Hong Kong Pharmacy Conference 2017
February 18 - 19, 2017
To Innovate and Excel
Dear colleagues and friends

A very warm welcome to the Hong Kong Pharmacy Conference 2017!

When I studied pharmacy some decades ago, the world was very simple. There was no internet, no cell phones, no digital cameras, no DVDs, no USB, no monoclonal antibodies and, of course, no biosimilars. Nowadays, we cannot even live without them (though some of them have already become old-fashioned)! In the current of innovation and technology advancement, one has to be neoteric in order to keep moving and stay young (or less ancient).

The theme “To innovate and excel” may look ambitious but it is also inevitable. As professional, pharmacists must keep abreast the latest development in the medical and pharmaceutical fields, and to learn new technologies and techniques. We also need the courage to ameliorate ourselves and make our mark. As such, the Organizing Committee has invited many renowned speakers from different specialties to enlighten us in these two days.

When the Programme Sub-committee first discussed the framework for the Conference programme, members were very eager to introduce the latest development and cream of the crop of different subjects to the audience. The idea was that, even though some topics may look familiar or ordinary, the presentations should open your eyes and inspire innovation and excellence. Of course, you will still find some atypical and interesting topics such as “Deprescribing”, “How dissimilar are biosimilars”, “MAID”, “BEERS”, etc.

This year, we decided not to organize lunch symposium on Day 2 of the Conference. Since the Pharmacy Conference is one of the most important events for pharmacists in Hong Kong, we treasure the opportunity to catch up with old friends and making new friends during the Conference dinner on Day 1 and lunch on Day 2, so that all participants may concentrate more on the presentations.

Before the end of the Conference, I'd like to invite all fellow pharmacists to join the plenary session, which will focus on future community dispensing model and manpower. Community pharmacy is one of the major key players in the health system and we all believe that it can better serve the community. So, please do come and together make our dream a reality.

Lastly, since we are still in the first month of the Chinese New Year, may I take this opportunity to wish you all a prosperous and healthy year of rooster! Enjoy the Conference!

Lot Chan
Chairman, Organizing Committee
Hong Kong Pharmacy Conference 2017
Theme Speech 1: Non-invasive Prenatal Testing: From Dream to Reality

LO, Dennis
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Hong Kong

The presence of cell-free fetal DNA in maternal plasma was first reported in 1997. Since then, developments in this area has revolutionised the practice of prenatal testing worldwide. In particular, this technology has been used for the non-invasive prenatal screening of fetal chromosomal aneuploidies, such as Down syndrome. Furthermore, this technology has been shown to be useful for the prenatal testing of many single gene disorders, e.g. β-thalassaemia. This is likely to be the next wave of active developments in the field. Looking towards the future, it has also been shown that the entire fetal genome can be sequenced non-invasively from maternal plasma. This development opens up many new diagnostic applications, including the detection of fetal de novo mutations from maternal plasma. Very recently, it has been demonstrated that the fragmentation patterns of circulating cell-free DNA are non-random and such patterns would exhibit fetal or maternal specificity. These findings have opened up many new avenues of research. Taken together, non-invasive prenatal testing using circulating DNA has created a paradigm shift in medical practice. This field has also laid the foundation for the use of plasma DNA for other branches of medicine, e.g. oncology, transplantation, autoimmune disease, and beyond.

Theme Speech 2: Human Heart-in-a-jar Technology for Precision Drug Discovery

LI, Ronald
Executive Director
Ming Wai Lau Centre for Reparative Medicine
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Cardiotoxicity is a dominant reason for drug failure, underscoring a need for screening models with improved biofidelity. Human pluripotent stem cells (hPSC) can be specified into ventricular (v) cardiomyocytes (CM) that have been robustly characterized at the single-cell level. However, a number of physiologically relevant cardiac properties (e.g., electrical conduction, pump performance) are multi-cellular in nature, requiring the assembly of individual cells into 3D engineered tissues. Although hPSC-vCMs have been organized as monolayers and patches for electrophysiological assessment and grafting, they are not amenable to contractile characterization; by contrast, engineered cardiac strips allow measurements of axial twitch force, but not pressure, and have limited utility for electrophysiological studies. To meet the need for next-generation in vitro cardiac models, we report engineering hPSC-vCMs into human ventricular cardiac organoid chambers (hvCOC) that function as fluid-ejecting pumps, following the Frank-Starling Law of the heart, and reproducing relevant physiological and pharmacological features of the native ventricle. For the first time, such parameters as ejection fraction, pressure-volume relationships, cardiac output and stroke work as well as electrophysiological mapping could be measured with a single human tissue construct.

We conclude that hvCOCs present a versatile biomimetic in vitro tool or “heart-in-a-jar” for drug discovery, cardiotoxicity screening, and disease modeling, and further expand the capabilities of cardiac tissue engineering technology.
Theme Speech 3: Leveraging Global Standards for Healthcare Safety

DEAN, Philip  
Head of Pharmacy  
Quality Control Laboratory Services of North Tees and Hartlepool NHS Foundation Trust  
United Kingdom

In 2014, the Department of Health introduced their eProcurement strategy which mandated the use of global standards in every NHS Acute Trust in England - to increase efficiencies and significantly improve the quality and safety of care. The recent Carter review stated that the introduction of GS1 standards will allow every NHS hospital in England to save an average of £3 million each year, while improving patient care. In a time where the NHS is under increasing pressure to do more for less, savings like this will be crucial.

As part of this programme, six “Scan4Safety” sites were given a share of £12m to demonstrate the benefits of implementation with international standards. Professor Philip Dean, Head of Pharmacy & QC Laboratory Services, will take a look at the Scan4Safety project and will explore the specific impact of the programme on North Tees and Hartlepool NHS Foundation Trust and on pharmacy.

Theme Speech 4: The Priority of Bar Coding in the Medication - Use Process

NEUENSCHWANDER, Mark  
President  
The Neuenschwander Company  
USA

The same bar-code technologies effectively utilized around the world in manufacturing, logistics, shipping and commerce must be wisely applied to medication-use processes in hospitals. In this session we will consider how bar-code systems have improved and my yet improve patient safety and how they may increase efficiency in drug preparation, distribution, administration, and documentation. It is not a matter of if, but when we will reap the benefits of barcoding in healthcare.
Theme Speech 5: Innovation and Leadership

CHIANG, Sau-chu
Director
Hong Kong Pharmaceutical Care Foundation
Hong Kong

Today with emergence of more new drugs and introduction of different innovative dosage formulations, the patients require more than just the basic information about their medications. At the same time, in the face of ageing population and increased patients’ expectation, the traditional medication supply system and the drug dispensing process has obviously reached its limits. Over time, our internal systems are becoming inefficient and our best service are not matching the quality and safety demands.

Now, we are only too aware that we cannot keep doing the same things over and over again. We need to break away from the traditional mode of management and avoid becoming skilled practitioners gradually losing the ability to think. This is because only the leaders of a healthcare organization have the resources, influence, and control and it’s our responsibility to strategically address the organization’s culture, planning and provision of services, acquiring and allocating resources, providing sufficient staff, and setting priorities for improvement in order to implement what’s new, what’s better, and what’s next.

In this lecture, Ms. Chiang will share how to deploy some internet of things, using mobile devices to help the patients at large to manage their medications, how to break away from the traditional models of service as she talked more on innovation and leadership.

Concurrent Session I: Paediatrics
Hidden Dangers within our Healthcare System: How can we Protect Children from Adverse Drug Events?

EWIG, Celeste
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The paediatric population is a dynamic and diverse patient group recognized for their increased vulnerability to medication errors and adverse drug events. Several risk factors associated with the occurrence of such events- such as polypharmacy, complex medical conditions and extreme age ranges- are applicable across the general patient population. Others are more specific to the paediatric population. Ontogeny and physiologic changes that occur as the infant develops translate to pharmacokinetic and pharmacodynamic implications creating the need for individualized dosing and frequent dose manipulations. Often multiple of these risk present concurrently further compounding the risk for harm. Recognizing these risk factors and how they present among paediatric patients can result in more thorough understanding of where and when they occur. This allows us to better formulate answers to the question “how can we protect children from adverse drug events?".
Concurrent Session I: Paediatrics

Neonatal Parenteral Nutrition - A Macro-control Approach

CHEUNG, Katherine
Clinical Paediatric Pharmacist
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Hong Kong

Parenteral nutrition helps to meet neonate nutritional needs for growth and development when full enteral feeding is likely to be delayed. Inadequate nutrition leads to growth deficits and has a long lasting effect, such as short stature and poor neurodevelopment. A balanced total parenteral nutrition (TPN) is essential for optimal growth and prevent catabolism.

The conventional approach in prescribing TPN for neonate is to tailor-make a regimen based on patient’s clinical status and biochemistry. A practitioner may spend a considerable amount of time individualising each patient’s TPN and adjusting their regimen frequently. Many institutions are using the individualised prescribing approach as it is perceived to deliver optimal nutrition to the patient. An alternative approach in prescribing TPN is to use standardised TPN regimens. However, this approach has been less favourable amongst practitioners due to their practice of continuous fine-tuning of the TPN regimen to suit individual needs. To date, there has been success in using standardised TPN and it is a well-established practice in most of Australia, Malaysia and Singapore. As well as providing safe and effective delivery of nutrition to neonates, standardised TPN has led to huge cost-savings for institutions and reduced errors.

Currently in Hong Kong (HK), there are no hospitals using standardised TPN for neonates. Kwong Wah Hospital is the first to take the initiative in HK to explore the safe and effectiveness of delivering TPN to neonate using the standardised TPN prescribing approach.

Concurrent Session I: Paediatrics

Could we Eliminate Medication Errors in a NICU with IT Innovations?

CHAN, Bill
Chief of Service and Consultant
Department of Paediatrics and Adolescent Medicine
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Medication errors could result from mistakes in prescription, dispensing and administration.

There are multiple steps in these processes and errors may be related to:
1. Wrong prescription
2. Wrong transcription
3. Wrong dispensing
4. Wrong patient
5. Wrong drug
6. Wrong dose
7. Wrong time
8. Wrong route
9. Omission of dose
10. Dose delayed > 1 hour
11. Wrong administration rate
12. Wrong IV push rate
13. Additional / unauthorized dose
14. Calculation errors
15. Allergy related error

IT (Information Technology) innovations could prevent some of these errors. A few examples collaboratively developed by the Departments of Paediatrics & Adolescent Medicine and the Information Technology will be highlighted in this talk.

However, if fool-proof, idiot-proof, or Poka-yoke in Japanese term, means “mistake-proofing” or “inadvertent error prevention”, our medication delivery system in the NICUs and the HA hospitals is far from it. We need enhanced awareness, good habit formation, team work, frequent auditing and better working environment for the healthcare professional to achieve an error-free clinical pharmacy service.
Concurrent Session II: Precision Medicine / Personalized Medicine
Pharmacogenomics and the Use of Gene Testing to Predict Therapeutic Efficacy and Adverse Reactions

CHAN, Wing
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Around the globe, the use of personalized and precision medicine has become a growing trend. Substantial evidence from clinical studies showed that precision medicine improves patient care by maximizing therapeutic benefits and minimizing adverse drug reactions. The learning objectives of this lecture is to:

• Define pharmacogenomics, its clinical applications and its impact on the future of healthcare
• Discuss how pharmacogenomic-guided therapy reduces the incidence of adverse drug reactions and provides benefits to patients
• Describe the global and local trend in the implementation of pharmacogenomics into clinical practice
• Summarize clinical case studies demonstrating how pharmacogenomics is currently being utilized in the healthcare setting
• Demonstrate the contributions and the role of pharmacists in implementing personalized and precision medicine

Concurrent Session II: Precision Medicine / Personalized Medicine
Precision Medicine of Hyperthyroidism: The Future is Now

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Department of Pharmacology and Pharmacy
The University of Hong Kong
Hong Kong

Precision medicine is a relatively new term describing an emerging approach for disease treatment and prevention that takes into account individual variability in genes, environment, and lifestyle for each person. Since the announcement of precision medicine initiatives in the United States, many developed countries have also devoted to develop precision medicine as a revolution in medicine. Up to date, the development of precision medicine is still limited.

Precision medicine of hyperthyroidism is one of the few areas showing promising results using genetic profile to facilitate clinical management. Graves’ disease, the most common cause of hyperthyroidism, has a strong genetic background. Previous studies in China Consortium for the Genetics of Autoimmune Thyroid Disease have identified multiple genetic loci underlying the development of Graves’ disease, suggesting that genetics may play an important role in Graves’ disease management. There are several clinical issues related to hyperthyroidism management, i.e. recurrence, complication, and side effect of the antithyroid treatment; whereas studies have demonstrated that genetic markers could predict these events. For example, our previous genome-wide association studies identified genetic marker of thyrotoxic periodic paralysis and antithyroid drug induced agranulocytosis in Hong Kong Chinese. Notably the markers show a promising clinical value in predicting the incidence. In this seminar, the role of genetic marker in predicting hyperthyroidism and its related events will be discussed.
Concurrent Session II: Precision Medicine / Personalized Medicine
Molecular Testing in Diabetes – What, Why and How

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Diabetes is a multisystem disease due to complex interactions amongst multiple causes including but not limited to autoimmune and genetic factors, modified by age, gender and treatment to influence clinical outcomes spanning from full functionality to multiple morbidities. While autoimmune markers can be used to identify patients with or at risk of having type 1 diabetes, family-based linkage analysis, investigations of candidate genes and genome wide association studies have discovered rare and common genetic variants in type 2 diabetes, the majority of which are implicated in beta cell biology. Alongside, over 10 classes of anti-diabetic drugs including injectables have been developed calling for better disease classification and precise use of these drugs to maximize benefits and minimize harm. The phenotypic and genotypic heterogeneity in diabetes often leads to delayed or inappropriate drug usage, notably insulin. Using molecular markers to classify diabetes, especially in patients with young onset or atypical presentation, should help physicians and patients make prompt decision in selecting drugs based on aetiologies. Screening of relevant genetic markers in family members can also detect high risk subjects for lifestyle modification or early drug use to prevent onset of diabetes or preserve beta cell function. There are also genetic variants which can identify subjects at high risk for complications for intensified management to reduce morbidity and premature mortality. While ongoing research is needed to unravel the complexity of diabetes including clinical trials to provide the definitive evidence regarding the utility of these biomarkers, the practice of personalized medicine remains an art guided by evidence in evolution, clinical acumen and informed choices.

Concurrent Session III: IT / App
Objectives and Priorities for Adopting Medication-Use Technology

NEUENSCHWANDER, Mark
President
The Neuenschwander Company
USA

In this session we will briefly review numerous technologies available to hospitals for packaging, preparing, storing, retrieving, and administering medications. More attention will be given to general axioms which can hospitals in evaluating paradigms and products before adopting them. Advice will be offered for determining priorities and identifying best sequences for implementation. Finally insight will be offered for how to use medication-use technologies the right way — anticipating and identifying detrimental unintended consequences before and after they may arise.
Concurrent Session III: IT / App
藥師面臨科技時代的轉變 — 以App運用在藥學管理的經驗分享

項怡平
藥劑師部長
義聯集團義大醫院
台中

科技進步日新月異，隨著互聯網、物聯網的發達，成為藥師在藥物的管理及全民用藥安全也需藉由科技化的管理來達成目標。目前有許多的醫院，已經藉由E化的(CPOE)的管理，更生藥物的開方，如藥物交互作用、重複用藥、藥物與食物交互作用、化療藥物安全劑量、孕婦用藥提醒…等，經由資訊化的管理措施，大幅降低用藥疏失。目前在App發展上，更有服藥提醒、慢病領域、服藥紀錄、甚至醫院電子處方隨時下載的便捷性。

此次演講分享義大醫院藥劑部顯影劑藥物APP管理，如何防止顯影劑造成的腎臟傷害；及全方位優質之創新門診病人的電子個別化用藥指導照護服務，如何藉由電子照護進行跨團隊合作的模式。

Concurrent Session III: IT / App
分享經濟時代醫院藥學服務思考

王家偉
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北京市醫院管理局
北京

自2008年始，以UBER、滴滴為代表的分享經濟模式方興未艾，主要特點是社會公眾（個人、企業、政府）將閒置資源（閒錢、閒物、閒置時間）通過互聯網智能平台發布並取得收益（社會收益、經濟收益）；醫院藥學特別是門診藥學服務正在經歷被傳統醫藥商業公司、新興醫藥電子商務公司、現代物流公司取代的困境；在此背景下，藥學專業技術人員如何順應時代潮流，創新求卓越，充分利用互聯網平臺為社會公眾提供藥學專業服務是藥劑師應該思考和實踐的目標。
Invited Lectures

Concurrent Session IV: Pain Management
The Pearls of Pharmacotherapy in Palliative Care: Pain Management and Beyond

SAN, Cindy
Emergency Medicine Clinical Pharmacotherapeutic Specialist
St. Paul's Hospital
Canada

World Health Organization defines palliative care as an approach that improves the quality of life of people and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual. Palliative care acknowledges dying as a normal process, thus, neither tries to prolong or shorten life. A palliative diagnosis propels patients and families onto a pathway of uncertainty, marked by multiple losses, marginalized roles, and potentially debilitating symptoms. This presentation will provide an overview on the principles of pain management in palliative care. Additionally, it will highlight approaches in other symptom management, such as nausea and vomiting, and opioid induced constipation.

Concurrent Session IV: Pain Management
Mindfulness in Chronic Pain Management

WONG, Emma
Registered Clinical Psychologist
Hong Kong

Mindfulness is a systematic approach to paying attention, awareness that can be cultivated in the present moment non-judgmentally in the service of self-understanding, wisdom, and compassion (Kabat-Zinn, 2014). It is not only a kind of “therapy” to regain quality of life but it may also bring whole person and whole life transformation. The fundamental issue of people who have chronic pain, in particular, is Suffering. Suffering from pain brings unpleasant sensations, resistance and further suffering including mental, emotional and physical reactions. It is our reactions to pain brings more sufferings. Mindfulness helps to cultivate acceptance, soften the resistance and reduce further sufferings arising from pain by turning towards the experience, aware of what it actually is with compassion and openness. It may not be the pain itself being eliminated but the way relating to the moment’s pain experience changes. Attitudinal foundations of Mindfulness include non-judging, patience, beginner’s mind, trust, non-striving and letting go. Mindfulness helps to remember the being mode which often being ignored, that is, not to strive for a certain goal and no special state (e.g. no pain) is to be achieved. Just being with the bare experience, just the way things are. All in all, pain is inevitable but suffering is optional. Mindfulness helps to reduce sufferings in pain.
Concurrent Session IV: Pain Management
The Canadian Experience for Medical Assistance in Dying (MAID): The Wheels of Controversies Go Round and Round...

SAN, Cindy
Emergency Medicine Clinical Pharmacotherapeutic Specialist
St. Paul’s Hospital
Canada

According to the historical criminal code, it is a crime in Canada to assist another person in ending his/her own life. This criminal prohibition applied to circumstances where a physician or health professional provides or administers medication that intentionally brings about a patient’s death, at the request of the patient.

In the case of *Carter v. Canada*, the Supreme Court of Canada unanimously determined that an absolute prohibition on MAID is unconstitutional. The wheels are in motion for MAID in many Canadian provinces. Therefore, this presentation set out to distinguish the practice of palliative sedation, euthanasia and physician assisted dying, discuss the implications of *Carter v. Canada* on the practice of pharmacy and identify some key unanswered questions and debates from *Carter v. Canada*.

Concurrent Session VI: Innovative Medicine
Recent Advance in Nucleic Acid-based Therapeutics

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Chair
Department of Pharmaceutical Sciences
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USA

Nucleic acids such as oligonucleotides, siRNA, miRNA and genes have great potential in treating various severe and life-threatening genetic and acquired diseases. In spite of continued research, not much progress has been made in turning these nucleic acids into therapeutics. Poor stability and cellular uptake of these macromolecules remain considerable barriers to their efficient delivery which is paramount to a successful therapy. Successful cancer treatment remains a challenge due to the emergence of chemoresistance resulting in recurrence and metastatic spread. Most chemotherapeutic agents show only limited efficacy due to their inefficient delivery to tumor due to the activity of cancer stem cells (CSCs), which are regulated by miRNAs. We have synthesized several biodegradable copolymers for micellar delivery of anticancer drugs in combination with miRNA. We have identified several key miRNAs including miR-205 and miR-let7b among a series of dysregulated miRNAs from the CSCs isolated from chemoresistant cancer cells and human cancer tissues. This presentation will provide a comprehensive discussion on the formulation, delivery and in vivo efficacy of oligonucleotides, siRNA, miRNA and genes, with an emphasis on the need of right target, right sequence and right delivery system.
Concurrent Session VI: Innovative Medicine
Building Tissues from Scratch

CHAN, Barbara
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Hong Kong

Tissue engineering refers to the application of principles and methods of engineering and life sciences toward the development of biological substitutes to restore, maintain, or improve tissue functions. In the last few decades, advancement in stem cells, new biomaterials, bioreactors and other related technologies enabled the development of engineered tissue replacements.

In this talk, an overview on the past, present and future of tissue engineering will be given. Specifically, a few selected critical questions, technologies and applications that are critical to the success of tissue engineering will be discussed. Emphases will be given to the critical roles of stem cell development, scaffolding approaches and bioreactor technologies on tissue engineering. The current status of a few tissue engineered solutions including those for skin and cartilage injuries will be reviewed. A few enabling technologies including photochemical crosslinking and cell microencapsulation developed in the speaker's lab and their relevance to tissue engineering will be reviewed. Last but not the least, the tremendous challenges towards engineering complex tissues, which are tissues consisting of multiple types of tissue components and cell types, will be discussed, using cartilage injury as the example.

Concurrent Session VI: Innovative Medicine
Current Situation on the Regulation of Cell, Tissue and Gene Therapy

CHAN, Lot
Chief Pharmacist
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Cell, tissue or gene therapy products may have different nomenclatures in different countries. Nevertheless, most of these products are regulated as pharmaceutical products and/or medical devices around the globe. These products may have great potential in providing novel treatment for rare or difficult-to-treat diseases. On the other hand, their potential risks are also high while their therapeutic efficacies for many diseases are yet to be established.

Currently, there are about dozens of cell, tissue or gene therapy products registered in various countries. Since most of them are registered as medicine, pharmacists should know more about these products.

This presentation will provide an overview on the current regulation of cell, tissue and gene therapy products, what are the registered indications, products on the pipe-line, and discuss the role of pharmacists in the production, development and usage of these products.
Concurrent Session VII: Geriatrics

Deprescribing

JEFFERY, Sean
Clinical Professor
School of Pharmacy
University of Connecticut
USA

Medications are the most commonly used intervention for treating patients. As our societies age, more medications are being used to treat seniors with multiple chronic comorbidities. This can lead to overly complicated, costly and dangerous medication regimens. Polypharmacy remains a recognized problem with both prescriber and patient-related factors as barriers to deprescribing. Health professionals need effective strategies that address polypharmacy across a variety of care settings. This session will share strategies on how to manage polypharmacy, implement deprescribing protocols, and engage clinicians in reducing medication burden in at-risk seniors. Pharmacists need knowledge and skills in how to manage and prioritize medications to deprescribe and the competence to know how to deprescribe.

Concurrent Session VII: Geriatrics

Pharmacotherapy of Alzheimer’s Disease: Current and Future Trends

CHAN, Andrew
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Hong Kong

People with dementia have decline in cognitive ability of sufficient severity to interfere with social or occupational functioning. Alzheimer’s disease (AD) is the most common cause of dementia worldwide and its pathophysiology is complex. Despite the significant healthcare burden and economic cost of AD, to date only two classes of drugs have been approved for AD, namely the acetylcholinesterase inhibitors and the N-methyl-D-aspartate (NMDA) receptor antagonist. These act to control symptoms rather than alter the course of AD. Recent evidence suggests that the pathological changes associated with AD begin several years before clinical symptoms. Pharmacological treatment may be beneficial if it can be started in this pre-clinical stage. This presentation will discuss the latest research findings in this area.
Concurrent Session VII: Geriatrics

BEERS for Elderly: To START or To STOPP? How a Pharmacist should Review Medications for Older People?

CHEUNG, Kenneth
Pharmacist
United Christian Hospital
Hong Kong

Potentially inappropriate prescribing (PIP) is a recognised cause of adverse drug events in elderly. Various tools to address use of potentially inappropriate medications (PIMs) or potential prescription omissions (PPOs) have become available. Among which are the famous Beers Criteria, START (screening tool to alert doctors to the right treatment) and STOPP (screening tool of older persons' potentially inappropriate prescriptions) Criteria. Although the enlistment of PIMs or PPOs in the recent updates of these criteria has adopted an evidence-based approach, clinical application of these tools in optimising medication use in elderly is not without criticism. This primarily encompasses the argument on mere adoption of explicit criteria versus professional judgment or individualized patient care. Clinicians may also be challenged whether identifying and discontinuing PIMs with these tools could result in improved patient outcomes.

Apart from a brief overview on the 2015 AGS Beers Criteria and START/STOPP version 2, this workshop will discuss on literature comparing these tools. To allow fellow pharmacists to better understand the complexity of medication review for elderly, this workshop will include case illustrations on applying Beers and START/STOPP criteria in real-world geriatric pharmacy practice.

The following publications are pertinent to this workshop.


Concurrent Session VIII: Biologics / Biosimilars

Immunotherapy – the Latest Modality for Treating Cancers

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Abstract is not available
Biosimilars are a biological product highly similar to an already-approved biological product (reference biological product) by the regulatory agency such as the Korean Ministry of Food and Drug Safety (MFDS) or the US Food and Drug Administration (FDA). Follow-on biological products and subsequent-entry biological products are the other names to refer to biosimilars. Since biological products are grown in living organisms, and purified by biotechnology-driven manufacturing processes that are most likely to be different by different developers, biosimilars cannot be 100% identical to the reference product. Although all of the biosimilars are to be approved based on the evidence that these differences in manufacturing biosimilars should lead to no clinically meaningful differences in terms of safety and effectiveness from the reference product, post-approval changes and drifts in manufacturing can be significant such that there is divergence between biosimilars and the reference product. Interchangeability (substitution), extrapolation across indications, and naming, pharmacovigilance, and physician education are the other issues for biosimilars for any practicing clinician, which will be discussed in details during this presentation.

In this sharing session the nomenclature of biologics (particularly the monoclonal antibodies) will be discussed. After the discussion audience should be able to briefly understand the origin and the function of the monoclonal antibodies after a first glance at their names.
Increasing amount of health-care claim databases and electronic medical records has been frequently used in drug utilisation and clinical outcome research. However, the quality of observational studies using secondary databases varies; appropriate study design using suitable databases to address valid research questions is vital to ensure the validity and reliability of studies.

This presentation illustrates the characteristics and applicability of using claim-based data and electronic medical records for drug utilisation research via case studies selected from author's previous publications. Two studies described used the Taiwan National Health Insurance Research database to investigate the impacts of co-payment on medical resource use and the impacts of adherence to endocrine therapy on all-cause mortality of breast cancer women. Furthermore, two studies used the United Kingdom Clinical Practice Research Datalink to evaluate the effect of implementing a prescribing indicator, and opioid prescribing pattern in patients with chronic non-cancer pain.

Claim-based datasets and electronic medical records are collected by different methods and the data specifications are different. Technical issues, such as accessibility of databases, usability and reliability attribute to the quality of study. The capacity of linking data to other data sources to retrieve additional information is also beneficial for drug utilisation and outcome research. Data linkage methods need to be validated.

A number of health database exist worldwide for research with various characteristics, advantages and limitations. Many research methodologies and guidelines have been developed for retrospective data analysis and increasing publications of retrospective data analysis are available.

Concurrent Session IX: Practice Issues
如何創新和卓越領導藥房

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學科的關鍵是學術，學術的關鍵是創新，創新的關鍵是發現和提出科學問題。然而在中國，醫院藥學發展的最大的問題在於學科缺乏學術，學術缺乏創新，而歸根結底是缺少發現和提出科學問題的人文環境，致使醫院藥學學科發展滯後於臨床學科，甚至得不到社會及政府的公信度和認可度。如何擺脫這一困境，其關鍵就是打造可以激發創新的體制與文化，培養具有創新能力的藥學專業人才，如此才能將中國的醫院藥學工作推進快速發展的軌道。現以我們在醫院藥學學科建設中的自身感受和實踐經驗予以匯報，與同道共商學科的建設及人才的培養。
Invited Lectures

Concurrent Session IX: Practice Issues
The Evolving Roles of Community Pharmacists in Singapore

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With the number of senior citizens expected to double from 459,700 to 900,000 in 15 years, Singapore faces a rapidly ageing population – a group with increased risk of developing multiple chronic conditions and needing treatment with multiple medicines (polypharmacy). Lifestyle-related conditions such as diabetes, heart disease, obesity and cancers are also on the rise. Tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol increase the risk of these conditions. To address the nation’s escalating healthcare demands, the roles of community pharmacists are ever evolving and expanding in order to have a greater impact on patient care.

Ministry of Health (MOH) Singapore has unveiled the “Healthcare 2020 Masterplan” in 2012 which spells the measures to enhance accessibility, affordability and quality of healthcare to better meet the needs of Singaporeans. One of the key paradigm shifts is to move healthcare beyond the hospital into the community. Being the most accessible healthcare professional in the community, community pharmacists are well-poised to play a vital role under the National Pharmacy Strategy. Community pharmacists now look forward to providing a broader range of pharmacy services with the key objective of empowering patients in better managing their health – through education, optimisation of medication management, promotion of healthy living and disease prevention, in collaboration with healthcare providers, government and institutions.

Like never before, community pharmacy practice is undergoing a major transformation. No longer do pharmacists conform to the classic role of dispensing. The (re)defining of their roles is timely to meet the fast growing medical needs of Singaporeans.

Plenary Session: Pharmaceutical Care Services Model for the Community – Where and How Do we Begin on the Public Private Partnership (PPP) Journey

Most local pharmacists are rather dissatisfied with the prevailing dispensing service model in Hong Kong where the public sector, as the major service provider in the health care market, has dominated both the prescribing and dispensing processes. On the contrary, the number of prescriptions that require dispensing in the private sector remain extremely insignificant. Taking a closer look at the current situation, approximately 600 pharmacists are in the workforce to serve the public hospital system through delivering both the inpatient and outpatient services in addition to other administrative and miscellaneous duties. This implies that there are indeed less than 600 pharmacists responsible for handling the dispensing of over 55.2 millions drug items in HA in 2014/15 (ref: 2016 Audit Commission report No.67). On the other hand, there are also about 600 pharmacists working in the community sector who, frankly, are not even handling 1 thousandth of this number of prescriptions in the community.

The public-private imbalance in the use of pharmacists’ expertise is rather obvious in Hong Kong. Inevitably, the heavy prescription load in the public sector will jeopardize the quality of service delivered. According to the HA 2014 Patient Experience and Satisfaction Survey, Section 9 Q 53 – 58 highlighted the questions asked about Patients’ experience on medication related issues when leaving SOPCs. The responses for these questions reflect that the service quality in the public hospital system is suboptimal in terms of patients’ knowledge about the use of their medications, the awareness of the side effects, overall satisfaction, etc.

The time has come for us pharmacists to start brainstorming and discussing the application of Public Private Partnership (PPP) initiatives to pharmacy services in Hong Kong. The Hong Kong SAR Government is strongly advocating the introduction and adoption of various PPP initiatives to manage the public health services. This presents as a golden opportunity for pharmacists to propose alternative means to develop and deliver a future Dispensing Service Model for the Community.

To update audience on the latest PPP plan in progress, Dr Cheung W L, the Clinical Service Director in the Hospital Authority, has been invited to speak in this plenary session. Dr Cheung had spoken in the 2016 Hong Kong Pharmacy Conference about some successful examples of PPP in other areas of health care, including the Cataract surgery PPP initiative and the GOPC Diabetes patient referral initiative.

Following his presentation, Dr Cheung would be joined by the representatives of the Pharmaceutical Society of Hong Kong, the Society of Hospital Pharmacists of Hong Kong and the Practicing Pharmacist Association of Hong Kong to further exchange on how pharmacists from the community sector may incorporate themselves in the future service delivery. The practical and foreseeable goal is to kick start action plans such as infrastructure set up, system development, setting up of committees or working groups to arrive at any concrete project plan. With this plenary discussion, the channel for communication between the Hospital Authority and the private community sector shall also be strengthened. Audience from the floor are most welcome to join in the open discussion. To maximize the output to be generated within the limited time allocated, all discussion and comments should focus on the topic of Public Private Partnership.
**Ab32**

**Pharmacist Discharge Intervention Programme to Reduce Unplanned Hospital Use in Patients with Polypharmacy**

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**Objectives:**
1. To explore role of pharmacist in providing medication review and discharge counselling to patients with polypharmacy.
2. To reduce unplanned hospital visits through regimen optimization, patient empowerment and enhancing drug compliance.

**Method:** Pharmacist Discharge Intervention Programme was initiated in a sub-acute hospital targeting patients with polypharmacy. The programme included prescription review, compliance assessment, regimen counselling and empowering patients or caregivers on disease management. Unplanned hospital use 30 days post-discharge was analyzed as primary outcome in all subjects and subgroups of elderly, patients with or without participation in cardiac rehabilitation programme (CRP).

**Results:** In an 11-month period 226 patients planned discharge were recruited from a medical ward, with 99 patients assigned to counselling group and 127 to control group based on discharge time. Fifty-one drug-related problems were identified. Thirty-three were prescribing problems, physicians were contacted with recommendations acceptance rate of 64%. Apart from these a total of 18 drug-related problems regarding patient drug administration were identified, interventions were given directly to patients or caregivers. Reduced unplanned hospital visits was achieved in counselled group. Admissions via clinic and visits to accident and emergency (A&E) unit were significantly reduced in all counselled subjects, and subgroups of elderly patients or patients not participating CRP, but not patients in CRP. Based on the results, projected cost savings of HKD 151,976 per month contributed by reduced unplanned hospital visits could be achieved by assigning one pharmacist to conduct Pharmacist Discharge Intervention Programme for 1 month.

**Conclusion:** Pharmacist Discharge Intervention Programme reduced unplanned rehospitalization via clinic and visits to A&E unit, especially in elderly and patients not participating local CRP. The service identified drug-related problems with interventions given to physicians, patients and caregivers. Projected cost savings derived from the programme further justified cost-effectiveness of pharmacist discharge counselling to patients with polypharmacy.

**Ab40**

**Impact of Outreach Pharmacists on Drug Regimen and Alertness towards Fall Prevention in Community-dwelling Elderly in Hong Kong**

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(Both underlined are co-first authors.)

**Aims:** This study evaluated the effectiveness of a pharmacist-led intervention on reducing falls and inappropriate medication use. It also investigated the risk factors and prevalence of fall risk-increasing medications in the elderly population.

**Methods:** A nine-month interventional, multicentre, prospective, cohort study was conducted in 26 community centres and rural villages in Hong Kong. Subjects aged 65 or above were selected from CU CHAMPION Summer Outreach 2015, based on Morse Fall Risk Assessment Tools and Medication Fall Risk Score (MFRS). The high fall risk subjects were invited to attend two follow-up sessions. Multifactorial interventions included medication review, education, and dear doctor’s letters. The primary endpoint was the reduction in number of elderly who experienced falls after intervention.

**Results:** Among 1548 elderly subjects joining the summer outreach, 151 were screened as high fall risk subjects. 55 subjects attended both follow-up sessions. Upon intervention, the number of fallen subjects decreased by 12.7%, although insignificant (p = 0.229). However, significant improvements in fall knowledge quiz score (p < 0.001) and quality of life (p = 0.008) were observed. Cardiovascular and psychiatric medications (e.g. β-blockers, mirtazapine) were shown more prevalent in the high fall risk subjects. Female gender (OR 2.208, p < 0.001), physical inability (OR 2.074, p < 0.001), and MFRS (OR 1.054, p = 0.029) were found significantly associated with a higher probability of falls. Intervention through dear doctor’s letters achieved 65.2% and 100% acceptance on addition of vitamin D3 and/or calcium, and drug-related problems respectively.

**Conclusions:** Although the study failed to show a reduction on the average number of falls upon intervention by the pharmacy outreach service, it was found that some medications of the elderly, especially the high fall risk subjects, were on the Beers Criteria. The elderly were not aware that some medications might increase the risk of falls. This requires attention.
**Ab29**
The Impact of Pharmacy Intravenous Admixture Service (PIVAS) on Time, Cost and Nurses’ Satisfaction Associated with the Preparation of Intravenous Antimicrobial Therapy in Neonatal and Paediatric Populations

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**Objectives:** Pharmacy Intravenous Admixture Service (PIVAS) in Queen Elizabeth Hospital was implemented in 2Q12 to prepare ready-to-administer, individualised intravenous antimicrobial doses for NICU and SCBU, and was expanded to PICU in 1Q16. The objectives of this study were to determine the time saving and cost reduction arising from PIVAS, and evaluate the nurses’ level of satisfaction with PIVAS.

**Methods:** The time required to prepare intravenous doses by PIVAS and traditionally by nurses in PICU was recorded. Data were collected from 5 PIVAS sessions and 34 ward-based sessions. Personnel costs were determined by multiplying these time data by salary rates of staff involved. Inventory costs incurred in PIVAS and on wards over 3 months were estimated from PIVAS workload reports. The total cost (inventory & personnel costs) apportioned to each dose was therefore identified. A satisfaction survey was designed and distributed to nurses concerned to evaluate service performance, fulfilment of nurses’ expectations, and its impact on nurses’ self-efficacy in patient care.

**Results:** Compared to traditional ward-based preparation by nurses, PIVAS significantly reduced the preparation time required per dose (mean±S.D. time: 90.5±7.16 vs 208±63.9 seconds; P<0.001). For every 100 doses prepared, PIVAS would reduce the preparation time by 196 minutes. Total cost per dose in PIVAS was lower than that of traditional ward-based preparation ($13.71 vs $37.75). This could be translated into a cost reduction of $2,404 per 100 doses prepared. The survey response rates were 82.5% (n=113). On a 5-point scale, average ratings for service performance and fulfilment of nurses’ expectations were 3.52 and 3.85. Over 80% of nurses regard PIVAS as being conducive to their self-efficacy.

**Conclusions:** In conclusion, PIVAS was more efficient and economical than traditional ward-based preparation. Substantial time saving and cost reduction could be derived from PIVAS. Furthermore, nurses’ feedbacks were generally positive. A future service expansion would be beneficial.

**Ab42**
Drug Use Evaluation of Gentamicin in Hospital Setting: A Focus on Appropriateness of Prescribing and Monitoring

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**Aim/Objectives:** Gentamicin is commonly prescribed for the treatment of Gram-negative infections, because of its low cost and high bactericidal efficacy. However, with its narrow therapeutic index, ensuring appropriate prescribing and monitoring of gentamicin is vital for optimal therapeutic outcomes and minimal toxicity such as nephrotoxicity and ototoxicity. This study aims to evaluate the appropriateness of gentamicin use and monitoring in a hospital setting of Hong Kong.

**Methods:** A retrospective drug use evaluation (DUE) was conducted during a seven-month period at Queen Mary Hospital, Hong Kong. A total of 17 patients aged above 18 with inpatient gentamicin prescription were qualitatively analyzed. Exclusion criteria included pregnancy and gentamicin indications for valve replacement, endocarditis or cardiac disease for maternal care. The appropriateness of prescribing and monitoring was assessed under DUE criteria predefined by three clinical guidelines from the United States, Australia and Hong Kong, respectively.

**Results:** At least one category of inappropriate prescribing or monitoring was identified in 47.1 % of patients. 57.1 % of patients who were prescribed multiple gentamicin doses received multiple-daily dosing, when single daily dosing should have been used under DUE criteria. Among the six patients (35.3 %) who were prescribed gentamicin for more than 24 hours, 33.3 % had their serum creatinine levels monitored only once. In the ≥65 years category, initial under-gentamicin-dosing was more common. Gentamicin use was deemed to be unnecessary in 17.6 % of patients, due to a lack of appropriate indications under DUE criteria. Clinical nephrotoxicity and ototoxicity were not reported.

**Conclusions:** Inappropriate gentamicin prescribing and monitoring were identified in this DUE. Alert system and effective prescriber education are recommended to improve gentamicin use. Further local study with a larger sample size is warranted to investigate the impacts of dosage, course length and patient factors on gentamicin-associated toxicity.
**Ab24**

**Bleeding Risk of Warfarin, Dabigatran and Rivaroxaban for Stroke and Systemic Embolism Prophylaxis in Patients with Non-valvular Atrial Fibrillation in Princess Margaret Hospital**

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**Objectives:** The primary objective of this study was to compare the incidence of bleeding events in Chinese patients with non-valvular atrial fibrillation (NVAF) who required oral anticoagulant treatment. The secondary objective was to investigate the relationship between blood coagulation panel results and bleeding incidents.

**Methods:** In this retrospective observational study, data were collected from Chinese patients with NVAF who received warfarin, dabigatran or rivaroxaban in Princess Margaret Hospital for stroke and systemic embolism prophylaxis in 2014. Patient demographics, medication prescribing history, laboratory results were retrieved from the Electronic Patient Record. Consultation notes were reviewed to collect information on bleeding events, ischemic stroke and use of Traditional Chinese Medicines or herbal medicines.

**Results:** 912 patients were included in this study. The patient-years observed were 593.2, 120.9 and 26.5 for warfarin, dabigatran and rivaroxaban group respectively. No significant differences were found in the overall bleeding rates among three groups. Warfarin (relative risk (RR) 0.50; p=0.05) and dabigatran (RR 0.37; p=0.02) treatment were associated with lower non-major bleeding rate than rivaroxaban. In patients <75 years old, warfarin (RR 2.93; p=0.048) and rivaroxaban (RR 4.55; p=0.024) had higher bleeding rate than dabigatran. And a significant positive correlation was observed between activated partial thromboplastin time (aPTT) and the number of bleeding events in dabigatran group (Pearson Correlation coefficient=0.220; p=0.015).

**Conclusions:** No significant differences in overall bleeding rates between warfarin and new oral anticoagulants (NOACs) were observed in this study. However, rivaroxaban had higher incidence of minor bleeding than warfarin and dabigatran group. Comparing with the international clinical trials on NOACs, the risk of intracranial bleeding (ICH) and gastrointestinal bleeding (GIB) were higher in this study. This suggested that the local Chinese population may have higher bleeding risk of ICH and GIB. Frequent aPTT monitoring may have an impact in predicting and preventing NOACs related bleeding.

**Ab05**

**Retrospective Review on Lipid Management Subsequent to the Conversion of Rosuvastatin to Simvastatin or Atorvastatin**

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**Objectives:** In response to indication changes in Hospital Authority Drug Formulary in 2015, some patients were switched from rosuvastatin to atorvastatin or simvastatin. However, it was not clear whether lipid control could be maintained given the controversy in the equipotent doses of various statins.

**Methods:** This retrospective, observational study aimed to describe the differences in lipid control and drug cost with the conversion of rosuvastatin to atorvastatin and simvastatin.

**Results:** Ninety-three patients were included. There was a significant increase in the mean LDL-C level post-conversion (mean difference +0.34mmol/l, p<0.001). The mean LDL-C level was significantly increased in the sixty-two patients (66.7%) converted from rosuvastatin to atorvastatin at 1:2 dose ratio (mean difference +0.29mmol/l; p=0.006), but not in the ten patients (10.8%) converted to equipotent dose (mean difference -0.08mmol/l; p=0.702). Few side effects were reported. The projected annual drug cost reduced by around HKD 1,900/patient.

**Conclusions:** Patients converted from rosuvastatin to atorvastatin or simvastatin experienced increased LDL-C level post-conversion. The lipid control was not maintained in patients converted from rosuvastatin to atorvastatin at 1:2 dose ratio, which is probably a lower than equipotent statin dose. Larger studies are required to confirm the equipotent dose. Healthcare providers should recognize the potentially worsen outcome when converting rosuvastatin to atorvastatin conservatively at 1:2 dose ratio.
**Ab04**

**To Reduce Avoidable Readmission of Patients who are Categorized as High Risk by 30-Day Hospital Readmission Model at Medical Ward of United Christian Hospital through Medication Reconciliation and Discharge Counseling**

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**Introduction:** Medication reconciliation and discharge counseling cannot be conducted on every patient in hospitals. A risk prediction model may help pharmacists to concentrate their efforts and resources on high risk patients to reduce their readmission.

**Aim:** To validate the 30 days hospital readmission model in medical wards of United Christian Hospital and see whether providing medication reconciliation and discharge counseling can reduce readmission of patients who are classified as high risk by the model.

**Methods:** The study was divided into two parts. First part would be a retrospective study for validation of the model in local hospital. The second part was a prospective and nonrandomized cohorts study of reducing readmission of high risk patients by medication reconciliation and discharge counseling.

**Participants:** Patients discharged from medical wards in United Christian Hospital (UCH) on 1/6/2015 for the first part and from 07/3/2016 to 24/3/2016 for the second part.

**Result:** 24 discharges were followed by 30 day readmission among 211 discharges. 5.56% of the patients in the low risk group (estimated, 5.12%) with 14.55% of the patients in the intermediate risk group (estimated, 9.22%), and 20.83% in the high risk group readmitted (estimated, 18.51%) to the hospital within 30 days after discharge. By Cochran Mantel Haenszel test, the p-value was 0.283. Therefore, the observed proportion of patients requiring readmission in UCH were similar to the estimated proportion from the study of Donze, after using 30 days readmission model to classify patients into different risk groups. In the second part, among 38 patients who were classified as high risk and received medication reconciliation and discharge counseling, 5 of them (13.16%) were readmitted to the hospital within 30 days after discharge. The chi square test showed that the p-value was 0.352 which was not statically significant.

**Conclusion:** The 30 days readmission model can be utilized in medical ward of the local hospital to identify the high risk patients. Pharmacists can concentrate their efforts on them in order to reduce their readmission. Medication reconciliation and discharge counseling might not be effective enough to reduce their readmission. More studies are needed to evaluate the effectiveness of other interventions in reducing readmission.

**Ab06**

**Prescription to OTC Switch of Anti-allergy Medicines: A Systematic Review**

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**Objectives:** The objective is to review existing literature to assess the impacts of prescription to OTC switches of anti-allergy medicines.

**Methods:** A systematic literature review was performed to identify published studies in eight evidence-based English databases. If the objective is to evaluate the impact of switching, the paper will be included. There was no date or publication status restriction in eligibility. The literature will be excluded if no references were given or no full texts were available. Title, authors, publication year, geographic scope, sponsor, switched medicines, therapeutic area, objective, type of analysis, perspectives, impacts and limitations of relevant literatures were documented.

**Results:** From 15 August, 2016 to 15 September, 2016, 456 literatures were searched. 11 studies were included in this literature review. 6 studies (55%) were conducted in the USA. 10 studies (91%) focus on the economic benefits, which are the main factors to drive the switch. It can increase patient access, thus reduce the number of physician visits due to various allergic symptoms by 3 visits (range 1-5). It can eventually save more than US$6 million (range 3-9) annually and reduce public expenditure by 52% (range 38% - 66%) in 3-5 years after the switch. However, safety concerns also arise, such as misdiagnosis and misuse, which lead to masking of serious conditions or delaying treatment. Therefore, pharmacists, being the first point of contact in the community, have a crucial role to safeguard the use of OTC medicines. The development of high quality comprehensive models to quantify public health and budgetary impact may contribute to a more systematic assessment.

**Conclusion:** Overall, the benefits of switching prescription only medicines to OTC medicines for treating short-term self-limiting illnesses are likely to outweigh the risks, provided that systems are in place to ensure and monitor the safe and effective use of medicines.
**Ab07**

Optimizing Antibiotics Use in Medical Wards at Tseung Kwan O Hospital – A Multidisciplinary Approach

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**Introduction:** Despite the Antimicrobial Stewardship Program (ASP) in place in HA hospitals, increasing trend of antimicrobial use (especially carbapenems) has been observed. Inappropriate use of antibiotics can lead to adverse events, toxicity, complications, hospital-acquired infections, and the emergence of antimicrobial resistant organisms, which in turn can increase burden and cost to the healthcare system. In view of this, new strategies are implemented to promote appropriate use of antimicrobial agents.

**Objectives:** To promote appropriate use of intravenous (IV) antibiotics, especially broad spectrum antibiotics, in Medical wards at Tseung Kwan O Hospital by various approaches.

**Methodology:** All IV antibiotics ordered through In-Patient Medication Order Entry (IPMOE) are screened for optimal dosage by pharmacists, and interventions are recorded. Mandatory documentation of dose, indication and duration is required for all IV antibiotic orders, to facilitate review by other doctors. Prompt review of the antibiotic orders upon return of microbiology culture results was encouraged, and appropriateness of antibiotic usage was assessed by clinical microbiologist from Department of Pathology.

**Results:** 70 dosing interventions (7.3%, n=957) had been made by pharmacists during October-November 2014, which has doubled when compared to July-August 2014 (3%, n=993); 63 (90%, n=70) of the recommendations were accepted by the prescribers. Inappropriateness of broad spectrum antibiotic use has reduced by 3.1% when comparing January-May 2015 to January-May 2014 (2.4%, n=619 versus 5.5%, n=273).

Broad spectrum antibiotic usage in TKOH has increased slightly by 5.8% when comparing January-June 2014 to January-June 2015 (65.85 versus 69.7DDD/1000BDO); while there was an upsurge of 26.8% in HA overall usage (83.06 versus 105.38DDD/1000BDO).

**Conclusion:** Multidisciplinary team had shown great effort in reducing inappropriate antibiotics use. New ASP strategies can facilitate medical staff to promptly review cases and assist decision making. Also, pharmacists can make great contributions to the selection of appropriate dosing and ensure patient safety.

**Ab08**

Association between Drug Exposure and Fall-related Admissions in Older Community Dwellers: A Case-Control Study in Hong Kong

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**Objective:** To elucidate the association between fall-related admissions and use of fall-risk increasing drugs (FRIDs) in community-dwelling elderly.

**Methods:** Community-dwellers aged 65 years or above admitting for fall and related injuries to two acute geriatric units at United Christian Hospital from October 2014 to January 2015 were retrieved for a fall registry. Each case was matched to one control of age, gender, history of fall and number of medications admitted without fall or related injuries within the same period. Association between FRID exposure and fall was evaluated by adjusted odds ratios (ORs) using multivariate logistic regression.

**Results:** Analysis was conducted on 113 patients and 113 controls. All FRIDs of interest, including psychotropics, anxiolytics, alpha-1 blockers, diuretics, digoxin, opioids and non-benzodiazepine hypnotics were not associated with fall-related admissions. Use of three or more central nervous system (CNS)-active drugs as suggested by the American Geriatric Society 2015 Beers Criteria was also not associated with fall. However, diabetes mellitus (p = 0.001) and liver diseases (p = 0.030) were positively correlated with fall in the univariate analysis. Multiple logistic regression analysis further confirmed the association between diabetes mellitus and fall (OR = 2.897, 95% CI = 1.473-5.698, p = 0.002).

**Conclusion:** Although exposure to pre-specified FRIDs was not associated with fall-related admission in community-dwelling elderly, diabetes mellitus was shown to be a predictive risk factor for fall-related admissions in this population. Comprehensive medication review by pharmacist in community-dwelling diabetic elderly could potentially minimise fall-related admissions.
Ab09

Development, Validation and Application of an Inhaler Technique Competency Assessment Framework in Senior Dispensers and Dispensers in a Local Hospital

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Objectives: This project aims (1) to develop and validate an inhaler technique competency assessment framework for Metered-dose inhaler (MDI), MDI + Aerochamber, Accuhaler, Turbuhaler, Handihaler, Soft Mist inhaler, Breezhaler and Ellipta inhaler; (2) to develop a training program on inhaler technique education; and (3) to assess the effectiveness of an educational workshop in improving and maintaining inhaler technique.

Methods: A competency assessment framework for inhaler technique was developed based on literature review and validated by 3 Board Certified Pharmacotherapy Specialist pharmacists and 2 academic pharmacists from the University of Hong Kong. For each inhaler device, essential steps which determine optimal drug delivery were defined. All participants were assessed on both verbal and physical inhaler technique skills at baseline. They then attended a training workshop which consisted of a 30-minute video demonstration and a 90-minute practice session. Participants were assessed immediately and 1-month post-workshop. Participants were re-assessed until passing, defined as obtaining ≥95% of total score without meeting any failing criteria.

Results: All participants (N=12) failed at baseline [MDI: 55.20±11.8, MDI+Aerochamber: 65.83±9.24, Accuhaler: 54.17±15.00, Turbuhaler: 36.77±14.27, Handihaler: 63.14±8.49, Soft Mist inhaler: 16.40±16.32, Breezhaler: 70.54±9.72, Ellipta inhaler: 42.27±20.52]. After training, participants’ inhaler technique was significantly improved [MDI: 99.31±1.03, MDI+Aerochamber: 98.33±2.07, Accuhaler: 95.83±3.41, Turbuhaler: 97.99±2.18, Handihaler: 99.68±0.71, Soft Mist inhaler: 98.92±1.82, Breezhaler: 99.72±0.61, Ellipta inhaler: 100.00±0.00, p<0.01 for all pairs]. Nevertheless, not all participants could pass the immediate post-workshop assessment the first time. Re-assessments were required for all except Breezhaler and Ellipta inhaler. The assessment scores did not significantly deteriorate after 1-month time.

Conclusions: A validated inhaler technique competency assessment framework has been developed. Suboptimal inhaler technique was prevalent among dispenser-grade staff. A training workshop was effective in enhancing staff’s inhaler technique. It is expected that both patient care and the professional development of dispensers could be greatly enhanced.

Ab10

Key Stakeholders’ Perspectives on Pharmacists’ Role and Responsibilities in Complementary Medicines: The Australian Story

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Objectives: The purpose of this study was to explore the perceptions and opinions of pharmacists and 7 other key stakeholder leaders’ about pharmacists’ role and responsibilities in complementary medicines.

Methods: Semi-structured key informant interviews were conducted with 2 practicing pharmacists, 1 pharmacy owner, 1 key representative of a pharmacist professional organization, 1 key representative of a consumer advocacy group, 1 key representative of a doctor professional organization, 1 key representative from a complementary medicine practitioner professional organization , 1 dean from a well-known registered pharmacy school, 2 senior staff from the regulatory authority and 1 key representative of the complementary medicine industry in Australia.

Results: There was a general consensus among all participants that pharmacists should play a role in the area of complementary medicines. However, participants’ perception about the range of complementary medicines relevant to pharmacy practice and the level of professional care expected from pharmacists varied. At the least, pharmacists were expected to take responsibility for the complementary medicines sold or recommended in the pharmacy and provided evidence-based advice to assist consumers in making informed decisions. To the most, anything including complementary medicines that interferes with the positive clinical outcome of conventional medicines is potentially pharmacist’s responsibilities and pharmacists should provide pharmaceutical care about complementary medicines in the same way they do about OTC pharmaceuticals.

Conclusion: This study provides an overview of pharmacists’ possible role and responsibilities in complementary medicines based on the views from a broad range of key stakeholders. While pharmacists should take the initiative to establish this extended role, general agreement among key stakeholders about how pharmacists should be involved is crucial for supporting pharmacists to integrate complementary medicines into their duty of care.
Ab12
Development of Drug Prepacking Competency Assessment Framework in Our Lady of Maryknoll Hospital

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Objective: To develop a drug prepacking competency assessment framework through conduction of a trial assessment on pharmacy staff. The framework aims at facilitating future staff training.

Method: Assessment checklists were designed based on Head Office and local drug prepacking protocols. A trial competency assessment was performed. A pharmacist was appointed as an assessor to evaluate the staff’s performance. Modifications were made on the trial assessment checklists to establish an official competency assessment framework.

Results: The trial assessment was conducted from May to Jul 2016. Fifteen dispensers and two supporting staff were enrolled. Among the assessments performed, full compliance was attained for essential steps in drug prepacking, including label generation, pre-checking, prepacking, reprinting labels, and storage and filling of pre-packed drugs. An average compliance rate of 95.2% was achieved in final checking. Identified practice deviation was rectified.

An official competency assessment framework was subsequently established. Major aspects of the drug prepacking are set as domains for assessment purpose. The elements describe generally the activities in a domain. Under elements, performance criteria show the expected performance in key areas. Evidence examples are further listed to provide ‘cues’ for the assessor to judge the assessment results.

Different modules suitable for different scopes of duty in drug prepacking are established by grouping different domains. The drug prepacking competency assessment framework provides a stepwise approach for staff training through completing module(s) appropriate to corresponding scopes of duty. The framework helps identify deficits in staff’s practice such that training can be strengthened accordingly.

Conclusion: Satisfactory compliance was revealed in the trial assessment. A drug prepacking competency assessment framework was set up to provide a stepwise training for OLMH pharmacy staff to ensure the quality and safety of the drug prepacking process.

Ab13
Retrospective Utilization Review of Dabigatran and Rivaroxaban in Patients with Atrial Fibrillation

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Objectives: Use of novel oral anticoagulants (NOACs) based on evidence-based recommendations is vital to strike the balance between stroke risk and bleeding risk. This study aimed to promote the optimal use of NOACs by reviewing prescriptions and identifying problems in real-life practice.

Methods: A retrospective review was conducted in a hospital setting using electronic patient record. Patients who were prescribed dabigatran or rivaroxaban from Jan 1, 2014 to Dec 31, 2014 for stroke prevention in atrial fibrillation were included for analysis of renal dosage adjustment, drug-drug interactions, transition of anticoagulants, and incidence rates of thromboembolism and bleeding events.

Results: In this study, 85 patients on dabigatran and 94 patients on rivaroxaban were included. Three patients on dabigatran (3.5%) and 50 patients on rivaroxaban (53.2%) required renal dosage adjustment. Among these, one patient on dabigatran and 20 patients on rivaroxaban were prescribed adjusted dose in accordance with international guidelines. Five drug-drug interactions (2.79%) were identified which involved concomitant use with carbamazepine or phenytoin. Switching approaches were documented in 12 out of 45 transitions of anticoagulants. Of which, four transitions were found to adhere to recommendations. Eleven thromboembolic events (6.6% per patient year) occurred in eight patients were found in dabigatran group, of whom four had documented compliance problems or had withheld the drug for planned procedure. Only one thromboembolic event was found in rivaroxaban group. Rates of any bleeding events were 10.8% per patient year for dabigatran and 17.7% per patient year for rivaroxaban, which were comparable to international clinical trials results.

Conclusions: This study compared local clinical practice with evidence-based recommendations. To promote safe and effective use of NOACs, various approaches can be considered including provision of clinical decision support and development of drug reference table. Pharmacist may also collaborate with doctors to promote appropriate use of NOACs.
Ab14
Implementation and Evaluation of a Pilot Pharmacist-led Vancomycin Therapeutic Drug Monitoring Service in Queen Elizabeth Hospital

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Objectives: Pharmacokinetic properties of vancomycin warrant individualized dosing for better treatment efficacy, improved patient safety and prevention of drug resistance. This study aims to investigate whether the pilot pharmacist-led vancomycin therapeutic drug monitoring (TDM) could optimize vancomycin dosage and monitoring in MRSA infection.

Methods: This was a retrospective cohort study. Adult patients in selected medical and orthopedic wards newly initiated with intravenous vancomycin for suspected or culture-proven MRSA infections and with at least one interpretable vancomycin trough (VANT) were included. Patient with duration of follow up less than 5 days or receiving renal replacement therapy were excluded. Historical control (CTRL) from Sep 2014 to Jan 2015 was compared to those treated under the pharmacist-led TDM program from Sep 2015 to Jan 2016 (INTN). Pharmacists were responsible to review initial vancomycin dosage, recommend VANT monitoring time and monitor VANT values. Primary outcome was time to first VANT target achievement (days). Key secondary outcomes included rate of patients achieved target VANT, rate of VANTs drawn before estimated steady state and rate of VANTs taken out of acceptable time range (± 2 hours from preset administration time).

Results: A total of 106 patients, 52 in INTN and 54 in CTRL, were included. Survival analysis showed the mean time to first VANT target achievement was shorter in INTN than CTRL (12.12 days vs 33.8 days; HR=4.873; P<0.001). VANT target achievement rate was higher in INTN (42.3% vs 16.7%; P=0.005; NNT=4). Lower rates of VANTs measured before estimated steady state were observed in INTN group (10.3% vs 18.4%; RR=0.56; P=0.072). Rate of VANTs taken out of acceptable time frame was lower in INTN (19.8% vs 30.7%; RR=0.64; P=0.052).

Conclusions: The implementation of pharmacist-led vancomycin TDM service significantly reduced time to target VANT, increased VANT target achievement rate and improved monitoring practice in target wards.

Reference:

Ab15
A Study on Medication Reconciliation Service on Discharge Patients using a Computerized System, Inpatient Medication Order Entry (IPMOE) System

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Objectives: Medication errors commonly occur during transition of care. Pharmacist-led medication reconciliation (MedRec) service is an effective strategy to prevent medication errors. In this study, a computerized system, inpatient medication order entry (IPMOE) system, was used to facilitate the MedRec process at discharge. It was to evaluate the clinical impact of the service with the aid of IPMOE system.

Methods: A prospective, randomized-controlled pilot study was conducted in medical wards in the Tsuen Kwan O Hospital. Patients with > five medications were enrolled and randomly assigned to either standard care or MedRec group. In the MedRec group, pharmacists reviewed patients’ past medication history via electronic patient record and medication administration record, interviewed patients and reconciled all medications taken by the patients to identify any discrepancies and drug-related problems (DRPs). Interventions were made if necessary. Discrepancies identified were classified according to physician’s prescribing intention and types of discrepancies. Severity of potential harm to patients was assessed by 3 clinical pharmacists independently based on the National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) Index. Cases with ≥1 unintentional discrepancy and 30-day emergency department visit (AED) or unplanned admission rate were analyzed.

Results: Eight-two patients, aged 76.4±11.17 years, were recruited, with forty-three subjects randomized to the MedRec group. 142 discrepancies were identified in the MedRec group. Eleven percent (n=17) of which were unintentional discrepancies or DRPs. The number of affected cases was significantly more than control group (MedRec:30.2% vs control:10.3%, p-value=0.026). The most common type of discrepancies was drug omission. Seventy-six percent of unintentional discrepancies or DRPs were found to be moderate to major harm. No difference in 30-day unplanned AED visit and hospitalization between the groups was determined.

Conclusions: Pharmacist-led MedRec service is effective to prevent medication errors and improve medication safety for discharge patients. The implementation of IPMOE simplifies the MedRec process by providing an organized and clear medication list. It reduces pharmacist’s time spent on reconciling medications.
Ab16
Drug Utilisation Evaluation of Vitamin B12 Supplements for Macrocytic Anaemia in Elderly Patients: A 3-Year Retrospective Review

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Objectives: Macrocytic anaemia due to vitamin B12 deficiency is prevalent in the elderly, and may cause unfavourable consequences on the quality of life in the older adults. Traditionally, vitamin B12 supplements were given parentally to replenish the body stores. Oral cobalamin in high doses has been suggested to be as effective as parenteral supplementation in such patients. This study evaluated the appropriateness of vitamin B12 supplements for macrocytic anaemia in geriatric patients.

Methods: Medical records for geriatric patients using oral mecobalamin and parenteral cyanocobalamin during 2013 – 2015 at United Christian Hospital were reviewed retrospectively. The primary outcome was the percentage of patients receiving a complete laboratory workup on macrocytic anaemia. The distribution of patients on oral and parenteral vitamin B12 supplements, percentage of haematological response to vitamin B12 supplements, and changes in medications causing vitamin B12 deficiency, such as metformin and gastric acid suppressants, in the study population were also reported as secondary outcomes.

Results: A total of 52 cases were eligible for analysis. Upon review, 37 out of 52 patients (71.2%) received a complete laboratory workup on macrocytic anaemia. There were 43 (82.7%) cases using parenteral cyanocobalamin. Switching of route of vitamin B12 supplementation was observed in six cases. After initiation of vitamin B12 supplements, 37 patients (71.2%) returned normocytic in 5.7 ± 8.4 months; 17 patients (32.7%) had their haemoglobin normalised in 6.8 ± 5.0 months. There were 31 patients (59.6%) with concomitant metformin and/or gastric acid suppressants. Changes in metformin doses or gastric acid suppressants were documented in 14 cases during normalisation of their haematological indices.

Conclusions: The majority of included cases received a complete laboratory workup on macrocytic anaemia. Parenteral cyanocobalamin continued to be the mainstay of vitamin B12 replacement in the study population.

Ab17
Pharmacist Clinical Service in an Orthopedic Rehabilitation Ward in Tuen Mun Hospital

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Objectives: Tuen Mun Hospital has started a pilot study of pharmacist clinical service in two orthopedic rehabilitation wards in early 2016. This study aims to evaluate the extent and impact of pharmacists’ intervention, to evaluate the clinical significance of drug related problems (DRPs) identified and to evaluate doctor’s acceptance rate of interventions made by pharmacist.

Methods: A prospective study design was applied. DRPs identified were classified according to the PCNE Classification V6.2. Three independent clinical pharmacists were responsible for evaluating the clinical significance of individual DRPs. Potential risk factors leading to the occurrence of a DRP were also analyzed.

Results: A total of 144 patients were included in this study. DRPs were identified in 44 (30.6%) patients. The most common DRPs were categorized as “Treatment effectiveness” (44.1%) and “Adverse reactions” (39%). Common causes of DRPs were “Drug selection” (39%), “Logistics” (15.3%) and “Dose selection” (13.6%). There were 109 interventions performed at prescriber, patient/caretaker and drug levels. The acceptance rate was found to be 93.9%. Majority (93.2%) of DRPs were somewhat significant (Outcome rarely lead to harm) to very significant (Outcome may lead to severe result). Eleven cases were rated as very significant (18.6%). Significant relationships were found between occurrence of a DRP and total medications of 9 or more (p=0.029) or regular medications of 5 or more (p=0.033). No statistical relationship between DRP occurrence and gender or age was found.

Conclusions: The pharmacist intervention was shown to be beneficial to patients as pharmacist was able to identify drug related problems to optimize drug therapy as a whole. With limited resources, the target patients should be those with more than 5 regular medication or 9 total medications.
Ab18
An Evaluation on Effectiveness of Pantoprazole, Famotidine and Antacids in Patients Prescribed with Short-term NSAIDs

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Aim: To compare the effectiveness of proton pump inhibitors, H2 antagonist and antacids in preventing the gastrointestinal symptoms of short-term NSAIDs.

Methods: An observational study which recruited patients prescribed with 1-3 weeks of NSAIDs with gastro-protective agents in Ngau Tau Kok Government Clinic. 2 NSAIDs (ibuprofen, naproxen) and 3 gastro-protective agents (pantoprazole, famotidine and triact) were examined. Patients who were on long-term NSAIDs and gastro-protective agents (i.e. daily users) or patients with H. pylori infection, gastric cancer, kidney impairment, allergy or pregnancy were excluded. Patients were asked to complete a questionnaire, in which gastrointestinal symptom rating scale (GSRS) was used during dispensing of NSAIDs with/without gastro-protective agents. This was followed up by phone calls which were made 1 week after dispensing and the same questions (GSRS) were asked.

Outcome measurements: The mean difference in GSRS scores on a scale of 1-7 before and 1 week after taking NSAID with/without gastro-protective agents was used as an endpoint. The control measurement was the difference in GSRS score without gastro-protective agents. The intervention measurement was the difference in GSRS score with pantoprazole, famotidine or triact.

Results: 51 patients were analyzed and GSRS scores significantly increased after 1 week on NSAIDs in triact group (mean increase GSRS score of 0.3 ± 0.4; p=0.04) and in control group without gastro-protective agents (mean increase of GSRS score of 1.7 ± 0.7; p=0.0001). No significant differences in GSRS scores before and after NSAIDs were noted in pantoprazole and famotidine groups.

Conclusions: NSAIDs caused gastrointestinal problems as a significantly greater increase in GSRS score was noted without gastro-protective agents. Also, antacids were statistically not as effective as proton pump inhibitors and H2 antagonists in relieving dyspeptic symptoms associated with short-term NSAIDs and both proton pump inhibitors and H2 antagonists were similar in efficacy in relieving NSAID-induced gastrointestinal symptoms.

Ab19
Evaluation of a Pharmacist-driven Inpatient Discharge counseling Pilot service for High-risk Patients: Impact on 30-day Unplanned readmission rates

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Objective: Hospital readmission is a key undesirable outcome of healthcare systems. Pharmacists may improve patient outcomes by implementing a discharge program. This study aimed to investigate the impact of pharmacist-driven inpatient discharge counseling pilot service on reducing 30-day unplanned hospital readmission and 30-day emergency department visit in patients with high-risk disease states.

Methods: Design. Randomized, controlled trial of 63 participants were recruited. Subjects. Patients aged over 18 who were admitted to medical wards (E4 and N3) with primary diagnosis of atrial fibrillation, chronic obstructive pulmonary disease, diabetes mellitus, heart failure, or ischemic heart disease and were taking more than or equal to five chronic medications. Intervention. Participants received admission medication reconciliation, discharge counseling and 72 hours post-discharge follow-up telephone call. Outcomes. 30-day unplanned hospital readmission rate and 30-day emergency department visit rate were compared among study groups. Other outcomes are number and nature of interventions (using Pharmaceutical Care Network Europe (PCNE) drug related problems (DRP) Registration Form V6.2), and patient satisfaction at the end of study.

Results: The hazard ratio of intervention group for 30-day unplanned all-cause readmission and 30-day emergency department visit rate was (0.950, CI 0.255-3.540; p=0.94). The hazard ratio of intervention group for 30-day unplanned same-cause readmission was (0.386, CI 0.040-3.711; p=0.410). Two drug related problems were identified during medication reconciliation. Among the intervened patients, 83.3% of participants found that the discharge counseling service has improved their understanding about the medication. 94.4% of participants were satisfied or very satisfied with the discharge counseling service and telephone follow-up.

Conclusions: The project results of the current study demonstrated a numerical reduction in the 30-day unplanned readmission rate and 30-day emergency department visit rate. This counseling service is associated with a positive effect on medication understanding and patient satisfaction.
Ab20
Drug Utilization Evaluation of Vancomycin among Paediatric Patients after Implementation of Antibiotic Stewardship Programme

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Objectives: This retrospective drug utilization evaluation aims to evaluate the impact of Antibiotic Stewardship Programme (ASP) on the appropriateness of intravenous (IV) vancomycin use among paediatric patients; to identify the scope of pharmacist’s intervention and reflect physician’s acceptance rate; and to identify areas of improvement in the current practices of the ASP in Tuen Mun Hospital.

Methods: Patients under 18 years old who were under the care of the Department of Paediatrics & Adolescent Medicine and received IV vancomycin during 2015 were recruited. The primary outcome was the appropriateness of use of IV vancomycin in post-ASP period; while secondary outcome includes incidence of adverse events, types and number of pharmacist’s intervention & acceptance rate, IV vancomycin use in paediatric and neonatal wards across ASP period; and utilization pattern of antibiotic order form by prescribers. The results would be compared with findings from the previous DUE.

Results: Rate of appropriateness of vancomycin prescribing in terms of regimen, indication and duration were found to be 96%, 95% and 87.8% respectively. Two cases of Red Man Syndrome but no nephrotoxicity were identified. Vancomycin usage in paediatric and neonatal patients was found to rise after the implementation of ASP. Acceptance rate of pharmacist’s intervention was over 80%.

Conclusions: Although the implementation of ASP did not bring a statistically significant improvement in appropriateness, prescribing of IV vancomycin was standardized to prevent unnecessary and prolonged use. The introduction of antibiotic order form could also act as an educational tool. Pharmacist’s role in promoting appropriate use of vancomycin was appreciated. Continuous improvement in the ASP and ongoing monitoring of vancomycin usage are encouraged to sustain the appropriate and safe use of vancomycin.

Ab21
Evaluation of Clinical Pharmacy Services in Children Cancer Centre and Bone Marrow Transplant Unit at Prince of Wales Hospital

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Objectives: The study aims to describe the clinical pharmacy services provided to Children Cancer Centre (CCC) and Bone Marrow Transplant Unit (BMT) at Prince of Wales Hospital since January 2015; to assess the clinical significance of pharmacists’ interventions; and to evaluate the users’ satisfaction.

Methods: A retrospective, descriptive statistical analysis was performed on the data collected from April to December 2015. The clinical significance of the pharmacists’ interventions from a randomly selected month was rated by a physician and three pharmacists. Users’ satisfaction was assessed using a questionnaire.

Results: During the period of April 2015 to December 2015, 155 patients were under the care of clinical pharmacists at CCC&BMT. A total of 481 chemotherapy prescriptions were verified; 75 drug information enquiries were handled; 314 interventions were documented, of which 70 involved chemotherapy agents; 227 involved non-chemotherapy agents; 11 involved both types of agents; and 6 involved no drugs. The problems identified in the interventions were related to treatment effectiveness (58%), adverse drug reaction (ADR) (25%), treatment cost (14%) and others (3%). Acceptance rate was observed to be higher in chemotherapy-related interventions (97.5% vs. 86.1%, p=0.033). Overall physician’s acceptance rate of interventions was 88.9%. In clinical significance assessment of all 53 interventions documented in November 2015, the overall mean rank of interventions was 2.17 ± 0.37 (1=Extremely Significant; 6=Adverse Significant). The response rate of users’ satisfaction survey was 86%. Participants included nurses (63%) and physicians (37%) from CCC&BMT. Overall mean score of the 12 aspects of clinical pharmacy services was 1.85 ± 0.15 (1=Excellent; 5=Poor).

Conclusions: The acceptance and value of clinical pharmacy services have been confirmed in this study. With this foundation, further analysis and discussion should be carried out to set the bearing for future development of clinical pharmacy services in the paediatric oncology setting.
Ab22
Retrospective Evaluation of a Rechallenge Protocol in Patients Experiencing Hypersensitivity Reactions with Prior Chemotherapy in a Tertiary Hospital

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Objectives: The study evaluated the effectiveness and safety of the standardized rechallenge protocol used in Tuen Mun Hospital in rechallenging patients with previous hypersensitivity reactions (HSRs) of grade 1 to 2 to paclitaxel, docetaxel, carboplatin and oxaliplatin.

Methods: The protocol consisted of intensification of premedication and lengthening of infusion time. A retrospective review of electronic medical records was conducted. Patients who attempted rechallenge with paclitaxel, docetaxel, carboplatin and oxaliplatin under the protocol during the time period from August 2014 to December 2015 were included.

Results: Forty-six rechallenge cases were included (12 paclitaxel, 15 docetaxel, 5 carboplatin and 15 oxaliplatin cases). The first rechallenge cycle was completed successfully in 43/46 patients (93.5%) and 42/46 patients (91.3%) were HSR-free throughout the treatment course under the rechallenge protocol. A total of 133/137 cycles (97.1%) were completed successfully under the protocol. Among patients who continued chemotherapy until disease progression or treatment completion, a median of 3 additional cycles (range: 1 to 9 cycles) were administered under the protocol. The 4 cases of recurrent HSRs responded well to infusion interruption and symptomatic treatment and all 4 patients were discharged uneventfully. Further rechallenge was not performed.

Conclusion: A combined strategy of intensification of premedication and lengthening of infusion duration is effective and probably safe in rechallenging patients with previous grade 1 to 2 HSR to paclitaxel, docetaxel, carboplatin and oxaliplatin.

Ab23
The Impact of Pharmacist-Managed Medication Therapy Management (MTM) Service on Phosphate Homeostasis in Patients undergoing Haemodialysis

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Objectives: To determine the effect of pharmacists’ intervention on serum phosphate level in patients undergoing haemodialysis.

Methods: A 6-month randomized controlled trial was conducted in 70 patients. The intervention group received two interventions at 3 month intervals, including medication review and education on serum phosphate control, whereas the control group received usual care.

Results: After the first intervention at the first month, there was a significant reduction in mean serum phosphate level within the intervention group from 2.13 to 1.95 mmol/L (p=0.024) and also a significant reduction when compared with control group (p=0.008). Although the effect of second intervention at the third month did not lead to a significant drop in phosphate level, there was still a gradual decreasing trend post-second intervention from 2.11 to 2.07 mmol/L (p=0.676). Throughout the six months, there was a close to significant continuous effect of the intervention (p=0.054).

Conclusions: The significant reduction in mean serum phosphate level after the first intervention and the gradual downward trend after the second intervention showed that pharmacists may be part of a multidisciplinary team by providing pharmaceutical care for this group of patients in the management of their complicated medication regimen via education and identification of potential drug related problems. A study with a longer duration and larger study size would be required to determine if the effect could be sustainable in the long term.
Ab25
Patient Education to Enhance Medication Safety and Improve Patient Compliance

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Objectives: HKU-SZ has adopted good practices from the West and has implemented an advanced clinical pharmacy system. Patient education is one of our quality improvement tools to enhance medication safety, improve patient compliance and optimisation of drugs use. Since 2013, a team of clinical pharmacists has prepared over 50 types of patient leaflets, 2 comprehensive booklets for warfarin and diabetic patients, and 9 sets of videos to show patients to use different medication-aided devices. In addition, the clinical pharmacists provide patient counselling service in the smoking cessation clinic, diabetic clinic and paediatric respiratory clinic, deliver educational talks to patients in the cardiac rehabilitation centre, to the antenatal patients on “safety of drugs use in pregnancy” and to the diabetic patients on Endocrine ward on insulin usage. On regular basis, the pharmacists provide teaching sessions to patients in the out-patient forum on effective use of insulin, drugs use in hepatitis B, medication safety in children, use of inhalation devices, and drugs use for smoking cessation. Furthermore, the clinical pharmacists provide patient counselling on the wards as per stroke clinical pathway, and for patients who are on warfarin using the comprehensive warfarin booklet and the patient leaflet.

The objectives of this study are to find out (i) the number of patients who have used the patient education services provided by the clinical pharmacists and (ii) the patients’ satisfactory level after receiving patient counselling or patient education services from our pharmacists.

Methods:
1. Measure quantitatively the number of patients who received the patient counselling or patient education services.
2. Ask the patients to complete questionnaires to monitor their satisfactory level.
3. Review the feedback received from the patients via email.
4. The impact of patient leaflet on the medication incidents.

Results:
1. From Jan 2015 to June, 2016, the number of patients who received the above patient education and patient counselling services are 399. The number of questionnaires that we received are 318 which all showed 100% satisfaction regarding our services.
2. One cardiac patient sent an email to the hospital to praise the clinical pharmacy service after he attended the educational talk in the cardiac rehabilitation centre.
3. One cardiac patient detected a medication incident relating to warfarin dosage after reading the patient leaflet prepared by our clinical pharmacist.

Conclusions: By receiving feedback and understanding the needs of our patients, the clinical pharmacy team endeavours to improve the quality of clinical pharmacy services, with an aim to improve the safety and efficacy of drugs use for our patients.

Ab26
A Pilot Study of Pharmacist-led Medication Management and Compliance Clinic (MMCC) at the Outpatient Setting of a Hong Kong Public Hospital

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Background: Profound studies have shown the importance of detecting drug-related problems and performing interventions by pharmacists in related to enhance therapeutic outcomes in ambulatory care settings. Hospitalization and subsequent discharge, follow-ups in clinic or any transitions of care often involve discontinuity of care and multiple changes in medication regimens. Patient education may not be adequate upon the transitions and thus lead to a number of drug-related problems and avoidable health care utilization.

Objectives: The pilot study aims to detect potential drug-related problems at the outpatient setting of a local hospital by establishing a pharmacist-led Medication Management and Compliance Clinic (MMCC), thus enhancing patients’ medication compliance and reducing admission number and rate.

Methods: A prospective non-randomized cohort study was conducted from November 2015 till January 2016. Patients who have been taking ≥5 chronic medications and fulfilling either one of the following criteria would be recruited, namely (i) Change of medication regimen at the present follow up; (ii) Dosage form requiring special technique for administration or (iii) ; Having potential non-compliance problems. Detailed pharmacist counseling sessions were provided to individuals and a standardized data collection form was designed for recording general assessment, including the compliance score as the primary outcome. Other pharmacist interventions were also performed such as disease knowledge education, discussion on individualized therapeutic goals, etc. The secondary outcomes include the comparisons of all-cause admission rates and numbers 30,60 and 90 days pre- and post- intervention. Paired t-test and McNemar test were used for analyzing continuous data and non-parametrical data respectively; others were interpreted as descriptive data.

Results: A total of 137 subjects (mean age 72 ±11) were enrolled. More than half (63.5%) participants were recruited due to requiring the use of special technique of administration and 52.3% of the cases were found having poor administration technique. However, the average compliance score ratio obtained was high, 0.8 ± 0.2(Maximum score=1). Moreover, result of showed a statistically significant reduction in admission rate 30 days after MMCC service by 2.19% (p=0.001) compared with the previous 30 days. In general, a trend of reduction in patients’ admission rate was observed after the MMCC service.

Conclusion: Pharmacist-led MMCC service has a significant role in reduction of admission rate. However, statistically significant reduction in admission rate could merely be obtained between 30 days pre- and post-intervention. The results implied more frequent pharmacist interventions might be needed for a more sustainable effect. This pilot study is served as a reference for further long-term investigation on the MMCC service and the pharmacists’ role in reduction of admission rate.
Ab27
Impact of Switching from Brand Crestor® to Generic Atorvastatin on Lipid, Side Effect Profile and Cost Implication in General Outpatient Setting

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Introduction: Generic Atorvastatin became available on 1st March 2015 in Hospital Authority. All patients who were taking brand Crestor® had to switch to generic Atorvastatin at equivalent doses. The drug expenditure was expected to be lowered to a great extent. However, patients usually have negative perception towards generic drugs. They may doubt the efficacy and safety of generic Atorvastatin. Our study aims to investigate the changes in lipid profile and adverse effect profile after switching from brand Crestor® to generic Atorvastatin. We would also compute the cost before and after the drug switch so as to work out the amount saved from this new policy.

Method: Eligible patients were recruited from two general out-patient clinics in New Territories East cluster. They had to switch from brand Crestor® to generic Atorvastatin at equivalent doses within the period 1st April 2015 to 30th September 2015. Their lipid profile and adverse effect profile were compared using paired t test. The medication cost was calculated in terms of annual cost in the last financial year.

Result: 46 eligible patients were identified. No significant differences were found in all lipid parameters i.e. TG (p=0.589), TC (p=0.698), HDL-C (p=0.265) and LDL-C (p=0.557). No significant changes were observed in liver enzyme ALT (p=0.847) as well. The drug cost from these 46 eligible patients was reduced by 84%.

Conclusion: Our study was able to provide encouraging results that the drug expenditure was greatly diminished with the efficacy and safety of the statins retained.

Ab28
To Increase Number of Full Medicine Reconciliation Completed within 30 minutes by 50% for Patients with 2 or More Co-morbidities

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Objectives: Medication reconciliation (MR) a multidisciplinary effort to obtain the most up to date list of medications. Pharmacists spend much time carrying MR and there were duplicate patient and caregiver interviews and physical medication checks prior to pharmacist performing the task. This compromised patient review time and caused patient’s dissatisfaction. There was no platform of communication for any useful findings from healthcare professionals. The aim of this project is to streamline the MR process for a more time-efficient results.

Methods:
1. Baseline time data was collected to verify root causes to the problem. Doctors, nurses and ward pharmacists will key in time spent performing MR as per routine workflow.
2. Brainstorming session to identify causes leading to increased time spent on MR.
3. 3 rounds of multi-voting including non-weighted ½ rule and weighted 1/3 rule to narrow down the root causes.
4. Causes with 0 votes were omitted which resulted in 19 causes identified.
5. Pareto Rule was used to further filter out the top 20% vital causes; 8 vital causes were identified.
6. During implementation phase, a structured form with details required to be filled in by respective healthcare professionals and time recorded to perform the tasks.

Results:
Before Implementation
We recorded time to perform MRs for each HCP for patients fulfilling the inclusion criteria. Average time taken for these full MRs was 45 minutes, with longest time taken 120 minutes.

Post Implementation
Preliminary post-implementation results showed all full MRs performed within 1 hour with 55% MRs completed within average of 30minutes.

Conclusion: Subjective feedbacks from doctors and nurses were positive as they were reminded by the questions in the form to ask relevant questions that were often missed out. Pharmacists were able to perform physical medications check with lesser delays and can focus questioning on compliance issues rather than sorting out logistical matters.
Ab30
Strategies for Enhancing Quality & Safety in Inpatient Medication Order Entry - A Review on Pharmacist Interventions in an Acute Hospital

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Objectives: Inpatient Medication Order Entry (IPMOE) is a new electronic drug ordering system developed by Hospital Authority. Although benefits from electronic prescribing have been established, risks of novel errors induced from the new system were also identified in overseas studies. Analysis of pharmacist interventions can help to recognize the underlying reasons for medication errors and to suggest potential mitigating strategies to further enhance medication safety and maximize the benefit of IPMOE.

Methods: All orders intervened by pharmacists who need to withhold dispensing by activating “Pending” function in main pharmacy of Prince of Wales Hospital between 1 June and 31 August 2015 were collected. The reasons for pending were categorized into 8 groups. Subclass analysis for most frequently captured reasons was conducted.

Results: There were 2236 orders marked with pending out of 145383 new orders verified by pharmacists. The three most common reasons were “Duplication of Therapy” (n=560, 25%), “Wrong Preparation” (n=479, 21.4%), and “Wrong Dosage” (n=398, 17.8%). There were also some unconventional prescribing errors, for example, route-preparation mismatch.

Conclusions: Improvement strategies were identified and proposed which included system enhancements, i.e. modifications alert prompting and system workflow, as well as regular monitoring and education. Feedback and communications are essential for building a safer and more effective IPMOE system.

Ab31
The Impact of Structured Pharmacist Counseling on Adherence and Knowledge of Patients on Oral Chemotherapy

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Objective: To evaluate the impact of structured pharmacist counseling on the adherence, knowledge and pharmaceutical care of patients newly initiated with oral chemotherapy.

Methods: This study is a prospective, single-center randomized control trial. Subjects in the intervention group received structured counseling sessions provided by pharmacist before each treatment cycle. The control group received standard single pharmacist counseling session before the first treatment cycle. A modified version of Morisky Medication Adherence Scales – 4 (MMAS-4) was used to evaluate the adherence of subjects to their oral chemotherapy. Any positive answer to the four questions in modified MMAS-4 was considered as non-adherence. Furthermore, urgent phone in pharmacist consultation service was offered to all subjects if needed.

Results: Ninety-eight patients were included into the study. Three months after the initiation of oral chemotherapy, the non-adherence rate of intervention group and control group were found to be 8.2% and 38.8%, respectively (p=0.018). A total of 68 calls were received via the urgent phone in pharmacist consultation service and 31.0% of subjects were referred to doctors for further management. The total number of visits to Accident and Emergency Department was 16 in the control group and 8 in the intervention group (p=0.015). Regarding patient’s knowledge on drug treatment, the percentage of subjects possessing knowledge on vomited dose management (intervention group 71.4% vs control group 6.1%, p<0.0001) and missed dose management (intervention group 59.2% vs control group 18.4%, p<0.0001) was found to be significantly improved with the intervention.

Conclusion: Structured pharmacist counseling service provided to patients newly initiated with oral chemotherapy could significantly improve their drug adherence and knowledge. The urgent phone in pharmacist consultation service was useful to identify and refer patients who require immediate attention to their conditions to doctors in a timely manner.

Keywords: structured pharmacist counseling, urgent phone in pharmacist consultation service, adherence, oral chemotherapy, pharmacist, counseling
Ab33
The Application of 2012 American Geriatrics Society Beers Criteria in a Hong Kong Hospital

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Objective: This study aimed to reduce the use of PIM in the elderly using 2012 American Geriatrics Society Beers Criteria as a screening tool to perform on-ward pharmacist's interventions. The change in PIM use at discharge, and the effect on 28-day and 3-month re-admission in the elderly were studied.

Method: Randomization to control and intervention groups was performed on 242 selected patients admitted to Yan Chai Hospital from November 2015 to May 2016. Patient recruitment, documentation of background information, screening for PIM’s, and interventions were performed on two designated medical wards by pharmacists. Statistical analyses were performed on the number of PIM's and patients with PIM's. 28-day and 3-month re-admissions between the two groups were analyzed.

Results: There was no statistically significant difference in number of PIM's (61 vs 48, p=0.177) and patients discharged with PIM's (50 vs 39, p=0.143) between control group and intervention group. By comparing the use of PIM during hospital stay and at discharge, a statistically significant reduction was found in intervention group (66 vs 48, p=0.008) but not in control group (60 vs 61, p=0.694). The number of patients re-admitted at 28 days and 3 months were 36 vs 35, p=0.888, and 58 vs 48, p=0.195 respectively in control and intervention groups. The number of re-admissions at 28 days and 3 months were 46 vs 40, p=0.763, and 112 vs 96, p=0.378 respectively in control and intervention groups.

Conclusions: On-ward pharmacist screening with recommendation was an effective way to reduce PIM use in geriatric patients. This approach could be utilized to reduce adverse drug events in the elderly in the future.

Ab35
Hepsin-Targeted Ligands for Prostate Cancer Imaging and Therapy

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Objectives: Prostate cancer (PCa) is the most common cancer and the second leading cause of cancer death in men in USA. Prostate-specific antigen (PSA) testing in the blood, the most popular detection method of PCa, has a limitation because of PSA testing is not specific for PCa and does not provide anatomic information of metastasis. Therefore, there is an urgent dire to explore new biomarkers for early and precise detection of PCa metastasis. We aimed to identify new molecules to detect the metastasis of PCa more effectively by targeting two cell surface biomarkers such as hepsin and prostate-specific membrane antigen (PSMA).

Methods: Novel hepsin inhibitors and heterobivalent ligands were designed and synthesized by combining solid phase of peptide synthesis and solution phase chemical reaction. In vitro inhibitory activities of the synthesized compounds were evaluated by using fluorescence-based assays. In vivo optical imaging studies of the heterobivalent ligand was performed with PC3-xenografted mice.

Results: Most of amidine-functionalized compounds exhibited moderate inhibitory activities against hepsin with IC50 values from 5.9 to 70 µM. Based on the structure-activity relationship (SAR) studies of amidine-derived analogs, a heterobivalent ligand which were intended to target both hepsin and PSMA was synthesized and then conjugated with an optical dye SulfoCy7. In vitro cell uptake and preliminary in vivo optical imaging studies showed moderately selective binding and retention in both PSMA/hepsin high-expressing PC3/ML-PSMA-HPN cells as compared with low-expressing PC3/ML cells. In addition, Leu-Arg dipeptides substituted with ketothiazole or ketobenzothiazole exhibited strong in vitro inhibitory activities against hepsin with Ki values in the nanomolar range.

Conclusions: We have successfully identified novel hepsin inhibitors which have a potential to be used as lead compounds for the development of hepsin-based PCa diagnosis and treatment. Heterobivalent ligands targeting both hepsin and PSMA proved to be an alternative for imaging metastatic PCa.
Ab36
Safety and Efficacy of High-Potency Statin & Ultra-Low LDL in Chinese Patients with Established Cardiovascular Disease: Practice Impact of the New Cholesterol Guidelines

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Objectives: This study investigated the safety and efficacy of different statin potencies and different low-density lipoprotein cholesterol (LDL) goal attainments for the secondary prevention of acute coronary syndrome (ACS) in Chinese population.

Methods: A historical cohort study was conducted to review medical profiles of 357 ACS patients of Prince of Wales Hospital with an index date from 1 August 2010 to 13 November 2014. Efficacy outcomes include percentage LDL reduction, target lesion revascularization and ACS-related A&E readmission. Composite safety outcome include elevated creatine kinase, muscle symptoms, liver function test derangement and impaired glycemic control.

Results: 357 ACS patients were included. Low-, moderate- and high-intensity statins achieved 24.9% (95% CI: 18.8% to 31%), 35.5% (95% CI: 32.2% to 38.8%), 56% (95% CI: 48.1% to 63.9%) LDL reduction respectively after adjustment. Using low- and high-intensity statins is less likely and more likely than moderate-intensity statins to achieve the treatment goal of ≥50% LDL reduction respectively (OR: 0.212, 95% CI: 0.09 to 0.498; OR: 9.437, 95% CI: 4.028 to 22.107) (p < 0.0001; P < 0.0001). High-intensity statins are more likely than moderate-intensity statins to result in impaired fasting blood glucose and HbA1c (OR: 2.495, 95% CI: 1.048 to 5.94; OR: 2.805, 95% CI: 1.143 to 6.883) (p = 0.039; p = 0.024). Statin intensity and LDL goal attainment have no significant effects on the incidence and time-to-event of the efficacy outcomes (p > 0.05).

Conclusions: High-intensity statins result in greater LDL reduction and more adverse effects when compared to statins of lower intensity. Statin intensity and LDL goal attainment have insignificant effects on the incidence and time-to-event of the efficacy outcomes.

Ab37
Treatment Outcomes and Associated Factors in Patients Hospitalized for Influenza Infection in Hong Kong: Influenza Season 2014/2015

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Aims: To describe the clinical and economic outcomes of hospitalized influenza infection treatment and identify factors associated with the outcomes.

Methods: A retrospective, observational cohort study on adult inpatients with laboratory-confirmed influenza infection in Prince of Wales Hospital from December 2014 to March 2015 and from June 2015 to August 2015 was conducted. Treatment outcomes including influenza-related length of hospital stay (LOS), cost of treatment, intensive care unit (ICU) admission and death were described. Outcome predictors were analyzed using binary logistic regression.

Results: A total of 116 patients were randomly selected among 1,100 laboratory-confirmed influenza infection cases. The medians of LOS and treatment cost were 5 (IQR 3-7) days and $38,719 (IQR $30,300-$52,569) respectively. There were 2 (1.7%) cases with ICU admission and 3 (2.6%) influenza-related death. Age ≥65 years (OR 4.299; 95% CI 1.221-15.134; p=0.023), chronic renal disease (OR 3.369; 95% CI 1.022-11.107; p=0.046), respiratory complications (OR 4.066; 95% CI 1.758-9.406; p=0.001) and ICU admission (OR 12.873; 95% CI 2.538-65.300; p=0.002) were associated with long LOS. Age ≥65 years (OR 3.911; 95% CI 1.161-13.183; p=0.028), chronic renal disease (OR 5.635; 95% CI 2.317-13.702; p<0.001) and respiratory complications (OR 5.635; 95% CI 2.317-13.702; p<0.001) were also associated with high treatment cost. All ICU patients had high treatment cost. To analyze factors for ICU admission, 22 more ICU cases were investigated. Male sex (OR 13.444; 95% CI 2.401-75.280; p=0.003) and respiratory complications (OR 47.147; 95% CI 7.127-311.910; p<0.001) increased the risk of ICU admission. Initiation of antiviral within 7 days after onset (OR 0.009; 95% CI 0.001-0.161; p=0.001) reduced the risk of ICU admission.

Conclusions: Age ≥65 years, male sex, chronic renal disease, respiratory complications and ICU admission are the risk factors for poor treatment outcomes, and initiation of antiviral with 7 days after onset reduces the risk of ICU admission.
Ab38
Impact of Community Pharmacy Outreach on Elderly Atrial Fibrillation Patients in Hong Kong

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Objectives: To estimate the prevalence and risk factors of Atrial Fibrillation (AF) in Hong Kong elderly population, and evaluate the effects of pharmacy outreach service on AF knowledge and managements in Hong Kong elderly patients.

Methods: Summer outreach programme 2015 was initiated to recruit subjects aged 65 or above from 26 elderly centers in Hong Kong. Screening of AF was done using handheld device to estimate the prevalence of AF. After combining with 2013 and 2014 data, the demographics of AF and non-AF participants were compared to identify risk factors. The baseline AF knowledge, risk factors control, chronic medications and adherences of AF subjects were recorded in summer. Education sessions and referral letters for anticoagulant initiation were provided in first follow up. The impacts of above interventions were then evaluated in second follow up by reassessing the AF knowledge, blood pressure and blood glucose readings, anticoagulant use and medication adherence.

Results: 147 out of 2767 subjects were detected with AF. The prevalence of AF in Hong Kong elderly population was 5.3%. Ages over 85, male gender, and hypertension were found to be possible risk factors of AF development (OR = 2.544, 1.649 and 1.550). The mean percentage of correct items in AF knowledge quiz improved from 16.1% to 37.6% after intervention (p<0.001). The mean score of Morisky 8-item medication adherence scale dropped from 1.96 to 1.23 (p =0.008). There were no significant changes in proportion of subjects at goal for blood pressure and blood glucose after interventions (p = 1.000 and 0.804). No significant increase in anticoagulant utilization was observed (p=0.125).

Conclusions: The prevalence of AF was similar with previous researches in other countries, with age, male gender and hypertension as risk factors. The pharmacy outreach service had significant impacts on AF knowledge and medication adherence of AF elderly patients.

Ab39
Warfarin Management and Oral Anticoagulation Knowledge Evaluation in Hong Kong

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Objectives: This project aimed to investigate the warfarin control of patients in Hong Kong. It also evaluated INR recommendation that provides better clinical and economic outcomes, and factors affect time-in-therapeutic range (TTR) and outcomes of the patients.

Methods: A ten-month observational study was conducted in Prince of Wales Hospital. Patients who were above 40 and took warfarin for at least one year, from 1st January, 2010 to 31st August, 2015 were enrolled. Their TTRs calculated from Caucasian and Japanese INR recommendations were assessed. Electronic Patient Records of these patients were reviewed as the retrospective part of the study. The age, gender, comorbidities, other medications used and INR check-up were recorded. Their clinical outcomes and economic outcomes were evaluated. Patients were interviewed by phone to complete an Oral Anticoagulation Knowledge (OAK) test which was developed to assess their knowledge towards warfarin.

Results: 258 subjects were recruited. 24 subjects (9.30%) were considered to have ideal TTR and 174 subjects (67.4%) were interviewed. Most of them were males (51.4%) and had atrial fibrillation (49.0%). The mean TTR of all patients was 40.0% ±17%. Patients with ideal TTR had significantly fewer clinical complications and lower healthcare costs related to warfarin. There is no significant difference in predicting clinical outcomes and economic outcomes between TTRs using different INR goal. Only prosthetic heart valve replacement (p<0.001) and use of aspirin (p=0.005) predicted non-ideal TTR. The mean score of OAK test in this population was 51.2%. Only 24 patients (13.8%) answered 75% questions or above correctly.

Conclusions: There was no significant difference found between Caucasian and Japanese INR recommendations. The study revealed that the anticoagulation control was suboptimal. Also, patients had limited knowledge towards warfarin therapy. Pharmacists shall expand their roles in counselling and provide more comprehensive education.
**Ab41**

**Developing Community Pharmacy in Hong Kong: The Public Perception of the Role of Community Pharmacists in Hong Kong**

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**Aim/ Objectives:** Driven by the growing emphasis on “pharmaceutical care”, the roles of community pharmacists had been shifting from a drug-centered basis, to a more clinical and patient-centered approach. This study aims to investigate the public’s perception of the role of community pharmacists in Hong Kong, the sources of such perceptions, and their satisfaction of utilizing services provided by community pharmacists.

**Methods:** A voluntary and anonymous questionnaire-based cross-sectional study was done in the University Health Service of the University of Hong Kong. The responses regarding perceptions were summarized with factor analysis, while the associations between the perceptions, sources of perceptions, and demographic were assessed. The responses regarding satisfaction and desired services were reported in a descriptive manner.

**Results:** A total of 417 questionnaires were completed. Four perceived roles of community pharmacists were identified. Participants had the strongest perception towards the dispenser role, followed by the therapy provider role, medical therapy manager role, and lastly, the health promoter role. The inadequate coverage of pharmacists by the mass media, local education syllabus, and health promotion programs were associated with the public’s weaker perception of the newer patient-centered roles. Besides, longer service hours, and the provision of obesity management by community pharmacists were identified as extended services desired by the public.

**Conclusions:** The public’s perception of the extended roles of community pharmacists are weaker than that for the traditional role. While steps should be taken to increase the public awareness of the evolving roles of community pharmacists, the findings may help to explore the directions for future education and promotion to attain a more comprehensive recognition of the evolving roles of community pharmacists by the public. Future studies of this kind will help to keep up with the changing view and needs of the public, and the landscape of community pharmacists’ evolving roles.

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**Ab43**

**Self-perceived Antiepileptic Medication Adherence of Adult Patients with Epilepsy in Hong Kong: A Cross Sectional Study**

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**Aim/ Objective:** The objectives of this study were (i.) to evaluate the self-perceived antiepileptic drug (AED) adherence of adult patients with epilepsy in Hong Kong, and (ii.) to identify factors associated with antiepileptic drug adherence.

**Methods:** A cross-sectional study was carried out in Queen Mary Hospital in Hong Kong from September 2015 to June 2016. A set of questionnaire was utilised to collect patient’s demographic information, drug-taking behaviours and AED regimens. The Morisky Medication Adherence Scale 8-item was used to evaluate drug adherence. The reasons of non-adherence and incidences of adverse drug reactions were collected.

**Results:** Of 100 patients recruited, 26%, 52% and 22% of patients were classified as high, medium and low adherence respectively. Seventy-four percent patients with low-to-medium adherence were classifi ed as non-adherence. Forgetfulness (82.4%) was the most common cause of non-adherence. Drug adherence was statistically associated with patient’s cognitive functions, number of specialty clinics attended and daily dosing frequency. Patient’s age, gender, comorbidity, carer, use of dose administration aid such as pill-box, number of AED in the regimen, number of other regular medications, occurrence of adverse drug reaction, total number of pills taken, and nutritional supplement did not show significant association with AED adherences. Valproate had the highest number of adverse drug reaction (18 incidences). Tiredness (76.5%) was the most common complaint.

**Conclusion:** The overall adherence of adult patients with epilepsy in Hong Kong was at medium level. Simplifying patient’s follow-up schedule and daily dosing frequency may help improve AED adherence. Interestingly, while forgetfulness was a common cause of non-adherence, dose administration aid failed to show a positive association with AED adherence. Other means of reminder may be needed to actively alert patients to take their AEDs. Further studies were recommended to identify approaches to improve AED adherence in local population.
Ab44
Preferences and Willingness to Pay for Oral Anticoagulants in Lower-Income General Patients in Hong Kong

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Aim/Objectives: The importance of stroke prevention in patients with atrial fibrillation is emerging in clinical and public health perspectives. Patients with under-treatment of atrial fibrillation may benefit from new oral anticoagulants, but economic factor may limit their choices of therapy. This study aimed to elicit lower-income general patients’ preferences for attributes of oral anticoagulant therapy and estimate their willingness-to-pay pattern. The influence of socio-demographic and medical factors on willingness-to-pay pattern was also examined.

Methods: A discrete choice experiment was conducted in Queen Mary Hospital. Participants chose their most preferred treatment option in each scenario. Descriptive analyses were performed.

Results: 89 lower-income general patients completed the questionnaire. More important attributes included bleeding, stroke, heart attack, death risks and monitoring, while antidote, dose adjustment and cost was less important. 58% of patients were willing to pay HKD$600 or more per month for anticoagulants in more than 2 scenarios. No significant association was found between willingness-to-pay pattern and patients’ factors.

Conclusions: Lower-income patients preferred treatment with better major clinical outcomes. Out-of-pocket cost was relatively less important, and more than half of the patients were willing to pay the monthly cost of new oral anticoagulants.

Ab45
Borneol as a Transbuccal Permeation Enhancer

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Aim/Objectives: Borneol, a traditional Chinese medicine ingredient, is a monoterpen. Studies have reported enhanced transmucosal permeation by borneol. Being traditionally used in sublingual formulations, borneol is potentially a transbuccal permeation enhancer. This study aimed to investigate the effect of borneol on transbuccal permeability of caffeine, a model drug, ex vivo.

Methods: An Ussing chamber was adopted in the permeability experiment. The system consisted of a donor chamber, a receptor chamber, and an isolated buccal tissue from domestic pigs mounted between two chambers. The cumulative amount of caffeine permeated through the buccal tissue was assayed using high-pressure liquid chromatography. The steady flux, as a measure of caffeine transbuccal permeability, was thereby calculated. The two-sample t-test was used for comparing the flux values.

Results: In the presence of 20 µg/mL borneol, the mean caffeine flux (mean ± standard deviation) was 1.18 ± 1.02 µg/cm²/h (n = 14), and 1.61 ± 0.54 µg/cm²/h for the normal saline control (n = 14). No significant difference in the caffeine flux values was observed compared to the control (p > 0.05).

Conclusions: At a concentration of 20 µg/mL, borneol did not increase the transbuccal permeability of caffeine. The study was limited by the small sample size with a single concentration of borneol investigated. Further studies using higher concentrations of borneol in an aqueous vehicle will be useful in exploring the potential of it as a transbuccal permeation enhancer.