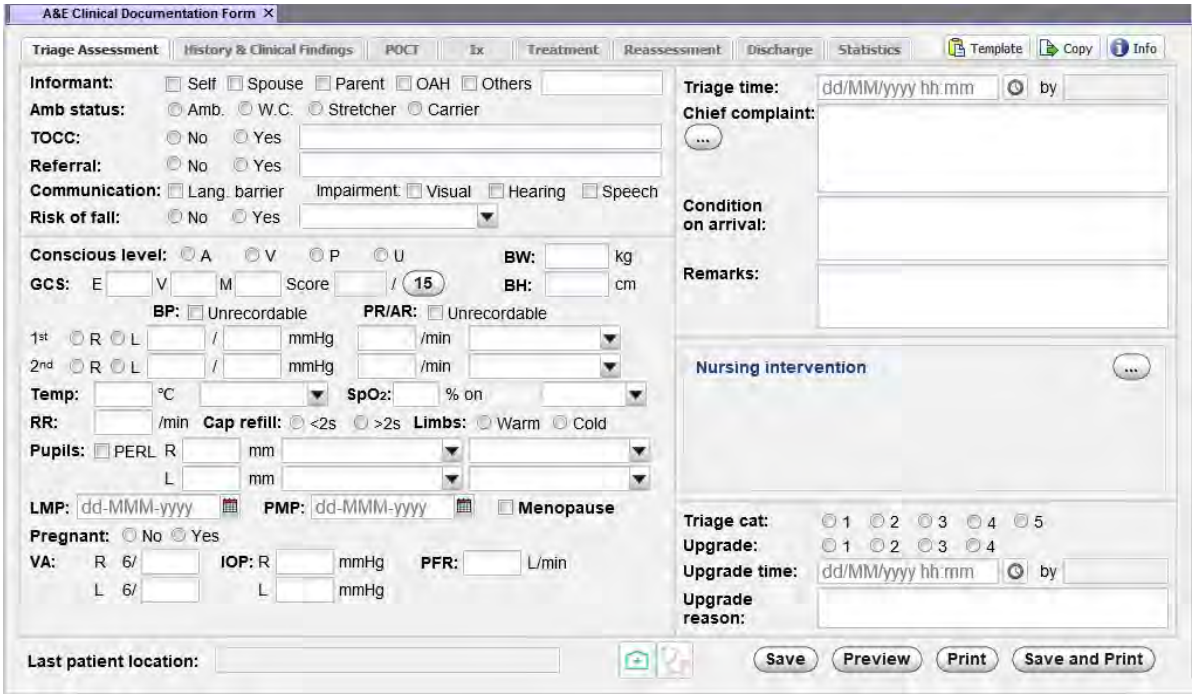


Figure 3. eAED system interface covered clinical documentations from triage to patient discharge

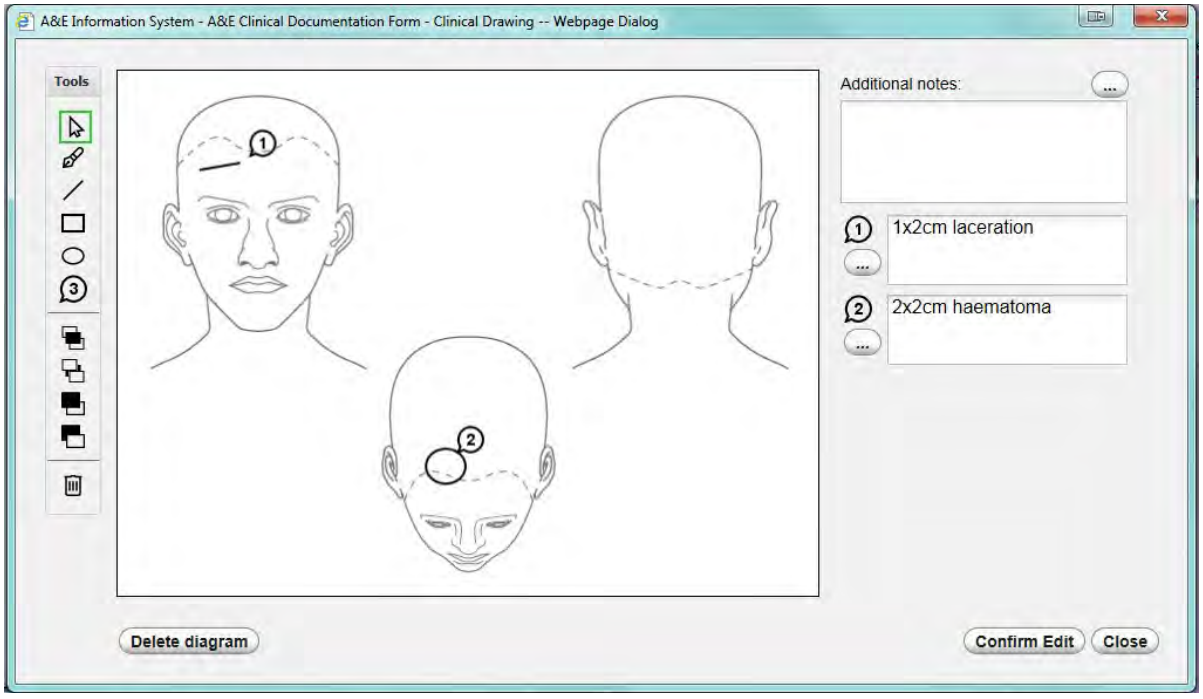


Figure 4. Clinical drawing features of eAED

- Accurate electronic handover between caring team members.
- Reduce patient misidentification – by reduction of workflow decoupling of IT system and paper clinical record, and will be further enhanced with workflow integration with patient identification gadgets in future eAED workflow.
- Safety alarms and auto-flagging – including flagging and alerts of abnormal vital signs in triage, warning of inappropriate triage categories based on vital signs, automatic alert prompting for discharging patients with deviated vital signs.
- Interfacing with IPMOE drug system – enabling closed-loop communication and integration with eAED workflow. Any drugs prescribed in IPMOE will be auto-flagged in the eList of eAED (with the "AOM" marker signifying "administration of medication"). A red alert sign will come up in delayed drug administration. The system will remind the in-charge physician automatically to reassess the patient 45 minutes after STAT medications are given. (Figure 5)

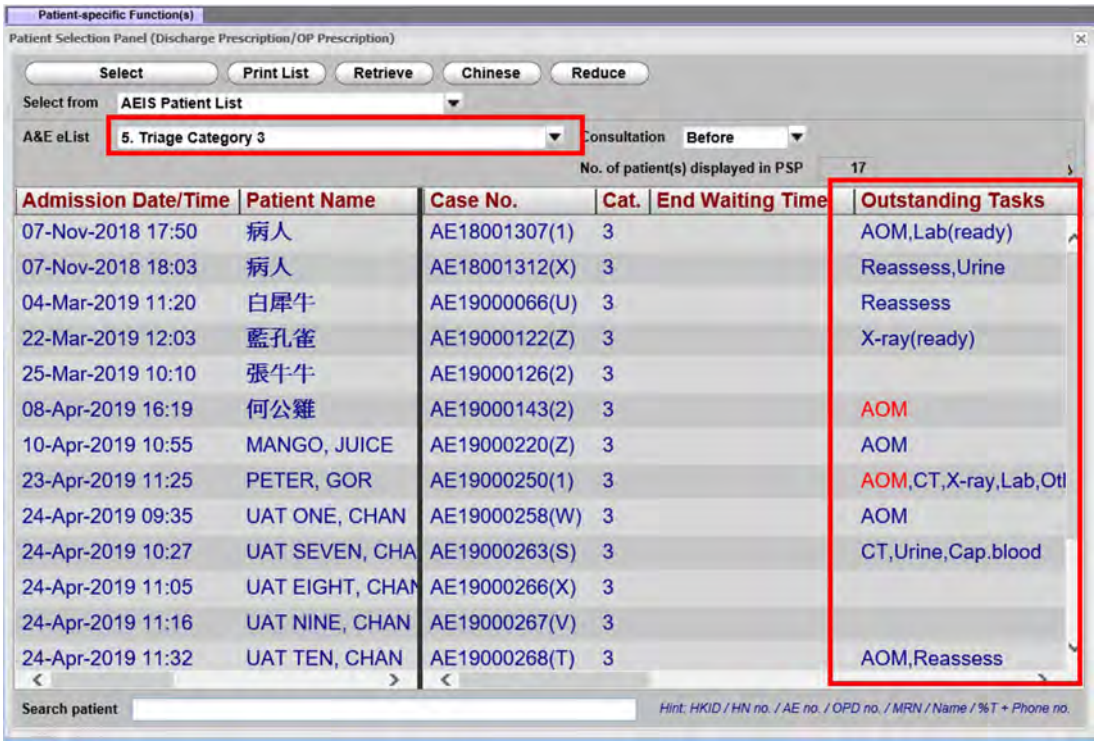


Figure 5. eAED Patient list (eList) indicating the patient list in each AED care workflow steps, and the outstanding clinical tasks for each patients.

- Enabler of future development of e-protocol driven patient care and e-Triage, with the infrastructure of real-time structural data.

Use of Real-Time Big Data

The generation of a tremendous quantity of real-time clinical information provided infrastructure data as enablers of:

- Frontline clinical task list (the eAED eList) allowing frontline staff to prioritise and designate clinical tasks among the caring team
- Real-time eAED dashboard – allowing real-time monitoring of throughput and bottle-neck of the patient journey, facilitating manpower deployment and planning by the on-site managers.
- Patient empowerment – allowing acquisition and enquiry of data by patients to improve transparency, such as the corporate waiting time display to the public (Figure 6).

Figure 6. System data of waiting time to public to enhance transparency

- Use of big data for clinical audit, big data analytics and research - up to two million structural AED clinical data per year after migration of all AEDs to eAED workflow, which will provide great opportunities for big data research to enhance emergency care.

Data Privacy Security and Downtime Contingency

The eAED project targets a paperless AED workflow. All clinical records will be stored within the system and each access to data will be logged. This will improve the traceability and accountability of clinical data access to meet the requirement of privacy and data security. In case of a downtime contingency, the system and workflow is resilient to system-down, server-down, network-down and power-down.

Together with a clear downtime contingency plan and drills, AED workflow would continue to run smoothly during scheduled system downtime or unexpected system failures.

With the migration of AED from traditional to eAED workflow, a comprehensive evaluation, impact analysis and surveillance will be aligned with the roll-out. The evaluation covers assessment on service and workflow efficiency, impact on service pledge, improvement in quality care and patient safety, and staff acceptance. All migrating AED would adopt the same standard for the evaluation to assess and monitor the impact to AED service. Data would be collected before and after eAED implementation for comparison and contrast. For service and workflow efficiency, a detailed patient journey time-motion analysis has been designed to assess the impact on each clinical workflow in AED (Figure 7). Incidence rates of patient misidentification, medication incidents, and audit on the clinical documentation integrity would also be audited. Staff acceptance and feedback was continuous. A previous published poster in HA convention 2018 illustrated the acceptance of eAED from senior managers to junior frontline clinicians.

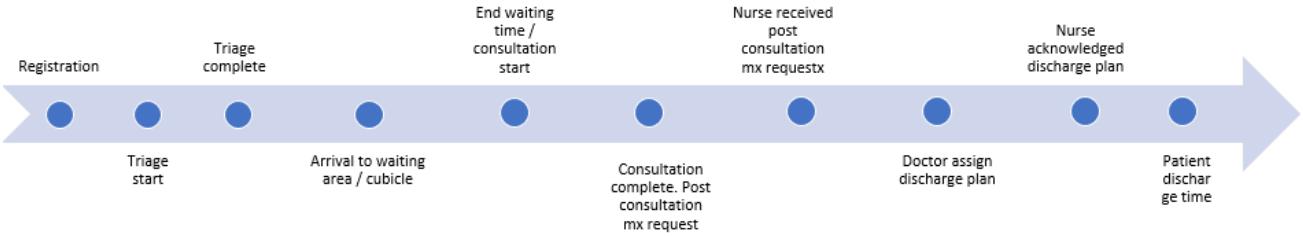


Figure 7. Time-motion analysis in eAED audit based on patient journey.

Way Forward

With the complexity of AED workflows, successful digitalisation of AED workflow with the eAED project could be a role model for other clinical workflows under the "Smart Hospitals" initiative. Aligning with the modernisation and digitalisation of various clinical and supporting workflows in the "Smart Hospitals" direction, eAED and the corresponding infrastructure would provide continuous improvement in service efficiency and quality patient care in emergency departments of the Hospital Authority.

Emergency Medicine Ward Audit

Introduction

The prototype of Emergency Medicine Ward (EMW) in Hong Kong, the Emergency Observation and Pre-Admission Ward, started its service in 2003 in Tuen Mun Hospital. Later in 2006, the decision to charge its patients as inpatients made EMW become a formal entity. As at December 2018, there are 16 acute hospitals with EMWs operating under A&E Departments in the Hospital Authority (HA). Unlike the traditional observation wards, the vision for EMWs is to be a place not to "wait and see" but to "treat and review", with the following characteristics:

1. Managed by emergency physicians with frequent ward rounds;
2. Suitable for certain target disease groups;
3. A hub for integrating multidisciplinary care;
4. A place for executing care plans and expediting investigations;
5. Access to sophisticated investigations;
6. The length of stay (LOS) would not be limited to a few hours; and
7. To reduce inpatient admissions and more efficient as compared with traditional inpatient wards.

From 2010/11 to 2018/19, the average number of scheduled EMW beds increased from 316 to 537 in HA. Over the same period, the number of admissions to EMW increased from 77,000 to 92,500.

Performance Monitoring

In mid-2017, a working group was formed under the Quality and Safety (Q&S) Subcommittee of COC (A&E) in HA Head Office to establish monitoring of EMW performance using different disease groups, to formulate guidelines on the management of specific casemix in EMWs, and to develop disease-based protocols and care plans.

In 2017-2018, the working group conducted an audit of EMWs in all A&Es. Several key parameters were set out to monitor performance for the management of "chest pain" in EMWs, e.g. daily EMW admissions, average length of stay, transfer-out rates and re-attendance rates. The results of the audit concluded that the overall management was safe. However, there were large variations in the daily number of admissions (0.2-3.0 /day), average length of stay (16.2 – 40.8 hours), transfer-out rates (4 -11.3 %) and re-attendance rates (9.3-24.3%). These variations, upon further analysis, can be accounted for by the difference in the clinical service need and demand, the availability of specialty and community support, liaison among disciplines on discharge arrangement, management pathways, frequency of ward rounds, etc. The findings were similar to HA Group Internal Audit's "Management of EMW Report" released in August 2019; and revealed the need to enhance and align care protocols among EMWs. As a result, a "Chest Pain Management Guideline in EMW" was developed to streamline the care of chest pain in EMWs and was endorsed by the COC (A&E) in September 2019.

Way Forward

Over the years, the EMWs have become integral parts of the A&E Departments and contributed to the hospitals in various aspects, such as decongestion of clinical wards, as well as provision of prompt and safe management on specific types of patients.

Benchmarking among EMWs has generally not been conducted because of the variations in the casemix. Further alignment of admission criteria of specific disease entities can make this more possible. The working group has completed the performance audit and development of the "EMW Management Guideline for Chest Pain" in 2019. The working group is going to look into EMW patients with principal diagnosis of "vertigo", in hope of determining how the disease is best managed and establish the reference or target LOS for this type of patients in EMW.

Apart from focusing on individual disease entities, several aspects are being investigated in order to enhance the efficiency and effectiveness of EMW.

1. Strengthen relations with other specialties, for example, joint consultations, SOPD urgent quotas, support of Allied Health, so that the patient journey can be streamlined and the LOS can be shortened.

2. Improve the access to diagnostic investigations such as radiological studies (USG, CT and MRI), electro-diagnostic test and endoscopy.

3. Delineate the roles of A&E, observation wards and EMW further – since some EMWs were converted or renovated from existing observation wards in the A&E Department, they may have to share manpower with the A&E Department. This may contribute to the variations in the number of scheduled ward rounds in different EMWs. A clear definition of the scope of EMW and Observation Ward can facilitate the standardisation of the manpower required, which is essential for better resource planning and allocation for further development of EMW.

To attain the above goals, COC (A&E) will work closely with the Department of Infection, Emergency and Contingency (IEC) and other concerned COCs to explore opportunities for collaboration.

COC (Anaesthesiology)

Overview on Pre-anaesthetic Assessment

Introduction

Pre-anaesthetic (or preoperative anaesthetic) assessment is the process of clinical assessment that precedes anaesthesia for surgical or non-surgical procedures, and it is the responsibility of the anaesthetist to conduct the assessment.

The aims of pre-anaesthetic assessment are to improve outcomes by identifying potential anaesthetic difficulties, identifying existing medical conditions, improving safety by assessing and quantifying risks, allowing planning of perioperative care, providing an opportunity to explain and discuss with patients while allaying their fear and anxiety.

In the earlier days, pre-anaesthetic assessment was uniformly conducted at patient's bedside, very often on the day before surgery. The practice was suboptimal because it limited the chance of optimising the patient's medical conditions preoperatively, and might, in turn, increase the chance of surgery being cancelled.

With the advancement of day surgery practices and an increasing emphasis on the optimisation of pre-existing medical conditions, anaesthetists have been advocating Pre-anaesthetic Assessment Clinic (PAAC) since the '90s.

The What, When, Where, Who & How

Clinical and Anaesthetic Assessments [What]

The consultation aims to identify and assess any significant comorbidities and to understand the risks that a particular patient may face. Appropriate investigations, patient management and anaesthetic plan will be instituted to optimise the identified medical conditions, to minimise the risks, and hence, to achieve the best possible patient outcomes.

The typical assessment process before proceeding to anaesthesia includes history taking, physical examination, specific pre-anesthesia investigations and optimisation. Reviewing medical records and interviewing the patient are considered core elements of a pre-anaesthetic assessment.

Airway assessment is a crucial and unique part of patient assessment before anaesthesia. It should be done for all anaesthesia encounters so that appropriate safety strategies can be planned ahead.

Routine preoperative investigations with healthy patients undergoing time-consuming, costly, and sometimes harmful procedures are considered ineffective and inefficient clinical practice. Nowadays, evidence-based investigation guidelines have been developed to improve the cost-effectiveness and to increase the risk-benefit ratio.

Medical records review is playing an increasingly important role during pre-anaesthetic assessment after the migration of paper records into electronic record systems. It is because such systems allow

medical history of patient to be followed longitudinally and accurately. This greatly facilitates eliciting important clinical information of patients, such as allergy, medication or previous anaesthesia history.

After completing the assessment, the anaesthetist would have assessed the patient's medical condition, performed anaesthetic risk-stratification, have necessary laboratory or radiological examinations available, and prepared the patient physically and psychosocially. Subsequent preparation work by the anaesthetist includes the prescription of premedication, referral to appropriate specialists, gaining informed consent, and to formulate the most suitable anaesthetic plan.

Timing [When]

In the past, pre-anaesthetic assessments were frequently done in the evening before the surgery. Those patients with complicated co-morbidities would be admitted a few days earlier for optimisation and pre-anaesthetic assessments.

With the delivery of patient-centred care, patient's convenience is increasingly valued. There are institutions at which patients are assessed by anaesthetists on the day of surgery. Though patients can benefit from fewer hospital or clinic visits, the chance of surgery cancellation will be increased if patient triage was not well performed.

The timing of an initial pre-anesthesia evaluation is guided by factors such as patient demographics, clinical conditions, types and invasiveness of the procedures, and the nature of the healthcare system. It is intuitive that patients with complicated pre-existing medical conditions who are scheduled for invasive procedures should be assessed well in advance of the day of surgery. This allows time for adequate assessment and optimisation.

A report by the American Society of Anesthesiologists (ASA) Task Force on Preanesthesia Evaluation revealed that the majority of consultants and ASA members indicated that the level of surgical invasiveness was a very important factor in determining the timing of initial pre-anaesthetic assessment.

On the other hand, an assessment that was done too early cannot reflect the true picture of a patient with underlying medical conditions. Most anaesthetists opine that the validity period of pre-anaesthetic assessment is about 3 to 6 months.

Assessment Place and Setting [Where]

The preoperative anaesthetic clinic is a place to assess patient's fitness for surgery as well as to discuss the most appropriate anaesthetic plan in light of the patient's preferences, clinical state, the operation itself, and the anaesthetist's preferences and special skills.

Elective pre-anaesthetic assessments would preferably be done in a clinic setting to provide a more relaxing environment for better conversation. This is of particular importance in patient and family education, especially in the discussion of the risks and benefits of anaesthetic options and the consent process.

In a clinic setting, with a patient sitting on a chair as compared to sitting on an hospital bed, airway

assessment is easier and more accurate. Moreover, a modern clinic enables clinicians to access electronic clinical notes, laboratory investigation results, and radiological images readily.

Multidisciplinary Approach [Who]

A multidisciplinary team is the cornerstone of good patient outcomes. However, in Hong Kong, nurses' participation in pre-anaesthetic assessment has all along been very limited – mostly involved in patient education or psychosocial counselling. Nurse-led preoperative anaesthetic assessment is an extended role for nurses that has been shown to be safe and cost effective. These nurses usually work as an integral part of the preoperative team and are very important links between the patient and the entire perioperative team.

Similarly, the traditional scope of practice for anaesthetists is limited to assessment, and the task of optimising a medical condition would be passed to another medical specialty. This scope of practice should be redefined and broadened. Apart from managing the medical and interventional nuances during anesthesia for a major surgery, anesthetists can be competently empowered to determine whether a patient is suitable for surgery or further optimisation is required. Internationally, models such as enhanced recovery after surgery (ERAS) are positioning anaesthetists as the perioperative physicians to lead these programs.

In addition, allied health professions, such as physiotherapists and dietitians, are playing a pivotal role in implementing "prehabilitation" in ERAS programs.

Tools of Assessment [How]

Face-to-face consultation, either at the patient's bedside or in the outpatient setting, has all along been the standard mode of pre-anaesthetic assessment. Over the years, a number of useful supplementary assessment tools have emerged.

i. Telephone Screening

Telephone screening is sometimes employed to identify patients who should attend a formal pre-anaesthetic assessment at the clinic before the day of surgery. It had been shown to be an effective means of preoperative assessment for suitable patients undergoing certain ambulatory surgeries and could increase anaesthetic and operating theatre throughput. This method was well perceived by patients, mainly due to convenience.

ii. Pre-Anesthesia Questionnaire

Questionnaires are developed for nurses to screen patients for risk factors for anaesthesia and surgery-associated complications and identify which patients should see anaesthetists for further evaluation before the day of surgery. It helps to prepare patients for anesthesia and assists in the development of anesthesia care plans.

iii. Computerised Preoperative Assessment System

Efficient and cost-effective patient care can be provided using preoperative assessment computer

program. It has been adopted to enhance preoperative assessment. There is evidence that the quality of perioperative care can be improved by computerised anaesthesia-based preoperative assessment systems as there would be improved time management and patient safety, better patient satisfaction, standardised patient information, easier analysis of perioperative data, and optimisation of hospital specific perioperative care.

Way Forward

Pre-anaesthetic assessment should be developed into a multidisciplinary service. Anaesthetists will continue to lead pre-anaesthetic assessment service and ensure that pre-operative service nurses receive adequate education and training to deliver this service safely.

The traditional scope of practice for anaesthetists must be redefined and broadened. As an overture to this, anaesthetic trainee education must also evolve to further incorporate perioperative medicine. The move will enable future anaesthetists to provide care beyond the operating theatre and throughout the entire perioperative continuum. An education in perioperative medicine guided by best practices and evidence-based medicine would further strengthen the role of anaesthetists as holistic perioperative physicians. This is precisely why expertise in perioperative medicine will allow an anaesthetist to thrive.

There must be policies and procedures to coordinate surgical, nursing, allied health, and medical departments to effect this multidisciplinary preoperative assessment and optimisation the ERAS program.

Pre-anaesthetic assessment can also benefit from advances in technology. Computer programs can be developed for nursing and anaesthetic assessments, which will be able to bring about seamless communication within the team. Guiding questions and procedures can be designed to facilitate and standardise computer-based assessments. Also, structured data fields make data mining and analysis for academic research easier. Further enhancements, such as anaesthetic risk scoring schemes and complicated assessment algorithms, can also be incorporated into the pre-anaesthetic assessment computer systems.

Experience Sharing from Tseung Kwan O Hospital (TKOH)

Development and Implementation of a Three-Tier Pre-Admission Clinic Service Program Facilitates Day Surgery and Enhances Recovery After Surgery

Introduction

The advantages of day surgery are well established. The day surgery rates are high (around 50-60%) in many developed countries, but that in Hong Kong is only about 15%.

Pre-anaesthetic assessment clinic ("PAAC") is an important element of Pre-admission clinic ("PAC") as it allows preoperative risk stratification and subsequent patient optimisation. In Hong Kong, PAAC was only run by anaesthetists but the shortage of anaesthetists has long been a problem. This practice, together with other prevailing barriers, hinders Hong Kong's day surgery development.

TKOH is a public hospital in Hong Kong which specialises in ambulatory and short-stay surgeries. PAC service is important as it goes hand-in-hand with day surgery. Though the safety and efficacy of Nurse Pre-anaesthetic Assessment Clinic (NPAC) has been well-established, it has not been practiced in Hong Kong until the Department of Anaesthesia of TKOH implemented NPAC in 2008.

Objectives

Through the implementation of a three-tier PAC service model, achieve:

- Higher day surgery rate
- Improved service quality, efficiency, cost-effectiveness and patient satisfaction
- Reduced complication rates
- Enhanced recovery after surgery (ERAS)

The Service Models

From 2008

On the day of surgical consultation, trained nurses at the Ambulatory Surgery Centre perform one-stage protocol-driven pre-anaesthetic assessment, investigations, and referrals where appropriate.

The nurses take care of the lower-risk ASA level 1 and selected ASA level 2 patients and refer the higher-risk patients to the anaesthetists (Fig. 1). Following the establishment of such practices, the day surgery rate of TKOH has continued to rise steadily over the past ten years.

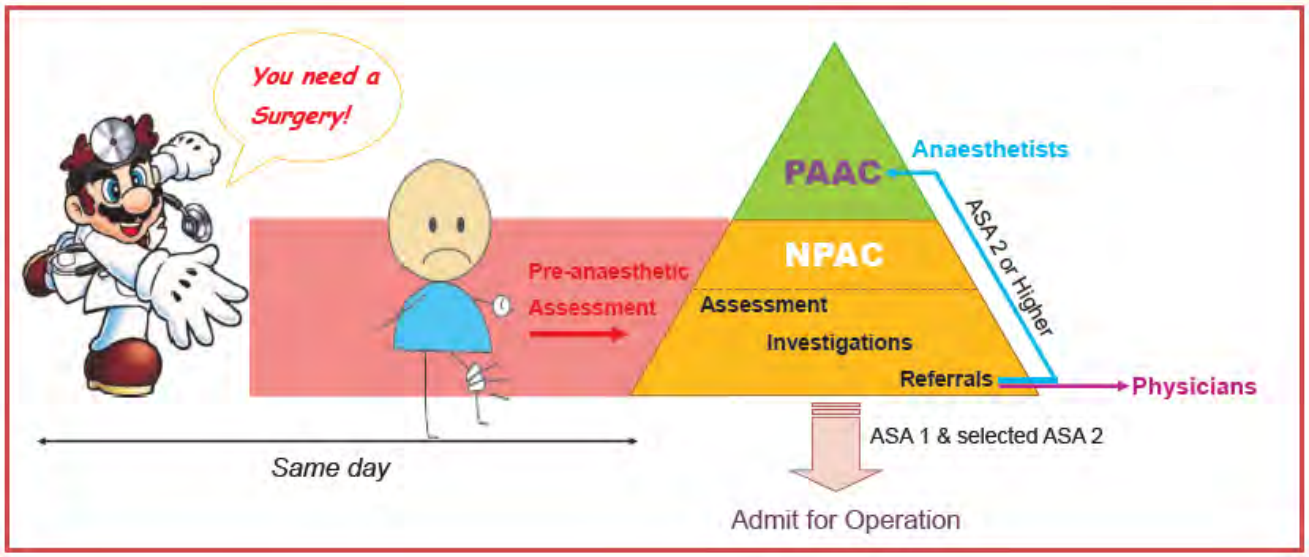


Figure 1

From 2014

TKOH further developed a "3-tier PAC Service Model" (Fig. 2) by introducing a Perioperative Medicine Clinic (POMC) on top of its pioneered NPAC and conventional PAAC.

Though the concept of 'Enhanced Recovery After Surgery' (ERAS) was introduced more than 20 years ago in Europe, it was not until the recent years that clinicians in Hong Kong started to incorporate it into practice. Anaesthetists play the role of perioperative physicians in the POMC. This laid foundations for the multidisciplinary team in the hospital to successfully implement a number of ERAS (Fig. 3) and patient blood management programs, with anaesthetists playing a central coordinating role during the entire perioperative period.

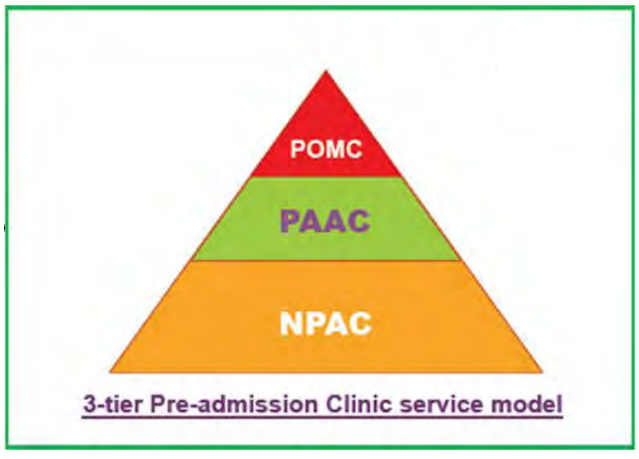


Figure 2

POMC:

- Coordinate patient care in a multidisciplinary team
- Conduct patient assessment, risk stratification and education
- Prescribe preemptive analgesics and carbohydrate drinks
- Optimise patients with certain medical conditions, including anaemia
- Conduct post-op multidisciplinary ward round ('ERAS Combined Ward Round')
- Refer patients to subspecialty clinics: e.g. ERAS, Echo & Anaemia Clinics

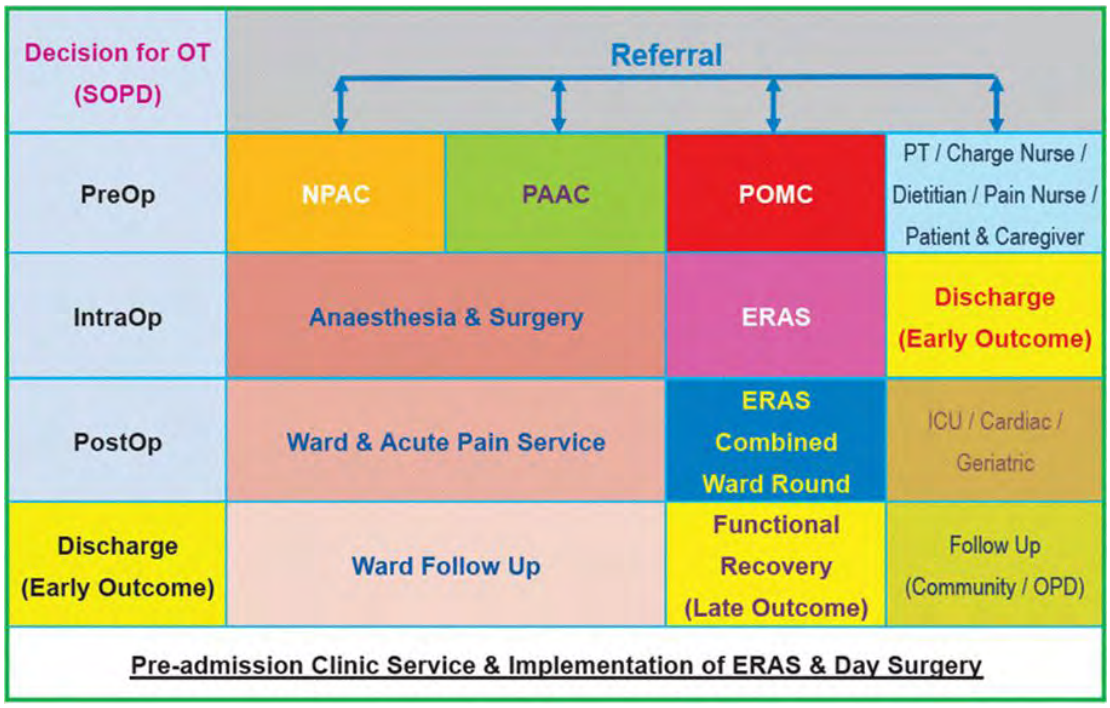


Figure 3

Findings (Fig. 4)

3-Tier PAC Attendance (Jan - Dec 2017) in TKOH

POMC: 170

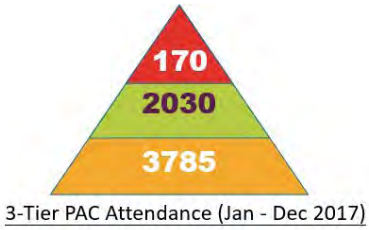
PACC: 2030

NPAC: 3785 (51% referred to PAAC; under triage rate 0.1%)

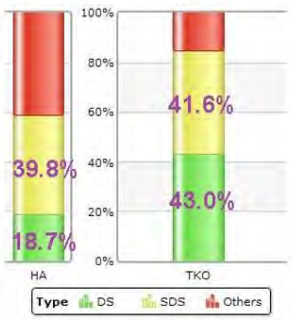
Day Surgery & Same Day Admission Surgery Rates (May – Jul 2018)

Day Surgery Rate: 43.3%

Same Day Admission Surgery Rate: 42.0%



3-Tier PAC Attendance (Jan - Dec 2017)



Day Surgery & Same Day Admission Surgery Rates (May – Jul 2018)

Figure 4

ERAS of Colorectal Surgeries (Nov 2015- Jun 2017) in TKOH

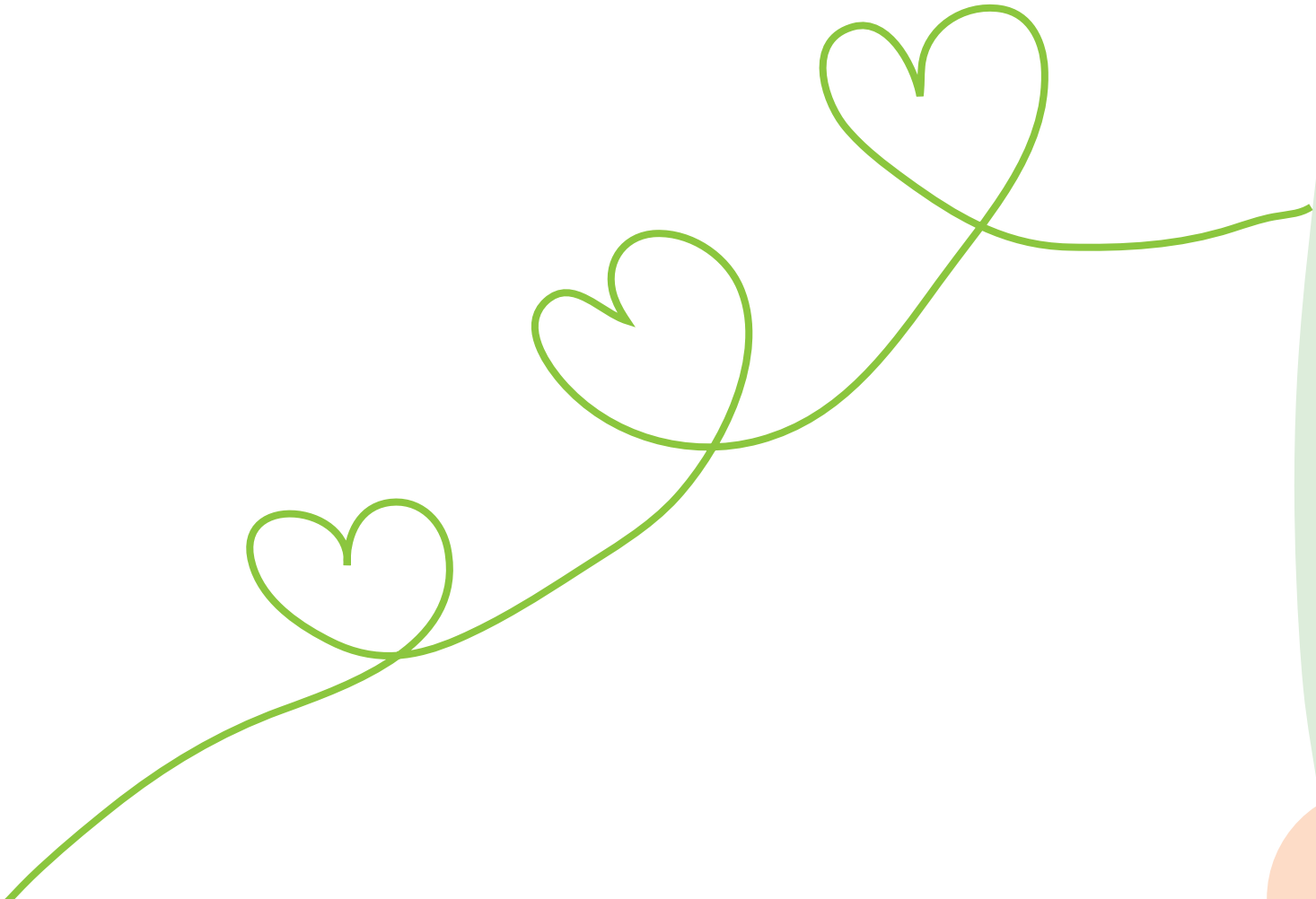
	Pre-ERAS	ERAS
Number of cases	(historical data)	168
Length Of Stay (days)	8	4
Overall Complication Rate	37.3%	21.4%
Blood Transfusion Rate	33.3%	11.3%

Conclusion

The three-tier PAC service is a model that, with the combined efforts of anaesthetists and nurses, provides coordinated patient care, increases quality, improves efficiency and cost-effectiveness, reduces complications, and enhances patient satisfaction. We provide a level of care that matches with disease complexity and patients' needs.

Nurses alleviate some of anaesthetists' workload by extending their nursing roles. Anaesthetists are better placed to optimise care of the patients and to implement ERAS strategies for better patient outcome.

This three-tier PAC service model effectively facilitates day surgery service and ERAS programs and hence shortens the length of stay. Most importantly, it helps to reduce the demand for hospital beds.



COC (Ophthalmology)

Electronic Ophthalmic Imaging Corporate Project

Introduction

Ophthalmic imaging is an essential diagnostic tool in ophthalmology services. Various imaging techniques and electronic ophthalmic images are necessary for the management of common eye diseases such as glaucoma, age-related macular degeneration and diabetic retinopathy. Traditionally, hard copies of ophthalmic images were viewed and stored in the Hospital Authority (HA). Due to an aging population, increased awareness and prevalence of eye diseases, a huge number of hard copies (around 1,700,000 images) are handled each year, and there is an increasing trend over the years. Besides the time and effort required to handle these hard-copy medical records, there were also other problems, including low image quality, colour degradation over time, difficulties in cross-Cluster and cross-specialty access of patient information even within the HA, and lack of sharing via electronic medical record (EMR). Storage of the large amount of heavy paper records created storage problems and Occupational Safety and Health (OSH) issues for staff.

Project Highlights

In order to improve the situation, the Coordinating Committee of Ophthalmology (COC (Ophth)) observed the need to undertake an initiative to reengineer the management of ophthalmic images. The key objective was to improve clinical service by replacing hard copies with digital copies so that doctors could view images directly in the electronic patient record (ePR). To achieve this, an Ophthalmic Image Management System (OIMS) (Figure 1) will be piloted in hospitals to upload, store and share electronic images through the ePR of the Clinical Management System (CMS). The ultimate goal is for clinicians in all HA eye clinics to be able to view ophthalmic images electronically instead of using hard copies.

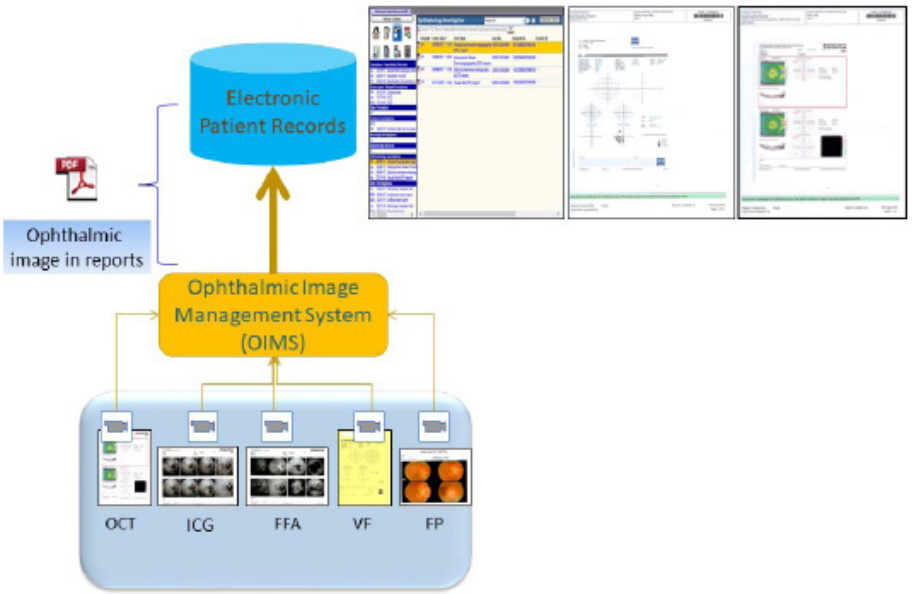


Figure 1: Ophthalmic Image Management System (OIMS)

Besides sharing of images within the HA, this Project will also pave way for future electronic health records (eHR) and public-private partnership (PPP) programmes.

The project was initiated in 2013 and piloted in the Hong Kong Eye Hospital (HKEH) in 2017-18. In 2019, the system was also implemented at Grantham Hospital (GH).

Way Forward

Both HKEH and GH will conduct a post-implementation review. Subject to the review findings, the Project will be enhanced with the remaining hospitals prioritised by COC (Ophth) to implement the system in phases.

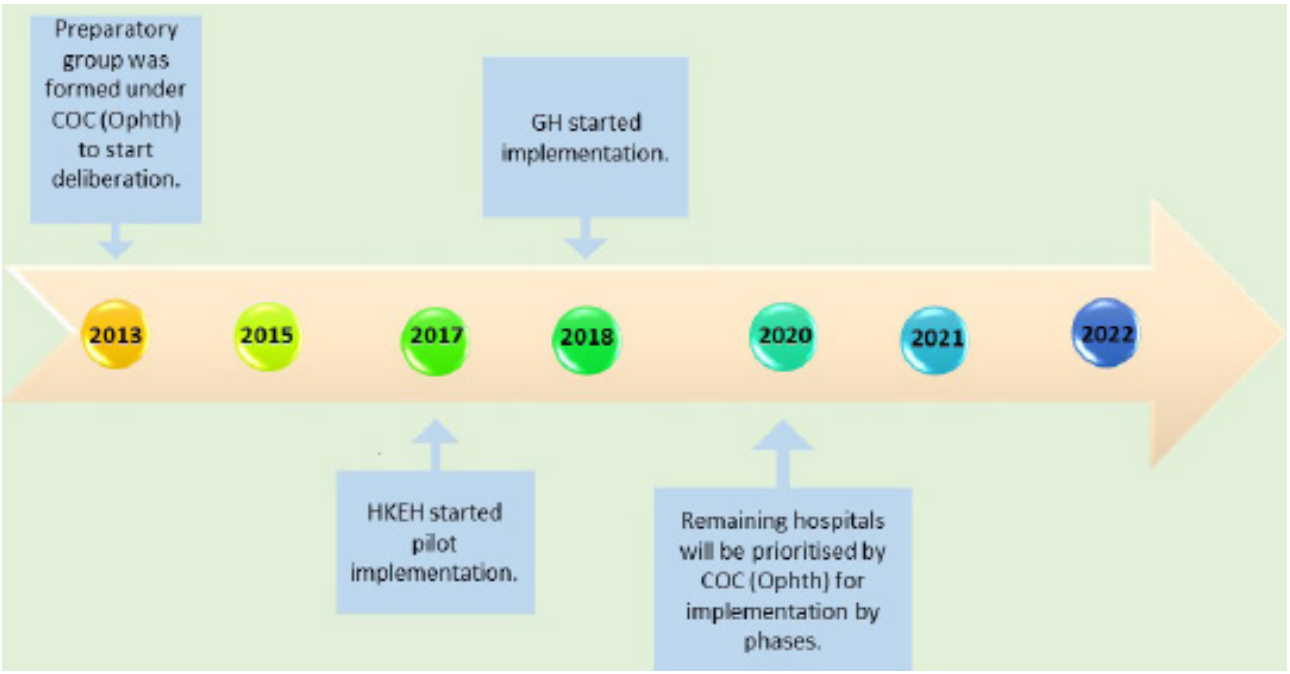
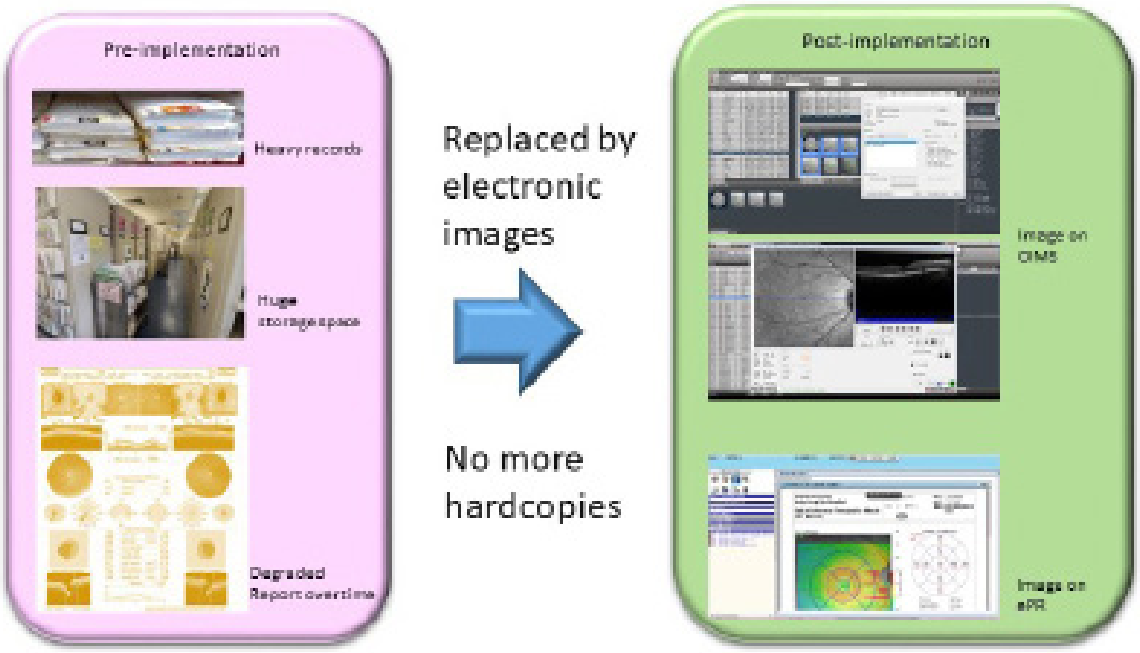


Figure 2: Conceptual rolling plan of implementation of OIMS

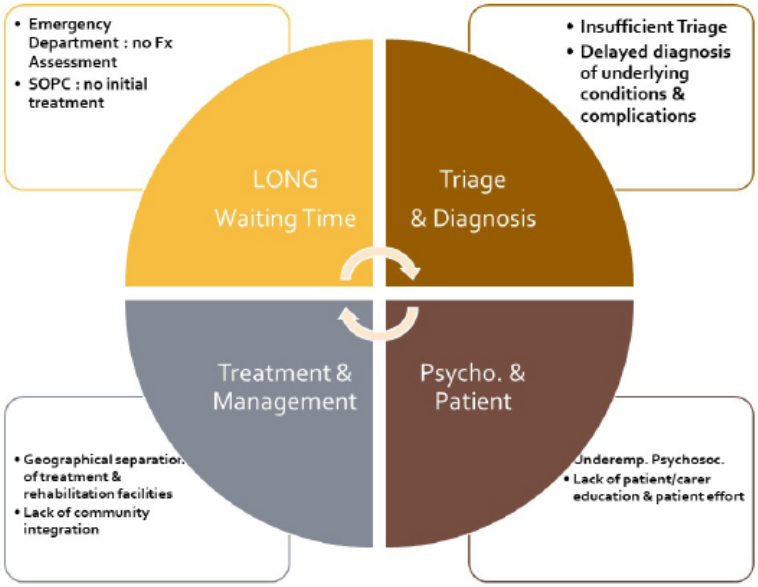


COC (Orthopaedics and Traumatology)

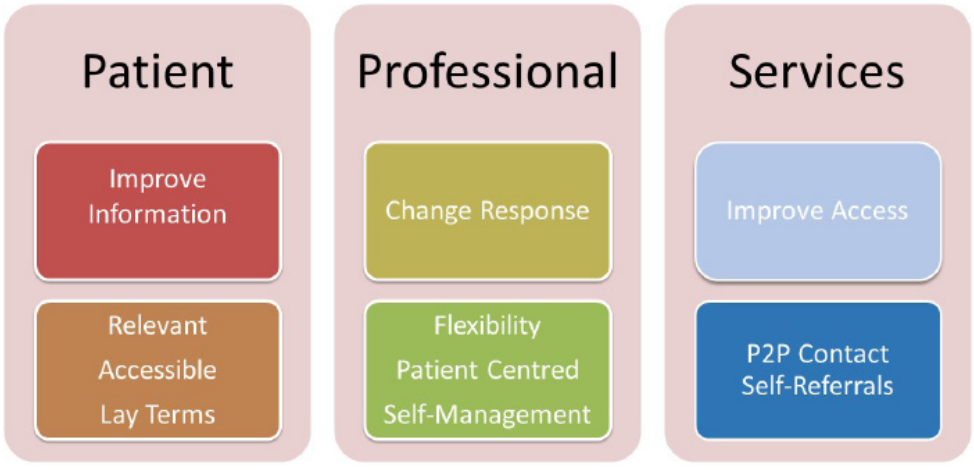
Introduction

Musculoskeletal diseases occur more frequently as people age. Currently, persons over 65 years of age account for 12 to 13 percent of the total population; by 2030 it is expected they will comprise 20 percent, an increase of more than 50 percent. Activities in younger years that place stress on bones and joints, a sedentary lifestyle and obesity are major contributors to joint diseases. In the coming decades, expectations of a healthy, active life throughout retirement years are projected to create an even greater burden on healthcare resources due to musculoskeletal diseases.

Current service gaps in orthopaedic service include the long waiting list at both emergency departments and specialist outpatient clinics (SOPC), with little initial treatment and assessment during their wait, resulting in delayed diagnosis of the underlying conditions and complications of disease or of treatment. Treatment facilities are geographically scattered, lacking integration with community and private options, with too little efforts in patient/carer education and prevention.



New strategy based on patients' needs may be necessary to overcome these shortcomings:



We need to ensure early access to care (assessment and diagnosis), so that patients can better self-manage their condition to maximise independence in daily living.

Accessibility to Service

To shorten waiting time for the Orthopaedic Specialist Clinic and to empower patients in musculoskeletal disease self-management, evidence-based behavioral and rehabilitative strategies as well as non-pharmacological approaches to chronic pain management were utilised in different Clusters for osteoarthritis, through integrated clinics delivered by doctors, nurses, and therapists.

Registration | *Fifty feet timed walk & get up and go test* | *Education talk by Advanced Practice Nurse* | *Questionnaires* | *GMSK Consultation*

A one-stop service of patient-administered questionnaire, functional assessment tests, educational talk by experienced nurse and therapist, and a conjoint consultation is offered.

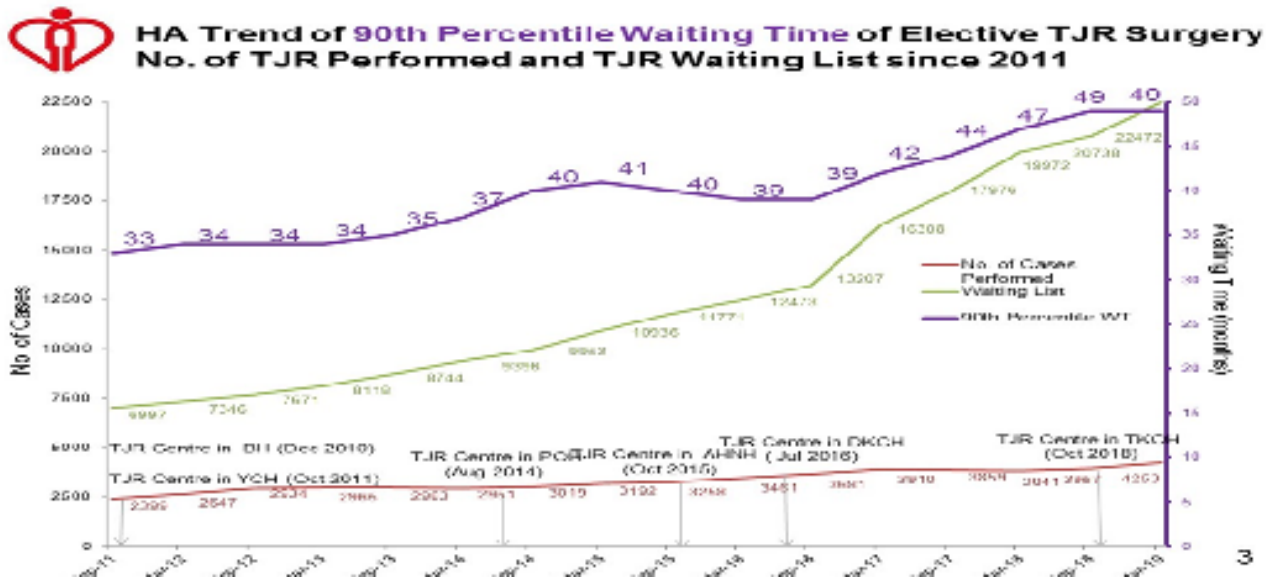
In one pilot Cluster, the waiting time for first appointment in the intervention group was shortened from 90 to 52 weeks. Selected stable patients were diverted to General Out-Patient Clinic for appropriate level of care. Patients with mild symptoms were able to be discharged with no further follow up required (n=41). Patients with rapid joint deterioration with radiographic destruction were scheduled for early elective surgery (n=4). The majority of patients were recruited for Self-Empowerment Programme (n=385). With lifestyle modifications, patients demonstrated significant improvement in "Timed Up and Go Test" (movement tests) , pain control and quality of life indicators. The overall waiting time in the Orthopaedic Specialist Clinic also shortened from 112 to 88 weeks.

Another strategy employed for managing SOPC waiting time was a "Collaborative Orthopaedics and Traumatology (O&T) and Family Medicine (FM) Service Model". In 2019, KEC and NTEC piloted this service model in managing SOPC waiting time. Some of the routine O&T cases referred to SOPC were managed by Family Medicine specialists, according to a protocol driven triage system, with back up support from orthopaedic specialists. According to a set of pre-agreed selection criteria between O&T and FM, O&T will screen referral letters, triage and divert appropriate new cases of routine category e.g. back pain, osteoarthritis of the knee, etc. to be seen at the Family Medicine Specialist Clinic (FMSC). In this service model, allied health professionals (physiotherapists (PT) and occupational therapists (OT)) provide protocol-driven care to patients referred by FMSC, while FMSC refer cases requiring O&T opinion to FMSC sessions that have on-site O&T specialists, who managed these more complicated cases. This has in turn increased both O&T SOPC and operating theatre (OT) capacity for Total Joint Replacement (TJR) surgery.

Another important initiative conducted by the Coordinating Committee in Orthopaedics and Traumatology (COC (O&T)) was on the management of TJR surgery waiting time. In 2018 a validity checking of patients put on the waiting list was completed, this included identifying duplicated bookings in different hospitals, death cases, surgeries performed elsewhere, etc., which accounted to around 5% of total bookings. In 2Q 2019, a compliance audit was conducted in our seven Clusters. The compliance rate to COC (O&T) TJR surgery booking criteria was checked. 16 hospitals within the seven Clusters that performed primary joint replacement were recruited. A total of 665 cases are randomly chosen from the waiting list in 2018. The overall compliance rate for joint replacement booking criterion in HA is 95.8%, ranging from 87.5% to 100%. The compliance rate for the hospitals are shown in the following de-identified chart:

Booking Hospital	Number of Cases Audited	Criteria A (%)	Criteria B (%)	Criteria C (%)	Criteria D (%)	COC Criteria Fulfilled(%)
A	50	62	2	44	100	100
B	49	34.7	0	81.6	100	100
C	50	12	0	100	100	100
D	35	97.1	5.7	2.8	94.3	94.3
E	32	93.7	9.4	18.8	87.5	87.5
F	33	97	0	9.1	100	97
G	32	71.8	0	50	100	90.6
H	35	65.7	5.7	34.3	100	88.5
I	35	54.3	5.7	88.6	97.1	97.1
J	50	100	6	36	96	96
K	50	38	66	42	98	96
L	50	42	4	80	100	100
M	50	50	8	54	100	96
N	35	60	51.4	34.3	100	94.3
O	35	62.9	0	51.4	100	94.3
P	35	85.7	37.1	77.1	100	94.3
	656	61.6	12.7	52.4	98.6	95.8

To enhance the management of patients waiting for TJR surgery, a "Structured Non-surgical Treatment Program" has been proposed. According to the Osteoarthritis Research Society International (OARSI) Guidelines 2010, the following core treatments were appropriate for all individuals: land-based exercise, weight management, strength training, water-based exercises, self-management and education.

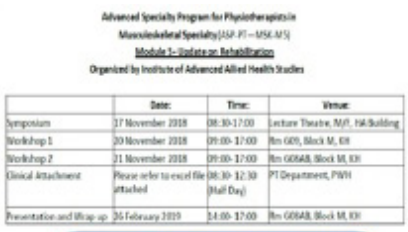


A local adaptation of non-surgical management of patients waiting for TJR Surgery in PWH is shown here :

Cultural adaptation for HK context

- Feasible
- Acceptable to patient
- Clinically applicable

- Recommended non-pharmacological management by NICE
- Mandatory 6-week (10 sessions) rehabilitation program for OAK before TKR in NHS



Advanced Specialty Program for Physiotherapists in Musculoskeletal Specialty (ASP-PT – MSK-MS)
Module 1 – Update on Rehabilitation
Organized by Institute of Advanced Allied Health Studies

	Date:	Time:	Venue:
Symposium	17 November 2018	08:30-17:00	Lecture Theatre, M/F, HA Building
Workshop 1	19 November 2018	09:00- 17:00	Rm G09, Block M, KH
Workshop 2	21 November 2018	09:00- 17:00	Rm G06AB, Block M, KH
Clinical Attachment	Please refer to excel file attached	08:30- 12:30 (Half Day)	PT Department, PWH
Presentation and Wrap up	26 February 2019	14:00- 17:00	Rm G06AB, Block M, KH

Local implementation

- Adaptation to 6-sessions
- Ongoing clinical service in PWH since 2017
- Training for PTs across clusters

Education information ✔
Outcome measures – KOOS

Patients were enabled:
pain ↓
function ↑
confidence in exercise ↑
active life-style ↑

Central Commissioned Training Program for Physiotherapists 2018-2019
Pain and Arthritis Management
Co-organized by HAMS and COC-Grade (PT)

	Symposium	Workshop
Date	17 November 2018 (Saturday)	19 November 2018 (Monday)
Time	08:30 – 17:00	08:45 – 17:00
Venue	Lecture Theatre, M/F., HA Building	Room G09, Block M, KH

ESCAPE-knee pain in UK

- Integrated exercise & self-management program for OAK

ESCAPE-pain HK vs usual care –
At 1 year follow up :
Ex adherence /week: 4 vs 2
Medical consultation in past 12 months: 0.5 vs 1.1

Another pilot "Structured Non-surgical Treatment Program" of patients waiting TJR surgery will start in KWC (YCH) in 2020.

Clinical Outcomes

As the global population continues to age, this trend has serious implications for the future use of healthcare resources in this patient population. Standard surgical treatment of degenerative conditions like end-stage symptomatic osteoarthritis consists of TJR. These have proven to be highly effective and durable, and yet they are expensive. There has been increasing recognition and awareness of the challenges posed by the scarcity of healthcare resources against virtually unlimited healthcare needs and increasingly expensive modes of treatment. As a result, decision makers at all levels are under greater pressure to justify their resource allocation and priority-setting decisions. Cost effectiveness analysis is a useful way to assess the economics and comparative effectiveness of healthcare interventions.

A single-centre, retrospective, longitudinal matched cohort study of prospectively collected outcomes, with a minimum of 5-year follow-up on 431 total knee replacement (TKR) cases was presented at the HA Convention 2019.

	Pre-op	Post-op	Mean change
WOMAC	43.25±17.54	6.76±9.83	-36.49
KOOS(QoL)	56.81±17.62	69.44±16.43	12.63
KOOS	59.79±18.59	82.03±10.23	22.24
PCS	23.03±10.02	34.57±8.52	11.54
MCS	40.51±14.15	46.25±6.85	5.74
SF-6D Utility Value	0.57±0.09	0.67±0.11	0.10
QALY gained*		0.154	

- Total no. of operations : 431
- Superficial wound infection : 8 (0.02%)
- Deep wound infection : 1 (0.002%)
- Clinical DVT : 0
- Pulmonary Embolism: 1 (0.002%)

Complication rate in 431 TKRs

Surgeon's Fee	49110
Anaesthetist's Fee	20460
Operation Theatre Fee	12280
Implant & Consumable Charge	16224
Room & board (9 days)	59850
Ward round Fee (9 days)	10800
Physiotherapy Fee (7 days)	3850
Total (TKR)	**172574**
6 physiotherapy sessions a year (x5)	16500
Drug Fee (NSAID 60 months)	15450
Viscosupplement Injection (x3)	7200
Total (Non-operative Treatment)	**39150**

Direct medical cost of TKR vs conservative treatment for end-stage osteoarthritis of knees

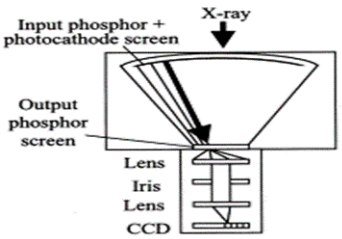
- Incremental cost-effectiveness ratio (ICER), representing the cost-per-point change in outcome score :
  - WOMAC : 472935
  - KOOS : 775962
- Cost-per-Utility/QALY gained (ICUR) :
  - Utility : 1,725,740 HKD
  - QALY : 1,120,610 HKD

The average gain in utility value (SF-6D) was 0.10 and the quality-adjusted life-year (QALY) gained was 0.154. In our threshold analysis, total knee replacement showed a cost effective ratio of HK$1,120,610/QALY, which is well below the established US cost effectiveness thresholds of US$200,000/QALY. The average length of stay was 8.81 days. In terms of complications, there were no deep vein thrombosis (DVT) cases, one case of non-fatal pulmonary embolism, eight cases of superficial wound infection and one case of deep surgical site infection. Both functional and quality of life outcomes generally improve after TKR in our joint replacement centre, with a low complication rate. TKR for end-stage osteoarthritis in our joint replacement centre was shown to be a cost effective procedure.

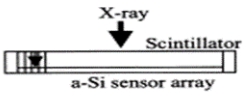
Project Highlights

3D Digital Intraoperative Imaging

Around 75% of orthopaedic operations (equating to around 30,000 annually) require radiological imaging intraoperatively by traditional Image Intensifier (I.I.) in HA hospitals. I.I. image quality deteriorated with time, with visual acuity lost with magnification. There has indeed been an industry trend to replace old I.I. by digital technology.



(a) Image-intensifier detector



(b) Flat-panel detector

A scintillator screen and a Si photo-sensor array for use in a cone-beam computed tomography (CT) detector has become standard practice in overseas orthopaedic surgery theatres. It provides a large volume of interest (VOI) with added edge length of 16 x 16 x 16 cm, capable of delivering anatomical details of a larger field than traditional I.I., for example all seven vertebrae for the cervical spine. There also appears to be less metal artifacts. From our initial evaluation, mobile 3D C-arm with flat-panel detector is considered essential for high-end orthopaedic, trauma and spinal interventions. It allows greater intraoperative control, reducing the need for postoperative CT scans, and costly corrective surgeries. A rolling plan is now in place to install at least one machine in the majority of HA hospitals with an O&T department.

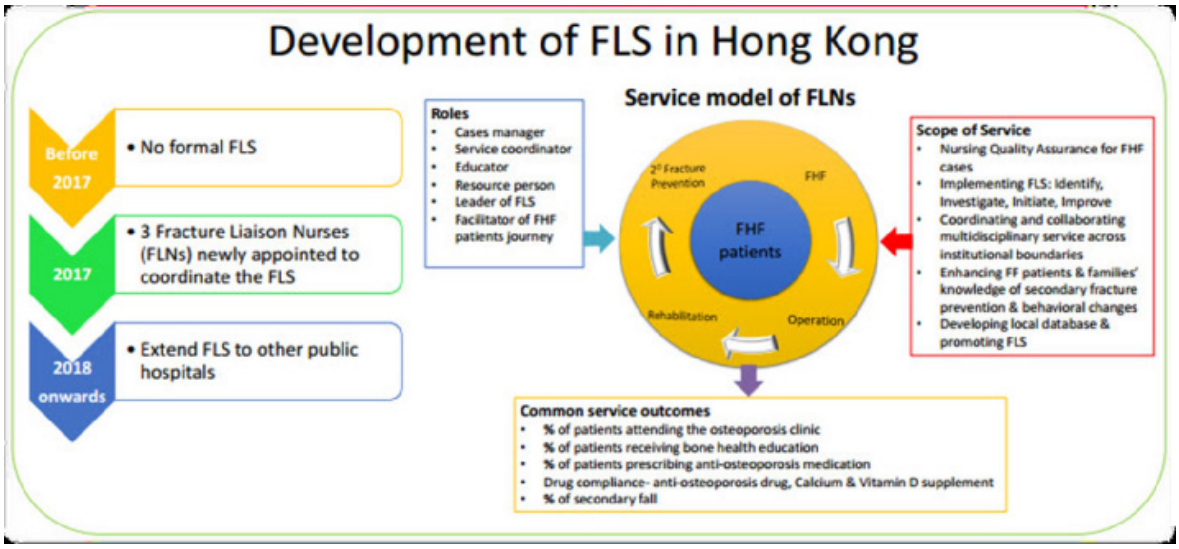
Medical-Grade 3D Printing Technology

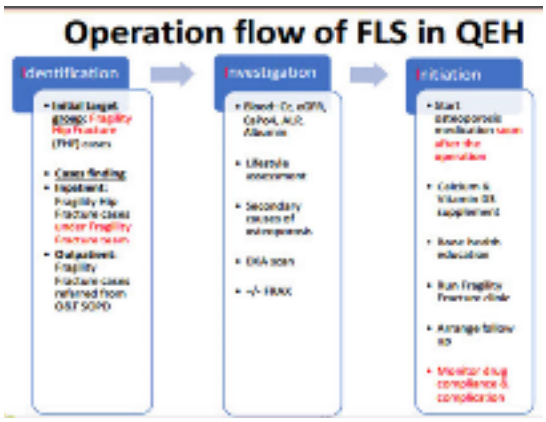
Another quality improvement initiative is to adopt medical-grade three dimensional printing in orthopaedics and traumatology Cluster-based services for patient specific bone model and intra-operative guide, and in the production of prostheses and orthoses.

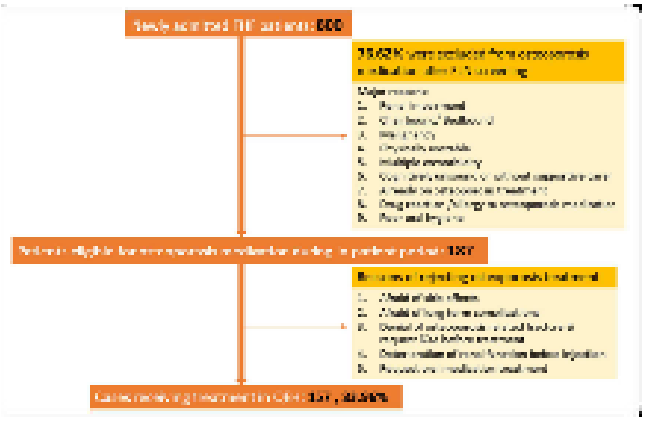
Medical-grade 3D printing technology helps pre-op planning, shortens operative time and reduces intra-op radiation exposure. Patient specific guide also improves accuracy and surgical outcome. A pilot will be conducted in KEC (UCH) and HKEC (PYNEH) in 2020 / 2021 with collaboration O&T and Prosthetic & Orthotic (P&O). Suitable cases for the pilot include: pelvic fracture, deformity correction, reverse shoulder arthroplasty, tailor-made spacer. Through medical-grade 3D printing technology we may save 15-20% of operative time per case and further increase OT capacity.

Way Forward

"Fracture Liaison Service" (FLS) is a multidisciplinary system approach to reducing subsequent fracture risk in patients with a recent fragility fracture by identifying them at or proximate to the time they are treated at the hospital for fracture and providing patients with easy access to osteoporosis care. Under COC(O&T) endorsement, QEH has set up one of the first FLS models in HA, which is a "Multidisciplinary Secondary Fracture Prevention Program". We also developed the first electronic mini-data set in Fragility Hip Fracture Pathway (FHFP) and pilot its use in HA.







Almost 100% of cases were screened and bone health education was given during the acute phase, which was 2.5 times of the service provision of Fracture Liaison Nurse (FLN) (300 cases / FLN). 84% of eligible patients received osteoporotic treatment during hospitalisation and 91.6% were subsequently followed up in the fragility fracture (FF) clinic one year after discharge. Good compliance was observed in bone health medication (98%) and osteoporotic drug (96%) which enhanced bone health and prevention of secondary fracture. No secondary hip fracture was observed in the first year review (6% non-hip).

The future of FLS care lies in a coordinated strategy based on a seamless integration of care. The FLS program must provide a systematic approach to quickly identify fracture patients to appropriate healthcare providers that is primarily focused on managing osteoporosis. This person would direct patients to receive diagnostic testing with bone density scans, shepherd longitudinal osteoporosis management including implementing universal osteoporosis recommendations (e.g. nutritional, lifestyle) and initiating prescription medications, and engage services to help with fall prevention and balance training.

COC (Radiology)

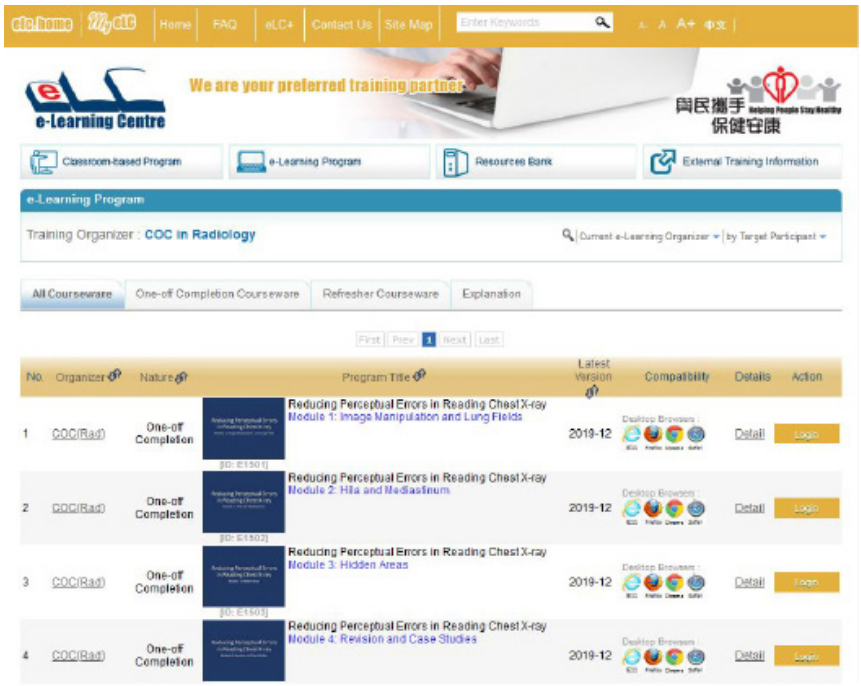
Introduction

The COC (Radiology) has an advisory role for the service development in Radiology to support clinical services in HA. It is our mission to serve as an integral part of the healthcare team by providing a wide range of diagnostic and interventional radiological services.

Project Highlights

Development of Training Modules in e-Learning Website

As a follow-up measure of the recommendations by a Root Cause Analysis Panel in November 2018 to decrease perceptual errors in interpreting chest X-ray images and embark on an HA-wide training for clinicians, COC (Radiology) formed a Task Force on e-Learning for Chest X-ray Examination to develop a web-based training programme named “Reducing Perceptual Errors in Reading Chest X-ray”. The objectives of the programme were to reduce perceptual errors in reading chest X-ray images, and to enhance knowledge and skills in identifying focal lung lesions and key associated chest X-ray findings effectively. Four training modules, namely “Image Manipulation and Lung Fields”, “Hila and Mediastinum”, “Hidden Areas” and “Revision and Case Studies” were developed and launched on the e-Learning website in December 2019.



Way Forward

COC (Radiology) supported the promulgation of the e-Learning programme and positive feedback were received from staff. At the end of each training module, a short quiz is available to allow the participants to have an assessment of their interpretation skills. The e-Learning programme aims to facilitate improvement in skills for frontline clinicians in the interpretation of chest X-ray images.

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