# NEWSLETTER OF THE HONG KONG COLLEGE OF PATHOLOGISTS

The Hong Kong College of Pathologists, Incorporated in Hong Kong with Limited Liability

# Message from the President

*Time flies! The Year of 2018 is coming to an enjoyable end as we are continuously receiving good news from our seniors and young Fellows.* 

I would like to congratulate Prof. KY Yuen, Prof. Dennis Lo and Prof. Malik Peiris for their recent awards and honours received locally and internationally. Between them, they have added significant new dimensions to the reach of their science and the way we view and understand their disciplines. In addition, two of our Fellows, Dr. SM Mak and Dr. HW Ip were nominated as Distinguished Young Fellows and received their certificates from Prof. CS Lau, President of the Hong Kong Academy of Medicine in September. Dr. SM Mak, as the representative of the Young Fellows' Chapter of our College, will give a detailed report on its activities including the Medical Indemnity Forum, and Cultivating Professionalism and Research in Medical Education.

The Training and Examinations Committee would like to announce that a total of 20 candidates passed our Membership Examination and Fellowship Assessment this year. Congratulations to the successful candidates on their achievements! In addition, the second Open Forum on the Fellowship in Genetic and Genomic Pathology was successfully conducted on 26th October 2018. More importantly, the Genetic and Genomic Pathology First Fellows Application is now open for submission till the end of March 2019.

As College President, I wish to report to you that I attended the Malaysia-Singapore-Hong Kong Tripartite Congress of Medicine in Kuala Lumpur in August as a joint function of the three Academies of Medicine as well as the Meeting of the International Liaison of Pathology Presidents (ILPP) 2018 in London in October to discuss the common interests and issues faced by the rest of the pathology world. This year, the ILPP has determined to use social media to gain public interest. Therefore, we have used our facebook homepage at https://www.facebook.com/hkcpath/ to publicize the successful celebration of the International Pathology Day at Queen Mary Hospital on 18th November 2018, where the College organized a series of live demonstrations and simple experiments to attract the attention of 180 secondary school students nominated by the Principals of various schools.

Being one of the 15 constituent colleges of the Academy of Medicine, our College has nominated Fellows to be interviewed by the Radio Television Hong Kong "Healthpedia"《精靈一 點》 to talk about their interesting encounters for the celebration of the 25th Anniversary of the Academy. The interviews can be reviewed at http://www.rthk.hk/radio/radio1/programme/ healthpedia/episode/537464.

Finally, Dr. Dominic Tsang and Dr. Christopher Lai will share with us a Topical Update on Antimicrobial Resistance which is a worldwide issue to be tackled not only by pathologists but also by clinicians, nurses and other related healthcare workers.

I would like to thank all the above Fellows who have contributed so much to the building of a positive image of pathologists. Hope you enjoy this issue of Pathologue!

> Dr. CHAN Ho Ming President November 2018





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# Position statement of The Hong Kong College of Pathologists on requesting and accessing medical laboratory testing for patient management

Medical laboratory testing, within the specialty of Pathology, is an integral component of the practice of medicine, surgery and midwifery as provided under the Medical Registration Ordinance, Cap. 161. Pathologists are specialist medical practitioners with the recognized training and competence to supervise medical laboratory testing and to authorize release of test results to registered medical practitioners.

The Medical Laboratory Technologists Board of Hong Kong (the "Board") is established under the Supplementary Medical Professions Ordinance, Cap. 359. According to the Code of Practice issued by the Board for the Guidance of Registered Medical Laboratory Technologists (the "Code of Practice"):

"No person registered or provisionally registered under the Medical Laboratory Technologists (Registration and Disciplinary Procedure) Regulations (Cap.359A) should -

(c) perform any tests for the purpose of medical diagnosis and treatment in the absence of a referral from registered medical, dental and/or veterinary practitioners, or a person registered in respect of a medical clinic exempted under Section 8(1) of the Medical Clinics Ordinance, Cap. 343;

(e) knowingly disclose to any other unauthorised person information obtained through his or her professional work on a patient's samples. Request for disclosure of specimen test results should be handled with due regard to the Personal Data (Privacy) Ordinance, Cap. 486. Registered medical laboratory technologists are asked to acquaint themselves with the requirements of the Personal Data (Privacy) Ordinance." (Section II, paragraph F, page 7 of the Code of Practice)

#### **Training and competence**

Comprehensive training received by medical practitioners ensures possession of the necessary expertise to make appropriate request and proper interpretation of medical laboratory testing, the foundation of which is the study of Pathology.

Use of laboratory results by personnel without the requisite training and competence can potentially result in mismanagement of patients with harmful consequences.

#### Position

Based on the above considerations, The Hong Kong College of Pathologists maintains the position that only registered medical practitioners can request and access medical laboratory testing for medical practice.

Endorsed by Council on 2018-01-04

# President's activities

#### The 52nd Malayzia-Singapore -Hong Kong Triparlite Congress of Medicine 2018, Kuala lumpur.

The President represented College to attend the 52nd Malaysia-Singapore - Hong Kong Tripartite Congress of Medicine in early August 2018 in Kuala Lumpur, Malaysia.



from South Africa (Prof. Johnny Mahlangu, left most in the back row), and Malaysia (Dr. SK Cheong, left second in the back row).

The President standing among the cultural dancers who performed at the Gala Dinner.

#### Dinnerwith Distinguished Young fellows at the Hong Kong Academy of Medicine



Dr. MAK Siu Ming receiving the award of the Hong Kong Academy of Medicine Distinguished Young Fellow 2018 from the President of the Hong Kong Academy of Medicine, Prof. LAU Chak Sing, accompanied by our President, Dr. CHAN Ho Ming, during the evening of "Dinner with Distinguished Young Fellows" on 20th September 2018.

Dr. IP Ho Wan was also nominated by the College as one of the Distinguished Young Fellows in 2018. Dr. Ip was unable to join the dinner due to overseas training.

### International liaizon of Pathology Prezidents 2018. London.



The President attended the International Liaison of Pathology Presidents' meeting in the middle of October, 2018. This is an annual conference which takes place in a different country every year. 2018 was the turn of the UK to be the host country, with the meetings being held in London.

It is an opportunity for Pathology Presidents of the participating countries to exchange ideas and discuss issues that may be affecting the specialty.

This year's 'hot topics' included the varying factors that influence manpower and training availability/ attractiveness in different countries, and sharing ideas about the role of Artificial Intelligence on the specialty. On a lighter note, the visiting party was shown around the new premises of the Royal College of Pathologists, in particular showcasing their washrooms which were decorated in a very unique and creative manner!



# Fellows' Laurels

#### Professor Kwok Yung Yuen is awarded the Gold Bauhinia Star by the Hong Kong Special Administrative Region

Professor YUEN is a world-renowned microbiologist and clinician who has made exemplary contributions to the research and control of emerging infectious diseases. Throughout the years, ProfessorYUEN has designed more than 100 rapid and accurate diagnostic tests for different

kinds of microbial infections. Moreover, he has also found novel antiviral treatment against influenza A viral infection. All along, Professor YUEN attends to patients suffering from the most difficult infectious diseases, and personally teaches and trains specialists in the field of clinical microbiology and infectious diseases. He also provides expert advice to the Government on the formulation of comprehensive and effective strategies to reinforce the local health protection system and tackle the threat of antimicrobial resistance to public health. Professor YUEN is awarded the Gold Bauhinia Star in recognition of his long and outstanding contributions to the development of public health protection and medical advancement in Hong Kong.



#### Professor Dennis Lo named "Top 20 Translational Researchers of 2017" by *Nature Biotechnology*

Professor Dennis LO from the Faculty of Medicine at The Chinese University of Hong Kong has been named the "Top 20 Translational Researchers of 2017" recently by the world-renowned scientific journal *Nature Biotechnology*, for his achievement in developing a robust non-invasive prenatal test following his discovery of fetal DNA in maternal plasma. This is the second year that Professor Lo receives this honour and he is also the only Hong Kong scientist on the list.



#### HKU Professor Malik Peiris Named One of 10 "Science Stars of East Asia" by Nature

Professor Malik Peiris, Tam Wah-Ching Professor in Medical Science, Chair Professor of Virology of School of Public Health, Li Ka Shing Faculty of Medicine, The University of Hong Kong, has been named one of the 10 "Science Stars of East Asia" by leading medical journal *Nature*. Professor Peiris was singled out for his success as "an infectious-disease specialist in Hong Kong, who battles emerging pathogens that threaten the global population".



Professor Peiris expressed, "This recognition is not for an individual but for our whole team. I am pleased that a number of those recognized by *Nature* are from Hong Kong and HKU, thus highlighting the research excellence within Hong Kong. This clearly shows that the recent Government initiatives to enhance support for biomedical research in Hong Kong as a basis of strengthening Hong Kong's knowledge based economy are well-founded."



Announcement

## Training and Examinations Committee

#### **CONGRATULATIONS!!**

We are pleased to announce that the following candidates have passed the Fellowship Assessment or Membership Examination. Congratulations!!

CHENG Shui Ying (Fellowship Assessment – Anatomical Pathology)

LEE Wai Kwan (Fellowship Assessment – Anatomical Pathology)

LIU Kwan Leung (Fellowship Assessment – Anatomical Pathology)

TSE Victoria Pui Wai (Fellowship Assessment – Anatomical Pathology)

KWOK Ka Ki (Fellowship Assessment – Forensic Pathology)

TSANG Chak Chi (Fellowship Assessment – Forensic Pathology)

WONG Ching Ching Alice (Fellowship Assessment – Haematology)

CHAN Cheong Kin Ronald (Membership Examination – Anatomical Pathology)

CHANG Lik Chun John (Membership Examination – Anatomical Pathology)

CHEUNG Chun Kei (Membership Examination – Anatomical Pathology)

CHU Sin Yan (Membership Examination – Anatomical Pathology) LAM Man Wah (Membership Examination – Anatomical Pathology)

LAM Ming Cheung (Membership Examination – Anatomical Pathology)

LAMYip Cheung (Membership Examination – Anatomical Pathology)

LAU Wing Sze Tiffany (Membership Examination – Anatomical Pathology)

LI Jing Xi Joshua (Membership Examination – Anatomical Pathology)

WONG Wing Fung (Membership Examination – Anatomical Pathology)

YEUNG Chun Fai (Membership Examination – Anatomical Pathology)

WONG Chi Kin Felix (Membership Examination – Chemical Pathology)

CHEUNG Hiu Ni (Membership Examination – Forensic Pathology)



Examiners for Anatomical Pathology (Membership Viva) 2018: Front row from left to right: Dr. CHAN Ngot Htain Alice, Dr. Martin YOUNG (External examiner), Dr. IP Pun Ching Philip (Chief Examiner), Dr. LAU Lin Kiu, Back row from left to right: Dr. TANG Wai Lun, Dr. CHAN Chak Lam Alexander, Dr. CHAN Wai Kong, Dr. TSUI Man Shan



Examiners for Anatomical Pathology (Fellowship Viva) 2018: Front row from left to right: Professor TO Ka Fai, Dr. Martin Young (External Examiner), Dr. IP Pun Ching Philip (Chief Examiner), Dr. LAU Lin Kiu. Back row from left: Dr. LUI Yun Hoi, Dr. CHAN Chak Lam Alexander, Dr. LEUNG Chung Ying, Dr. YUEN Wah Fun Nancy

![](_page_7_Picture_4.jpeg)

Examiners for Chemical Pathology 2018: From left to right: Dr. POON Wing Tat, Dr. TAM Sidney, Dr. MAK Miu Chloe (Chief Examiner), Dr. Alan McNEIL (External Examiner), Dr. TAI Hok Leung Morris, Dr. CHAN Ho Ming

![](_page_8_Picture_0.jpeg)

Examiners for Clinical Microbiology and Infection 2018: Front row from left to right: Professor Malik PEIRIS, Professor Pak Leung HO (Chief Examiner), Professor David MITCHELL (External Examiner), Dr. Dominic TSANG Back row from left to right: Dr. WK LUK, Dr. Janice LO, Dr. Vincent CHENG, Dr. Kitty FUNG, Dr. WK TO, Dr. Cindy TSE

![](_page_8_Picture_2.jpeg)

Examiners for Forensic Pathology 2018: (left to right) Dr. LAM Wai Man, Dr. POON Wai Ming (Chief Examiner), Prof. Peter VANEZIS (External Examiner), Dr. LAI Sai Chak, Dr. LAM Wai Kwok

![](_page_8_Picture_4.jpeg)

**Examiners for Haematology 2018:** Front row from left to right: Dr. Raymond CHU, Dr. Clarence LAM, Professor Wendy ERBER (External Examiner) Back row from left to right: Dr. Rock LEUNG, Dr. Edmond MA, Dr. Jason SO (Chief Examiner), Professor Margaret NG, Dr. Eudora CHOW, Dr. Natalie CHAN

# Forum on the Admission of First Fellows in Genetic and Genomic Pathology (26 October 2018))

A forum was held on the evening of 26th October 2018 at Queen Elizabeth Hospital, co-chaired by the College President, Dr. CHAN Ho Ming, and Training and Examinations Committee (TEC) Chairman, Dr. CHAN Chak Lam, Alexander. There were around 20 participants, including the Immediate Past President, Council Members, members of the TEC and members of the Taskforce on Training for Genetics and Genomics (GG TF). Stakeholders from various disciplines, including Anatomical Pathology, Chemical Pathology and Haematology were represented, involving colleagues from hospitals in the Hospital Authority, The University of Hong Kong and private hospitals.

The forum was opened by the TEC Chairman who gave a brief introduction on the background and the purpose of the forum. Dr. Alexander CHAN then focused on the admissions criteria and the application process of First Fellow in Genetic and Genomic Pathology.

The floor posed questions surrounding the admissions criteria, the period of Good Practice, the format of the Assessment and the composition of the Assessment Panel. There were also concerns about inter-College (local versus overseas) and inter-discipline variability, as well as potential implications on report signatories. The President, TEC Chairman and the Immediate Past President all joined in the discussion and all concerns were addressed.

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## International Pathology Day 2018

To celebrate the ILPP International Pathology Day 2018 on 14th November, and to promote public understanding of pathology and pathologists' work, the College organised the International Pathology Day Workshop on 18th November, 2018 at Students' Laboratory, Block T, Queen Mary Hospital. This year, we had overwhelming responses with over 400 applicants. On the day of the workshop, about 180 secondary school students from 30 secondary schools participated in interactive sessions conducted by Pathologists from six Pathology Disciplines, with the help from Medical Students from the Li Ka Shing Faculty of Medicine, the University of Hong Kong & Faculty of Medicine, the Chinese University of Hong Kong.

Dr. Clarice CHEUNG, Dr. Esther HUNG, Dr. Crystal LAM, Dr. Tony LAM, Dr. Ken LAU, Dr. Rock LEUNG, Dr. Garrick LI, Dr. Terence LI, Dr. Vivian LI, Dr. Johann LOK, Dr. Ka Kin MOK, Dr. Albert SIN, and Dr. Sally WONG took part in in the preparation of the workshop. Our special thanks to the event secretarial coordinator Ms. Juliana KWOK & the event photographer Mr. Chi Wai KONG.

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College President Dr Michael CHAN introducing pathologists' work to participants of the workshop

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Students focusing on laboratory work

![](_page_10_Picture_7.jpeg)

The Pathology Detectives: Forensic Pathologists explaining how to estimate the time since death

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Testing of ABO Blood Group

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#### THE HONG KONG COLLEGE OF PATHOLOGISTS:

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#### Volume 13, Issue 2 July 2018

The Hong Kong College of Pathologists, Incorporated in Hong Kong with Limited Liability **Editorial note:** With increasing prominence of the threat of antimicrobial resistance both internationally and locally, awareness and knowledge on the problem and prospects are essential, in order for rational application of control measures and monitoring of their effectiveness. In this issue of the Topical Update, Dr. Dominic Tsang and Dr. Christopher Lai present an updated overview of this important subject. We welcome any feedback or suggestion. Please direct them to Dr. Janice Lo (e-mail: janicelo@dh.gov.hk), Education Committee, The Hong Kong College of Pathologists. Opinions expressed are those of the authors or named individuals, and are not necessarily those of the Hong Kong College of Pathologists.

## Antimicrobial resistance – a global health crisis

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**Dr. Dominic TSANG and Dr. Christopher LAI** Consultant Microbiologist and Associate Consultant, Department of Pathology Queen Elizabeth Hospital, Hong Kong

#### End of modern medicine as we know it

The World Health Organization (WHO) described in 2001 antimicrobial resistance (AMR) as a global problem and an impending crisis. The apocalyptic term "Post-antibiotic era" was mentioned.<sup>1</sup> The situation did not improve since. In fact, it deteriorated. In the United Kingdom (UK) government-commissioned "Review of Antimicrobial Resistance" by Lord Jim O'Neill, it was estimated that 700,000 people died from AMR infections in 2016 in the UK alone, and that drug-resistant infections could cause 10 million human deaths annually by 2050, costing the world up to \$100 trillion.<sup>2</sup> The Chief Medical Officer for England, Dame Professor Sally Davies, has predicted that unless tackled now, AMR could lead to the end of modern medicine as we know it. It could lead to routine operations and even childbirth becoming increasingly dangerous without the required antibiotics. In the UK, over 25,000 deaths a year are attributed to drug resistant infections.<sup>3</sup> European Commission estimated the costs associated with AMR infection at €1.5 billion annually.<sup>4</sup>

The driving force behind emergence and dissemination of AMR is directly related to the use of antibiotics, i.e. the antibiotic selection pressure.<sup>5</sup> It is recognized that non-human indiscriminate use of antibiotics in agriculture and animal husbandry to promote growth in animals and the consequential persistence of antibiotics in soil and aquatic environment select for AMR that could be disseminated widely.<sup>6</sup> Human overuse nonetheless needs to be controlled by dedicated efforts on strengthening regulations on over-the-counter purchase of prescription only antibiotics, enhancing training in antibiotic prescriptions, monitoring compliance with antibiotic guideline and antibiotic stewardship programme (ASP).<sup>7</sup>

#### **Concerted effort against AMR**

Antibiotics on one hand is an agent required for life saving. But on the other, its usage and the resultant selective pressure have been recognized as the main drivers for AMR. Therefore, its use in human and non-human settings should be balanced against the risk of driving AMR. As such, antibiotic usage data has been linked to AMR surveillance data in the AMR containment strategy.  $^{\!\!89}$ 

There are already in place a few surveillance systems on AMR, covering healthy animals, diseased animals, food and humans in countries such as Canada, Denmark, Finland, Germany, Italy, Japan, USA, the Netherlands, Norway, France, and Sweden.<sup>10</sup>

The UK and China will establish the Global AMR Research Innovation Fund and encourage further investment from other governments and the private sector, helping to address AMR. The new fund will invite bids from industry, academia and other bodies. It aims to create international partnerships to build a global response and support new research to reduce the spread of antibiotic resistance.

The World Health Assembly in May 2015 endorsed a WHO global action plan to tackle antimicrobial resistance to ensure continuity of successful treatment and prevention of infectious diseases with effective and safe medicines.<sup>11</sup> The plan sets out five strategic objectives including: to improve awareness and understanding of antimicrobial resistance; to strengthen knowledge through surveillance and research; to reduce the incidence of infection; to optimize the use of antimicrobial agents; and to develop the economic case for sustainable investment that takes account of the needs of all countries, and increase investment in new medicines, diagnostic tools, vaccines and other interventions. Under each of the objectives, specific actions were listed out for member states as well as international partners to implement.

# Hong Kong Strategy against Multidrug resistant organisms (MDROs)

The Hong Kong Strategy and Action Plan on Antimicrobial Resistance 2017-2022<sup>12</sup> was released in July 2017 with the goals to develop a territory-wide network on surveillance on AMR and antimicrobial use, promote appropriate therapeutic use of antimicrobials in human and animals and to promote research on diagnostic and related interventions. Six key areas were targeted in the plan, including strengthening knowledge, optimizing antimicrobial use, reducing infections, improving awareness, promoting research and fostering partnerships among stakeholders.

In terms of AMR surveillance, the overall resistance profiles of MDROs have all along been closely monitored in public hospitals under the Hospital Authority in Hong Kong.<sup>13</sup> Among the concerned MDROs, Gram positive organisms include methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant enterococcus (VRE). Gram negative organisms include extended spectrum beta-lactamase producing *Enterobacteriaceae* (ESBL-E) and the WHO top priority organisms of carbapenem-resistant *Enterobacteriaceae*  (CRE), carbapenem-resistant *Acinetobacter baumannii* (CRAB), and carbapenem-resistant *Pseudomonas aeruginosa* (CRPA).<sup>14</sup>

**Trends in antibiotic resistant organisms MRSA:** In Hong Kong, MRSA bloodstream infection was made a key performance indicator (KPI) to gauge the performance of infection control practices in all public hospitals.15 The corresponding MRSA bacteraemia rate was 0.18-0.19 per 1,000 acute bed days when the monitoring began in 2008 and declined gradually to 0.144 per 1,000 acute bed days in 2017. At the same time, MRSA constituted 43.1% among *S. aureus* isolated from local HA hospitals.

**VRE:** The total number of VRE cases detected remains below 50 a month since 2015, after an upsurge and successful control in the Queen Elizabeth Hospital in 2013 when the peak number of cases detected in a month reached 300.<sup>16</sup>

**CRAB/multi-drug resistant** *Acinetobacter baumannii* (MDRA) is commonly associated with patients with prolonged hospital stay and who required ventilator-assisted ventilation. These patients are also usually put on multiple antibiotics for the treatment of underlying infections.<sup>17</sup> Substantial environmental contamination with the resistant bacteria is frequent as a result of nursing care procedures, leading to explosive outbreaks which are difficult to abort unless attention is given to patient segregation and effective disinfection of instruments and environmental surfaces.<sup>18,19</sup>

**ESBL-E** began to emerge in late 1980s and peaked in UK in 2006 with 12% *E. coli* isolated from bacteraemic cases being ESBL positive. ESBL-E has been common locally, at 22% in 2017 compared to 24.3% since 2012. They are especially important as they commonly caused community-acquired as well as hospital-acquired infections. In fact, a local report showed 62% of imported chicken were found to be contaminated with ESBL-E.<sup>20</sup> Community carriage rates for ESBL-E are high in East Mediterranean areas and South East Asia, from 30-60%.<sup>21,22</sup> For treatment of ESBL-E infections, imipenem has been universally effective since its launch in 1987, and the same applies to meropenem, another carbapenem antibiotic which was launched in 1996.

**CPE** are members of the *Enterobacteriaceae* including *E. coli* and *Klebsiella species* which possess the gene on plasmids coding for the enzymes such as KPC, NDM and OXA-48 under the Ambler Classification on molecular class A, B or D respectively which enable them to inactivate carbapenem antibiotics and also other beta-lactams. CPE are usually multiply antibiotic resistant, therefore rendering limited options in treatment of their infections.<sup>23</sup> The emergence and subsequent spread of CPE followed

human movement closely as exemplified by the clustering of KPC-CPE in New York, North-West England, Israel and the spreading of NDM-CPE to Sweden by a returning patient from New Delhi, India.24-26 In Hong Kong, CPE cases were being increasingly detected, from 19 cases in 2011 to 473 cases in 2017. Active bacterial screening (ABS) of patients based on a set of consensus criteria in public hospitals including admission screening of all patients who have stayed in overseas hospitals in the past 12 months, suffering from antibiotic associated diarrhoea, staying in the same cubicle of a known CPE case, etc., helped to pick up an increasing number of CPE. Fortunately, most of the cases (90%) were asymptomatic carriers and did not require specific treatment. Of note, the number of confirmed CPE isolates in England in 2016 was more than 2,500 with KPC, NDM and OXA-48 predominant. Effective treatment options for CPE are few. The activities of ceftazidime and aztreonam with and without avibactam were tested against a large, contemporary, international collection of carbapenemase-producing Gram negative bacilli (CP-GNB) with diverse resistance mechanisms. Aztreonam-avibactam was active against all isolates except two NDM producers with elevated MICs of 8/4 and 16/4 mg/litre; ceftazidimeavibactam was active against all KPC-, IMI-, SME-, and most OXA-48 group-producing isolates (93%) but not metallo- $\beta$ lactamase producers. Among the older and contemporary antimicrobials, the most active were colistin, tigecycline, and fosfomycin, with overall susceptibilities of 88%, 79%, and 78%, respectively.<sup>27</sup> Among local CPE isolates, the resistance rate of colistin is around 5.8%.

# The "Find and Confine" Control strategy of AMR in HA hospitals

"Find": This is the single most important control measures aiming to uncover the carriage state of any asymptomatic carrier, especially of VRE and CPE, who could shed the MDRO in the excreta. This is commonly done by ABS in the form of admission screening based on high risk factors such as hospitalization in recent months, a history of exposure to a known case, prolonged hospital stay (e.g. for 14 days or more), development of antibiotic associated diarrhoea etc. The yield of ABS at present is not high, ranging from 0.6% to 1.4% (average 1.0%) based on 2017 CPE ABS data in one of the hospitals, but ABS has undoubtedly provided a substantial impact in mitigating otherwise uninterrupted dissemination of VRE and CPE in the hospital setting. The availability of commercial agar media with the function to differentiate CPEs after overnight incubation has greatly facilitated ABS. Coupled with other rapid enzyme detection and PCR confirmation of CPE, which are also available commercially, the time to detection of CPE carriage in patients has been shortened to one to two days.

"Confine": It is an important part of standard precautions (SP) plus contact precautions (CP) in the care of a known MDRO case. A room with en-suite is the preferred placement especially for those who suffer from diarrhoea and therefore at a higher risk of transmission of MDROs. This is widely practiced in developed countries. When en-suite rooms are not available, segregation of MDRO carriers by "cohorting" patients carrying the same MDRO is a pragmatic alternative.

Hand hygiene (HH): Healthcare workers (HCWs) strictly observing proper HH, e.g. WHO 5 moments, is undoubtedly the most important and effective measure in aborting the dissemination of MDROs in healthcare setting. The use of alcohol handrub in place of hand washing in situations where soiling is minimal has greatly improved HH compliance. However, HH is an action governed by human behavior which unfortunately also suffers from all factors that affect our behavior, such as physical fatigue, forgetfulness, motivation, persistence, peer influence, etc. For the same reason, the reliability of HH compliance monitoring by direct observation is also limited by the well-known "Hawthorn effect" in that, as humans, we tend to perform when we are aware of being observed.<sup>28</sup> Further, in periods of high bed occupancy like influenza seasons, it is very hard to expect HCWs to fully comply with HH and as a consequence, these periods are more prone to cross transmission and outbreaks of MDROs. Apart from HCWs, patients and visitors are equally important in observing HH in order to avoid cross transmission. Similar moments of HH are being promoted for patients in local hospitals. In the long run, the development of a positive and motivated infection control culture and HH habit would not only maintain the cross transmission of MDROs at a low level but also mitigate the risk of other cross infections.

Environmental hygiene: The inanimate environment plays an important role in perpetuating the dissemination of MDROs in the hospital settings, especially VRE and MDRA.<sup>29,30</sup> High-touch (frequently touched) surfaces such as patients' privacy curtain, bed rails, door knobs, nursing trolleys, drip stands are often contaminated with the MDROs during outbreaks.<sup>31</sup> The conventional cleansing and disinfection by using diluted sodium hypochlorite solution, although effective, is labour intensive. Also, to ensure the cleaning procedure is meticulously performed, it is commonly monitored by the use of a surrogate marker (e.g. UV-fluorescent marker) to ensure satisfactory performance.32 To circumvent such drawback, there are now plenty of effective new products on environmental disinfection, ranging from self-disinfecting surface coating sprays, hydrogen peroxide vapor, UV-C device, 2-in-1 disinfectant wipes to antimicrobial privacy curtains that could achieve effective decontamination with less labour. In a multi-centre study, 42.7% of standard hospital curtains were

contaminated with MRSA and 42.3% with CRAB.<sup>33</sup> The use of disposable antibacterial privacy curtains, e.g. nanoparticle silver or quaternary ammonium impregnated curtains, have been shown to prolong the time to contamination and reduce the bio-burden even after extended usage in acute care setting.<sup>34</sup>

Reducing overuse of antibiotics: It is imperative to maintain the use of antibiotic at the minimum essential level in order to prevent the emergence of resistance.<sup>34</sup> Education and training at an early stage of the medical curriculum is critical in establishing the concept and skills in prudent antibiotic use. Guideline such as the local IMPACT guideline on antibiotic use is indispensable in providing the guidance on the right indications, choice, dose, route, and duration of antibiotic use. In addition, antibiotic stewardship program (ASP) has been widely practiced and proven to be effective in ensuring appropriate use of antibiotics.<sup>35</sup> Locally, a multidisciplinary team of clinical microbiologists, physicians, pharmacists and infection control nurses has been put in place in all HA hospitals to provide concurrent feedback on the use of targeted "big-gun" antibiotics. The percentage of appropriate use stays at above 80% in general and feedbacks on antibiotic use are welcomed in most of the cases.

Another very important aspect in the control of AMR is diagnostic support in infection.<sup>36</sup> The rapid isolation and identification of an aetiological agent lends strong support in the continuation of antibiotic treatment, or its discontinuation in the absence of any evidence of infection. This is made possible with the introduction of molecular platforms such as 16S ribosomal RNA PCR and metagenomic studies.<sup>37</sup>

Surrogate biomarker of infection, in particular procalcitonin (PCT) which exhibits greater specificity than other proinflammatory markers such as C reactive protein (CRP) helps in identifying patients with sepsis and can be used for diagnosing infections, especially ventilator-associated pneumonia (VAP).<sup>38,39</sup> The short

# half-life (25-30 hours in plasma) of PCT and its absence in healthy state make it the preferred biomarker for bacterial infections. PCT levels <0.15 ng/mL make a diagnosis of significant bacterial infection unlikely.

#### The outlook of the challenges from AMR

The outcome in our battle against MDROs depends on how successful we are in preserving the efficacy of our existing antibiotics for treatment of infections and the result of our search for new antibiotics. Both require resources, efforts and dedication. While preserving existing effective antibiotics demands the aforementioned One Health approach, research breakthroughs arguably provide us the only hope in winning the battle against MDROs and to ensure effective treatment of infections for the continual practice of modern medicine. Not long ago, researchers have identified from a soil sample a new cell wall inhibitor, teixobactin, from a previously unknown Gram-negative bacterium that lives in soil but which cannot be cultured in the laboratory using standard technique.<sup>40</sup> The researchers used the "Ichip", an isolation chamber, in which a soil sample is diluted with agar and a single bacterial cell in a chamber is then placed in soil where the bacteria could access to nutrients and growth factors. The teixobactin identified has excellent activity against Grampositive pathogens including MRSA, Clostridium difficile, Bacillus anthracis and Mycobacterium tuberculosis. Another recent breakthrough was reported<sup>41</sup> on accessing hidden natural products (NP) made by bacteria not by culturing but by sequencing, bioinformatics analysis and heterologous expression of biosynthetic gene clusters captured on DNA extracted from environmental samples. Such technique has led to the discovery of malacidins, a distinctive class of antibiotics which are active against MRSA infections without selection for resistance under the laboratory conditions. These discoveries are definitely good news given the great potential for more to be discovered by using these innovative technologies. Of course, there are still tests to be done before they could become clinically useful, but at least these discoveries through our human creative and innovative minds are holding promise in the battle against AMR. Meanwhile, we must not be distracted away from the momentum in tackling the rapidly deteriorating AMR situation.

#### References

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# Report on Activities from the Young Fellows' Chapter

The Hong Kong Academy of Medicine Young Fellows' Chapter organised a Medical Indemnity Forum on 14th April 2018 at Queen Elizabeth Hospital. The HKCPath Young Fellows' Chapter (YFC) contributed to this event in the capacity of the Academy's YFC. Professor Chak Sing LAU, President of the Hong Kong Academy of Medicine, Dr. Chor Chiu LAU, Vice-President of the Hong Kong Academy of Medicine and Dr. Hung To LUK, elected Council Member of the Hong Kong Academy of Medicine, joined the Medical Indemnity Forum. Dr. LUK was one of the speakers and briefed the participants on the background behind the forum. About 80 participants joined this afternoon event. The Honorable Dr. Pierre CHAN also shared his opinion from the floor.

![](_page_17_Picture_2.jpeg)

From left to right: Dr. Tom HO, Dr. Shiobhon LUK, Dr. Siu Ming MAK, Dr. Sunny WONG, Dr. Jasper WONG, Dr. Mike LEUNG, Dr. Hencher LEE and Dr. Tommy CHEUNG

The 4th Medical Education Conference was held on 5th May 2018 in the Hong Kong Academy of Medicine Jockey Club Building. The theme of this year's conference was "Cultivating Professionalism and Research in Medical Education". The Academy's Young Fellows' Chapter was invited to chair a session at this event. The topic of the chaired forum was "Conducting Research in Hong Kong: From Young Fellows Perspective". Dr. Siu Ming MAK (Anatomical Pathology) and Dr. Hencher LEE (Chemical Pathology) were both actively involved in this chaired session as one of the chairpersons and one of the speakers respectively. The speakers and the chairpersons shared the joys and challenges of conducting research in Hong Kong. On the one hand, the speakers shared their passions and fruitful rewards of their works but on the other hand, speakers also discussed the difficulties they encountered, including time allocation, bidding for resources, formation of research teams and work-life balance. The audience, which consisted of around 30 participants, were also invited to join in the discussion. Prof. Gilberto LEUNG, Co-Chairman of the Organizing Committee of 4th Medical Education Conference, concluded the session with distribution of souvenirs to speakers and chairpersons.

![](_page_18_Picture_1.jpeg)

From left to right: Dr. Mike LEUNG, Dr. Sunny WONG, Dr. Tommy CHEUNG, Dr. Shiobhon LUK, Dr. Hencher LEE, Dr. Tom HO, Dr. Jasper WONG and Dr. Siu Ming MAK

## Announcement from the Education Committee (Oct 2018)

#### 1. CME/CPD ANNUAL RETURN 2018

To align our practice to the regulations laid down by the Hong Kong Academy of Medicine, this announcement serves to remind Fellows the Education Committee will call for CME/ CPD annual return in early October as in last year. The deadline of submission will be 7th January 2019.

<u>Nil return is not required in the first and second cycle years of the 3-year CME/CPD cycle</u>. A minimum of 15 CME/CPD points is recommended to be achieved each year. Fellows can submit CME/CPD annual returns if there are CME/CPD activities to update or report. The CME/CPD Annual Return Form can be downloaded from the "Downloads" area of the College webpage (<u>http://www.hkcpath.org/</u>).

#### 2. CME/CPD PROFILE

Please be reminded the Education Committee will no longer include individual Fellow's personal CME/CPD profile in the call-for-annual return notice. Fellows are required to login to the iCMECPD website (<u>http://www.icmecpd.hk/</u>) to check their own CME/CPD records.

#### **3. "ATTENDANCE RECORD FOR INDIVIDUAL FELLOW"**

To avoid the last minute rush, Fellows are encouraged to make use of the "Attendance Record for Individual Fellow" to report their CME/CPD activities (e.g. Self Study and Publications) to the Education Committee soon after completion of the CME/CPD activities. The forms can be found at <u>http://www.hkcpath.org/resources/downloads</u>.

#### ERRATUM

On page 11 of the last issue of Pathologue (Volume 27, issue 1, June 2018), the caption of the photograph at the bottom of the page which included the former Professor of Immunology at the University of Hong Kong, should read Dr. John Lawton and not Dr. James Lawton as previously published. We sincerely apologise to Dr. Lawton for the error.