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Innovation to Enhance Patient Safety and Care

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Tell us your thoughts



Antibiotic Stewardship Programme

By **Dr Vivien CHUANG¹**, **Dr Raymond LAI²**

Chief Manager (Infection, Emergency & Contingency)¹ Chief Infection Control Officer², HAHO

The Antibiotic Stewardship Programme (ASP) introduced in 2005 aims to promote appropriate use of antimicrobials amid the growing menace of antimicrobial resistance (AMR). The programme is supported by ASP teams comprising Infectious Diseases (ID) physicians, Microbiologists and Pharmacists. Audits on prescriptions and concurrent feedback are provided. Training materials are also developed to foster clinicians' corresponding awareness (Figure 1 & 2).

As an enhancement, a protocol-driven IT tool, namely "Smart ASP", is introduced in acute hospitals in 2024 and 15 convalescent hospitals in 2005 for seven selected "big gun" antibiotics. This tool automatically assesses the prescriptions based on patients' clinical data (e.g. laboratory culture results) and analytic rules. In case of a potentially inappropriate prescription, a reminder message, Medication Genie (MG), would be prompted in the In-Patient Medication Order Entry (IPMOE) system, reminding clinicians to review it (Figure 3). This helps clinicians to optimise the antimicrobial treatment, which minimises patients' unnecessary exposure to antibiotics and reduces AMR in the long run.

As a next step, Smart ASP would be extended to cover other IV antimicrobials.

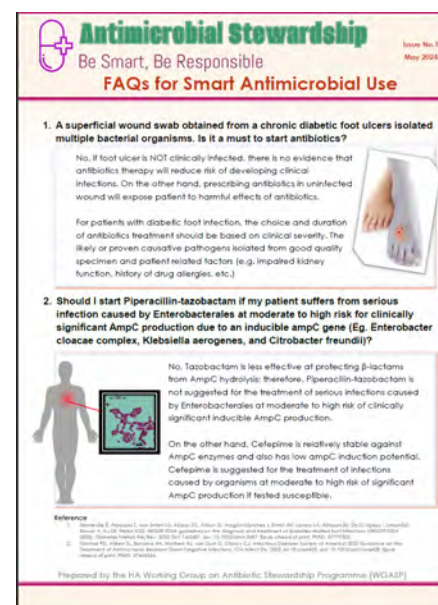


Figure 1: FAQ for Smart Antimicrobial Use



Figure 2: eLC learning course on Antibiotics prescriptions

ASP team message

According to data as at 23:59 on 05- Dec-2024, no positive culture of the following:

- *Pseudomonas aeruginosa*, or
- *Acinetobacter baumannii* complex resistant to Unasyn AND Sulperazon, or
- *Enterobacteriaceae* resistant to Augmentin, Cefuroxime, Cefotaxime, Ceftriaxone and Ceftazidime.

Please review antibiotic therapy of Tazocin.

[Remarks: Please ignore the message if the antibiotic prescription has been reviewed accordingly.]



Figure 3: Smart ASP Medication Genie in IPMOE

Editorial Comments

Appropriate antibiotic use is crucial for patient safety, public health, and is a territory-wide priority. Evidence-based clinical assessments and selecting the right antibiotic therapy are vital for effectively treating infections in diabetic foot ulcers and serious infections caused by Enterobacterales. This approach ensures optimal patient outcomes and helps combat antibiotic resistance.

Mr Jackson WONG, Senior Manager(Allied Health), HAHO

Recent Advances in Digital Pathology

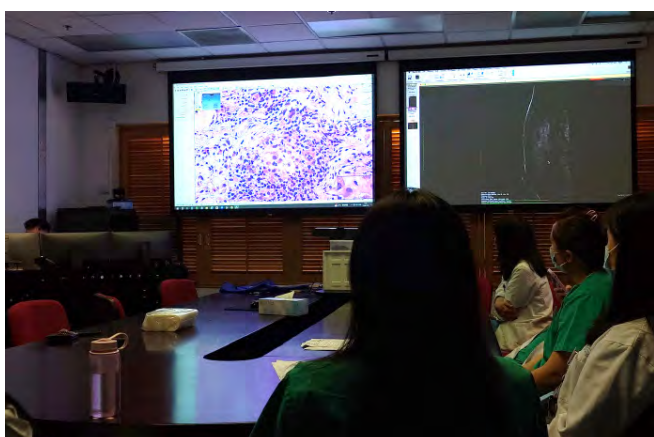
By **Dr Elaine CHEUNG¹**, **Dr Ronald CHAN²**, **Dr Siu Ming MAK³**

Department of Pathology, ¹Queen Elizabeth Hospital, ²Alice Ho Miu Ling Nethersole Hospital/ North District Hospital;

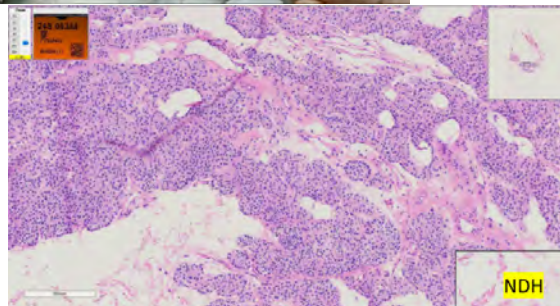
³Department of Clinical Pathology, Tuen Mun Hospital/ Pok Oi Hospital/ Tin Shui Wai Hospital

Recent advancements in Digital Pathology have opened up many new possibilities in Smart Hospital development and adoption of artificial intelligence in the Hospital Authority (HA). Many HA's hospitals have already kickstarted by acquiring digital slide scanners for digital transformation of their diagnostic workflow. As the volume of data which requires handling is vast, collaboration between medical staff, technical staff, corporate and IT stakeholders are needed to setup appropriate infrastructure to support the initiative.

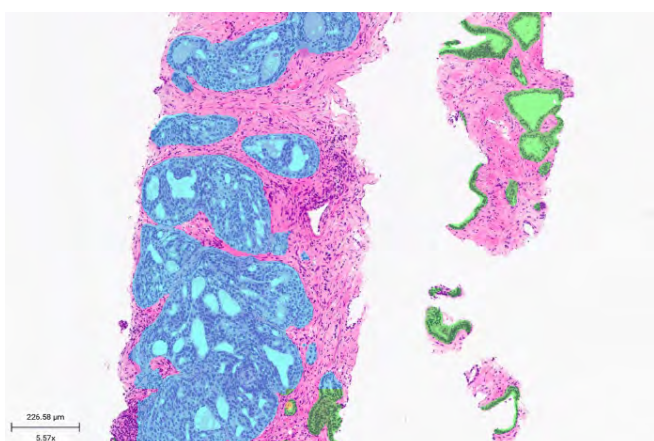
Exchange visits with mainland and overseas centres with prior experience in recent years enabled helpful experience sharing on this exciting new technology. We are looking forward to future big-data integration of digital pathology images, molecular data, imaging data, and clinical records, driving towards more personalised care and advanced diagnostic strategies. The digital transformation of pathology in HA hospitals will revolutionise diagnostic services, improving patient outcomes and increase in operational efficiencies.



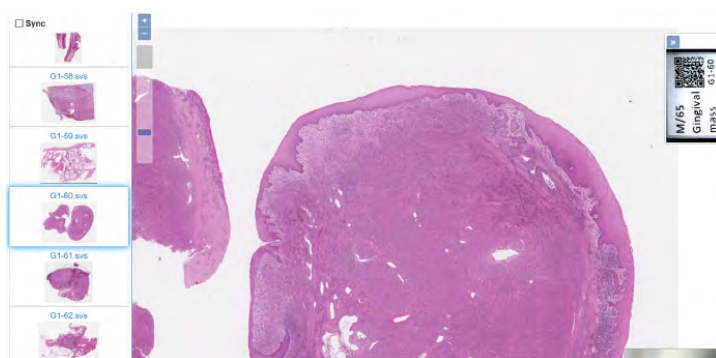
Digital pathology allows easy multi- disciplinary meetings, integrating clinical, radiological and pathology data in patient management. Thanks to CMS and radiology filmless project and digital pathology, all data have been digitised for easy meeting.



Digital pathology enables telepathology for intraoperative diagnosis. A parathyroidectomy in AHNH is supported by pathologists in NDH.



Artificial intelligence cancer detection in prostate biopsies. The blue area represents cancer while the green areas represents background prostate tissue.



Interesting cases are curated to create teaching sets for training. Compared with glass slides, digital images are more portable and will not suffer from fading stain.

Editorial Comments

With the help of digital pathology, pathologists can access and analyse the digital slides regardless of their geographical location. This enables faster diagnosis and treatment, which increases the success rate of therapy, the chances of recovery and survival. The Hospital Authority plays a strategic role in promoting the technology to demonstrate efficiency, share knowledge and innovate for the ultimate benefit of patients.

Dr Jeffrey LAI, Chief Manager(Quality & Standards), HAHO

GCRS-PLUS: Transforming Specimen Collection Across Hospitals

By **Ms Daisy AU**, Health Informatician, Information Technology and Health Informatics Division, HAHO

Since its pilot launch in 2021 at Haven of Hope Hospital (HHH), Tseung Kwan O Hospital (TKOH), and North Lantau Hospital (NLTH), Generic Clinical Request System - Paperless Label Management with UPI and Scheduling (GCRS-PLUS) has significantly enhanced healthcare delivery through mobile technology for inpatient bedside specimen collection. This initiative showcases the capabilities of smart hospitals, has benefited from a collaborative co-delivery adoption strategy. By December 2024, GCRS-PLUS has been fully implemented across all HA clusters and hospitals#.

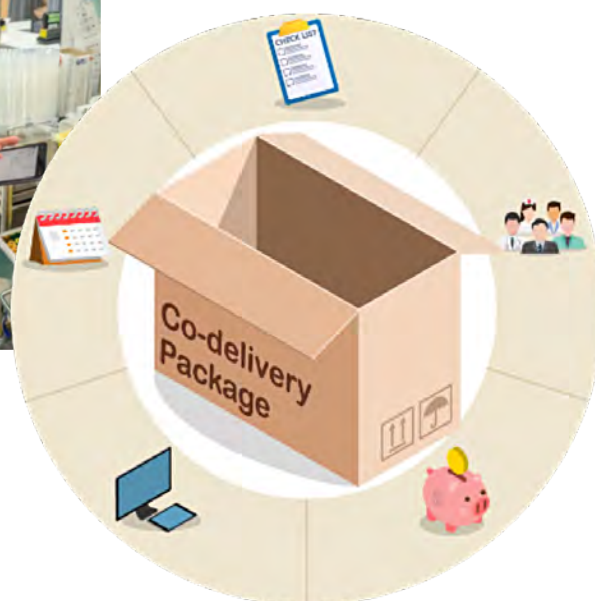
The system aims for a paperless environment, providing near real-time updates through Clinical Dashboard. It processes over 16.7 million specimens annually, improving diagnostic accuracy and enhancing patient safety with over 9.3 million bedside identity verifications.

GCRS-PLUS also supports compliance by managing more than 13.3 million collection schedules each year. Recent reviews indicate a 50% reduction in specimen rejection rates due to the elimination of duplicated label printing.

On the environmental front, GCRS-PLUS reduces paper usage by approximately 7.6 million sheets annually—preserving 914 trees—and cuts carbon emissions by nearly 85,000 kg each year. Additionally, the electronic specimen collection task list has supported and minimised manual handling of job sheets by 21,150 hours, equating to about 10 full-time equivalents (FTEs).

Looking ahead, plans are in place to extend the GCRS-PLUS to Accident & Emergency departments, with initial pilots underway at Tseung Kwan O Hospital and Tin Shui Wai Hospital, aiming to further improve patient outcomes across different care settings.

Except for Kwai Chung Hospital (KCH) which the implementation will start after hospital redevelopment



Editorial Comments

“GCRS-PLUS” is an easy-to-use electronic system which not only enhance the workflow of specimen collection and scheduling at the bedside, but it also provides an environmentally friendly way to provide near real time updates to the healthcare provide through clinical dashboard.

Dr Carmen CHAN, Deputy Service Director (Quality & Standards), HKWC

Application of Artificial Intelligence in Endoscopy

By **Dr K L LUI¹**, **Dr Lawrence LAI²**

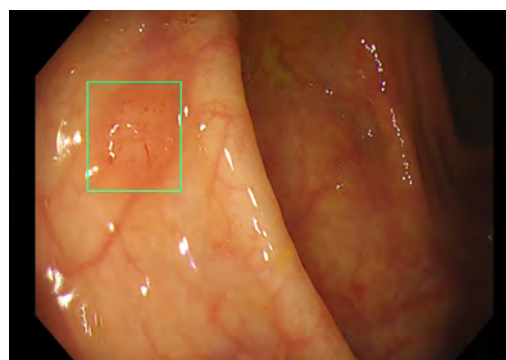
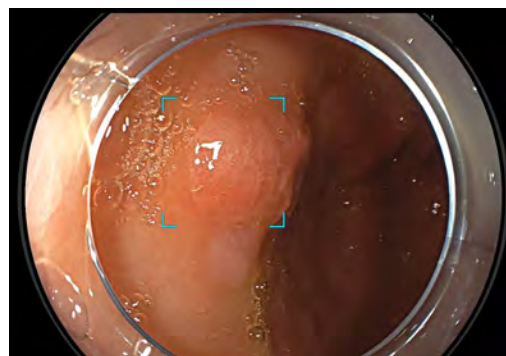
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Missed lesions are a significant concern in both upper and lower endoscopy, with up to 20% of procedures potentially overlooking abnormalities. This can lead to post-endoscopy interval cancers, which often have a poorer prognosis due to delayed diagnosis. To address this issue, it is crucial to enhance lesion detection rates and reduce the miss rate. The application of artificial intelligence (AI) lesion detection models in endoscopy has shown promise in improving these metrics. Endoscopy has become one of the most important areas for AI applications.

Our recent study demonstrated that using an AI lesion detection model increased the detection of adenomas per colonoscopy by 44%. Similarly, another study found that AI models reduced missed lesions during upper endoscopy by 77%. These AI systems typically function as co-pilots, assisting endoscopists by generating bounding boxes around suspicious areas.

So far, AI machines have been installed in some of our centers in HA. Despite the compelling evidence of their effectiveness, the widespread adoption of these AI models faces several challenges, including their availability, the dynamics of human-AI interaction, and regulatory approval. Overcoming these hurdles will require ongoing collaboration among endoscopists, administrators, and researchers. The technology itself is also changing and improving every day. Addressing these challenges is essential for the broader implementation of evidence-based AI tools in endoscopy, which hold the potential to significantly improve patient outcomes.



Editorial Comments

The integration of AI in endoscopy represents a transformative step towards enhancing lesion detection rates and reducing missed abnormalities. While promising studies highlight significant improvements, challenges such as accessibility and regulatory approval must be addressed. Collaborative efforts among stakeholders are essential to fully realize the potential of AI in improving patient outcomes.

Dr Joanna PANG, Chief Medical Informatics Officer, HAHO

Trivia



Please scan the QR code to answer the question of the Trivia.

If you answer the following question correctly by 20 March 2025, we will put your name into a lucky draw. Then we will present a gift coupon to each of the 3 winners that we draw.

Question: What is the key aim of the GCRS-PLUS?

- A) To increase the number of hospital beds
- B) To create a paperless environment for specimen collection
- C) To reduce the number of healthcare staff
- D) To introduce new medical devices



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