201 Bleeding-related hospital admissions and 30-day readmissions with dabigatran versus warfarin in patients with nonvalvular atrial fibrillation

Ms Wallis CY Lau[1], Dr Xue Li[1], Prof Ian CK Wong[1,2], Dr Esther W Chan[1]
[1]Centre for Safe Medication Practice and Research, Department of Pharmacology and Pharmacy, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong, [2]Research Department of Practice and Policy, UCL School of Pharmacy, London, United Kingdom, United Kingdom

Objectives: To compare the incidence of bleeding-related hospital admissions and 30-day re-admissions with dabigatran versus warfarin in patients with nonvalvular atrial fibrillation (NVAF).
Methods: Retrospective cohort study using a population-wide database managed by the Hong Kong Hospital Authority. Patients newly diagnosed with NVAF from 2010 through 2014 and prescribed dabigatran or warfarin were 1:1 matched by propensity score. The incidence rate of hospital admission with bleeding (a composite of gastrointestinal bleeding, intracranial hemorrhage, and bleeding at other sites) was assessed by zero-inflated negative binomial regression. Among patients who were continuously prescribed with their initial anticoagulants upon discharge, we assessed the risk of 30-day re-admission with bleeding using a Cox proportional hazard regression model, with adjustment for length of stay and type of bleeding in the initial bleeding episode.
Results: Preliminary results indicated that among the 51946 patients with NVAF, 8309 users of dabigatran or warfarin were identified, with 5160 patients matched by propensity score. Of these, 151 (5.9%) dabigatran users and 172 (6.7%) warfarin users were hospitalized with bleeding during follow-up. The incidence of first hospitalized bleeding did not differ significantly between groups (incidence rate ratio[IRR]: 0.92; 95% confidence interval[CI]: 0.66-1.28). Cox regression analysis indicated that dabigatran use was associated with a higher risk of 30-day re-admission with bleeding over warfarin (adjusted hazard ratio [HR]: 2.87; 95%CI: 1.10-7.43). The difference became statistically non-significant when the observation period was extended to 60 days of discharge (HR: 1.89; 95%CI: 0.89-4.04).
Conclusions: When compared to warfarin, dabigatran was associated with a comparable incidence of hospital admission but a higher risk of 30-day re-admission with respect to bleeding. Given that dabigatran achieves full anticoagulation more quickly than warfarin, close early monitoring of patients initiated on dabigatran following hospital discharge for bleeding is warranted.

202 'Real-world' hemorrhagic rates for antithrombotics using a self-controlled case series design

Dr Prasad Nishtala[1], Dr Te-Yuan Chyou
[1]University of Otago, Dunedin, New Zealand, [2]University of Otago, Duendin, New Zealand

Background: Population-level evidence for the safety of using antithrombotics in older people within the multi-morbidity are limited.
Objectives: The overarching objective of this study was to examine the gastrointestinal (GI) bleeding risks associated with antiplatelets, anticoagulants either as monotherapy, dual antiplatelet therapy (DAPT) or triple therapy (TT) under the context of confounding due to multi-morbidity.
Methods: SCCS design and Poisson regression analyses were used for this investigation. We identified 3378 individuals aged 65 and above, who had been diagnosed for the first time with GI-bleeding event, between 01/01/2005 and 31/12/2014, without any previous event of GI-bleeding for at least 12 months. SCCS design was used to control for time-invariant confounding variables, and conditional Poisson regression was used to estimate the increased risk of GI-bleeding due to DAPT, TT or the monotherapies, as incident rate ratios (IRR). Multivariable conditional Poisson regression was used to estimate the adjusted IRR.
Results: Amongst the 3378 individuals in the cohort, 78% (n = 2624) had their first-time GI-bleeding while having aspirin, antiplatelet, or anticoagulants monotherapies, or multi-drug therapies of these drugs. Anticoagulant and antiplatelet dual therapy was associated with a higher GI-bleeding risk (adjusted IRR = 2.5, 95% CI = [2.24, 2.8]) with anticoagulant and antiplatelet monotherapies. Although the confidence intervals are wide, the risk of GI-bleeding was highest with TT use compared with anticoagulant and antiplatelet dual therapy uses and the monotherapies (adjusted IRR = 10.02, 95% CI = [5.51, 18.21]).
Conclusions: In this population based study of older individuals the bleeding risk was higher in individuals using TT compared to anticoagulant and antiplatelet dual therapy as well as the monotherapies. Higher bleeding risks were associated with the use of anticoagulant and antiplatelet dual therapy compared to using only an anticoagulant or antiplatelet. The findings inform risk assessment posed by antithrombotics in older people.

203 High-risk non-steroidal anti-inflammatory drug (NSAID) prescribing in primary care: results from a developing nation

Dr Wen Yea Hwong[1,2], Ms Mei Fong Lim[1], Dr Ee Ming Khoo[3], Siti Aminah Ismail[1], Dr Sheamini Sivasampu[1]
[1]National Clinical Research Centre, Ministry of Health Malaysia, Kuala Lumpur, Malaysia, [2]Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, the Netherlands, [3]Department of Primary Care Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

Aim: Little information is known on the extent of high-risk prescribing for non-steroidal anti-inflammatory drugs (NSAIDs) in developing countries. This study examined the use of NSAIDs in Malaysian primary care, assessed the extent of high-risk prescribing and identified factors related to the high-risk prescription.
Methods: From the National Medical Care Survey 2014, we included patients who were prescribed at least one systemic NSAID. Types of NSAIDs used and indications for prescriptions were assessed. We examined high-risk NSAIDs prescribing using defined criteria and performed a multivariable logistic regression to determine the association between predictive factors and high-risk NSAIDs prescription.
Results: About 17% (n=54150) of patients received at least one NSAID. Diclofenac was the most frequently prescribed NSAID (37%, 95% CI: 36.5-37.3%), followed by mefenamic acid at 31% (95%CI: 30.6-31.3%) and ibuprofen, 10% (95%CI: 9.7-10.1%). NSAIDs were most commonly prescribed for musculoskeletal complaints and respiratory tract infections. Twenty-four percent of NSAIDs prescribing were classified as high risk. There is a 5% increase in the likelihood of receiving high-risk NSAID prescription with the increase in age. The odds of receiving a high risk NSAIDs prescription increased with number of medications prescribed (OR:1.22, 95% CI:1.06-1.41) and diagnoses documented in one visit (OR:2.00, 95%CI:1.58-2.55). Designation of the prescriber and place of undergraduate training significantly influenced the likelihood of high-risk NSAIDs prescribing.
Conclusion: A quarter of NSAIDs prescribing within primary care in Malaysia is classified as high risk. Targeted strategies at all levels of healthcare stakeholders is essential.

204 Non-steroidal anti-inflammatory drugs and risk of first hospitalization for heart failure: A population-based case-crossover study

Sung-Po Huang[1], Yao-Chun Wen[2], Shih-Tsung Huang[3], Tzung-Dau Wang[4,5], Fei-Yuan Hsiao[1,3,6]
[1]School of Pharmacy, College of Medicine, National Taiwan University, Taipei city, Taiwan, [2]Health Data Research Center, National Taiwan University, Taipei city, Taiwan, [3]Graduate Institute of Clinical Pharmacy, College of Medicine, National Taiwan University, Taipei city, Taiwan, [4]College of Medicine, National Taiwan University, Taipei city, Taiwan, [5]Cardiovascular Center and Division of Cardiology, Department of Internal Medicine, National Taiwan University Hospital, Taipei city, Taiwan, [6]Department of Pharmacy, National Taiwan University Hospital, Taipei city, Taiwan

Aim/Objective: This study was thus aimed to investigate the potential link between NSAIDs (both COX-2 inhibitors and traditional non-selective NSAIDs) and heart failure in patients without history of heart failure.
Methods: We conducted a case-crossover study using Taiwan's National Health Insurance Research Database (NHIRD). A total of 5,915 study subjects with first hospitalization for heart failure between 2005 and 2013 were identified from the NHIRD. The date of first admission for heart failure was defined as the index date. Exposure of individual NSAIDs between case period (1-30 days before index date) and control period (121-150 days before index date) were retrieved. Multivariate conditional logistic regression models were used to estimate the adjusted odds ratios (aORs) of incident heart failure associated with NSAIDs use adjusted for potential time-varying confounders.
Results: Overall, NSAIDs use was associated with 1.58-fold risk [aOR, 1.58; 95% (CI), 1.40-1.78] of heart failure hospitalization. The increased risks of heart failure were comparable between traditional non-selective NSAIDs and COX-2 inhibitors. Among all NSAIDs, ketorolac was associated with highest risk of incident heart failure.
Conclusion: Both traditional non-selective NSAIDs and COX-2 inhibitors were associated with increased risk of heart failure risk even in patients without related history.

205 Outcomes of re-exposure to iodinated contrast media in patients with moderate to severe iodinated contrast media hypersensitivity reactions

Dong Yoon Kang[1,2], Se-Jin Park[3], Ji Young Koh[1,2], Young Hoon Choi[3], Whal Lee[3], Sang-Heon Cho[1,2,4], Hye-Ryun Kang[1,2,4], Min-Gyu Kang[5]

[1]Drug Safety Monitoring Center, Seoul National University Hospital, Seoul, Korea, [2]Seoul National University Hospital Regional Pharmacovigilance Center, Seoul, Korea, [3]Department of Radiology, Seoul National University Hospital, Seoul, Korea, [4]Department of Internal Medicine, Seoul National University Hospital, Seoul, Korea, [5]Department of Internal Medicine, Chungbuk National University Hospital, Chungbuk, Korea

Aim/Objective: To study the optimal strategies for preventing recurrence of iodinated contrast media (ICM) hypersensitivity reactions (HSR) in high-risk patients.

Methods: We retrospectively reviewed the history of ICM HSR in all patients who underwent computed tomography scan from October 2012 to April 2017. Each use of ICM from the first occurrence to the recent was investigated in patients with moderate to severe HSR history. The kind of ICM, type of pre-medication, occurrence, and type of HSR, symptoms, treatment, prognosis, and combinations of ICM change were evaluated.

Results: A total of 537 patients with a history of moderate to severe HSR to ICM were identified during the study period. Of these, 266 (49.5%) patients were re-exposed to ICM after HSR. There were 940 cases of ICM re-exposure, 90% of them were asymptomatic or had mild HSR while 7.4% had moderate, and 2.6% had severe recurrence of HSR. Depending on the preventive method, HSR recurred in 42.5% of patients who received premedication without ICM change, 17.4% of the patients who changed ICM without premedication, and 14.2% of the patients who had premedication with ICM change. There was a difference in recurrence rate according to the combination of changing ICM after HSR. Among the various combinations of ICM changes, the combination of iohexol-iopamidol and iopromide-iomeprol showed a significantly higher recurrence rate of 23.0% and 23.1% compared to the mean outcomes of ICM change.

Conclusion:

The incidence of recurrence was 19.5% in patients with a history of moderate to severe ICM HSR. In order to prevent recurrence of HSR, changing ICM is important as well as appropriate pre-medication.

206 Statin use and risk of New-Onset Diabetes in hypertensive patients: A population-based retrospective cohort study in mainland China

Hailong Li[1], Siyan Zhan[1], Hongbo Lin[2], Peng Shen[2]

[1]Peking University Health Science Center, Department of Epidemiology and Biostatistics, Beijing, China, [2]Yinzhou District Center for Disease Control and Prevention, Ningbo, China

Background: Reports have suggested that statin use is associated with an increased incidence of type 2 diabetes mellitus (T2DM). Data on the risk of T2DM associated with statin use among patients with hypertension in China are very limited.

Objectives: To determine the association between statin use and new-onset T2DM among patients with hypertension in China.

Methods: We conducted a retrospective cohort study of hypertensive patients from 1 January 2010 to 31 August 2016 using the Yinzhou Regional Healthcare Database. Patients aged 30-90 years of age without T2DM were eligible for inclusion. We identified new statin initiators and nonusers. To adjust baseline potential confounders, multivariate model and propensity score methods were used. The risk of incident T2DM among statin initiators compared to nonusers was estimated by the Cox proportional hazards model with a time-dependent definition for the drug exposure. Propensity scores for statin use were then developed using logistic regression, statin initiators were matched 1:1 with non-users according to propensity scores with the nearest neighbor matching method within 0.2 caliper width, and Cox regression was again conducted.

Results: Among 74,857 patients (22,810 statin initiators; 52,047 non-users), the unadjusted incidence rate of incident T2DM was higher in statin initiators than non-users (28 versus 16 events/1000 person-years; adjusted HR, 1.44; 95% CI, 1.36-1.52). After propensity score 1:1 matching (22,597 statin initiators; 22,597 non-users), baseline characteristics between 2 groups were balanced except that the nonusers group was a little older. Statin use was associated with a significant increased risk for T2DM in the matched cohort (adjusted HR, 1.68; 95% CI, 1.57-1.79).

Conclusions: Among hypertensive patients in the Yinzhou Reginal Healthcare Database in China, statin use was associated with an increased risk of incident T2DM.

207 Selective prescribing and estimation of risks and benefits of Statins in aged care services

PhD Maarit Jaana Korhonen[1,2], PhD Jenni Ilomaki[1], PhD Janet K Sluggett[1], Professor Renuka Visvanathan[3,4], RN Tina Cooper[5], RN Leonie Robson[5], Professor J Simon Bell[1]

[1]Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Australia, [2]National Health and Medical Research Council Centre for Research Excellence in Frailty and Healthy Ageing, Adelaide, Australia, [3]School of Medicine, Faculty of Health and Medical Sciences, University of Adelaide, Adelaide, Australia, [4]Aged and Extended Care Services, The Queen Elizabeth Hospital, Central Adelaide Local Health Network, SA Health, Adelaide, Australia, [5]Resthaven Limited, Adelaide, Australia

Objective: To compare the characteristics of users and non-users of statins in aged care services and to evaluate the relationships between statin use and the number of falls, all-cause and fall-related hospitalisations, and all-cause mortality over a 12-month period.

Methods: A prospective cohort study of residents (N = 383, mean aged 88 ± 6.2, 78% female) was conducted in six aged care services. Characteristics of statin users and non-users were compared using absolute standardized difference (ASD). Associations between statin use and time to hospitalisation or death were estimated using Cox proportional hazards regression and between statin use and number of falls per person-year using linear regression with inverse probability weighting (IPW).

Results: Overall, 152 (40%) residents used statins at baseline. The greatest differences between statin users and non-users were observed in activities of daily living, frailty, and medication use (ASD >0.40), with statin users being less dependent and less frail but using a higher number of medications. In IPW-adjusted analyses, statin use was associated with lower numbers of falls (-1.72, 95% CI -2.99-[-0.44], per person-year), all-cause hospitalisation (HR = 0.62, 95% CI 0.42-0.91) and mortality (HR = 0.51, 95% CI 0.37-0.91), and with an increase in fall-related hospitalisations in age-sex-adjusted analyses (HR = 1.88, 95% CI 1.02-3.45). This association was attenuated in IPW-adjusted analyses (HR = 1.38, 95% CI 0.76-2.51).

Conclusions: Statin users experienced less falls and had a lower risk of all-cause hospitalisation and mortality compared to non-users. Conversely, statin users had an increased risk of fall-related hospitalisations but this association became considerably weaker after adjustment for baseline confounders. These apparent associations may be largely explained by selective prescribing and de-prescribing of statins based on consideration of each resident's clinical and frailty status. Randomised trials of de-prescribing statins are needed to guide statin prescribing in this setting.

208 Effects of cilostazol and renin-angiotensin-aldosterone system (RAS) blockers on the progression of renal disease in diabetic patients

Yoojin Noh[1], Jimin Lee[1], Inwhee Park[2], Sooyoung Shin[1], Sukhyang Lee[1]

[1]College of Pharmacy, Ajou University, Suwon, South Korea, [2]Department of Nephrology, College of Medicine, Ajou University, Suwon, South Korea

Purpose: This study was performed to determine the effect of cilostazol in combination with ACEI or ARB treatment on the decline in eGFR.

Methods: Methods: We analyze an observational cohort of 5,505 patients who were prescribed ACEI/ARB and cilostazol or other antiplatelet agents. We used the data from electronic medical records retrieved from a major tertiary care medical center in Korea from January 1, 2010 to December 31, 2014. The primary outcome assessed was worsening of renal function defined as a 30% decline in eGFR per year. The secondary outcomes included commencement of dialysis, renal transplantation, death, myocardial infarction, and ischemic stroke.

Results: Following propensity score matching, in the eGFR stage 1,2 group, 825 patients in the cilostazol treated subgroup (CT) and 1,650 patients in the cilostazol untreated subgroup (CU) were identified, while in the eGFR stage 3,4 group, 1,010 patients in the CT subgroup and 2,020 patients in the CU subgroup were identified. eGFR decreased over time in the majority of patients, but the decline was less in patients in the CT subgroup of eGFR stage 1,2 group (OR, 0.98; 95% CI, 0.75-1.29). In contrast, there was no substantial difference between the CT and CU subgroups in the number of advanced CKD patients. In the subgroup analysis, the strongest effect in slowing eGFR decline was observed in CT patients at a high risk of diabetes (OR, 0.782; 95% CI, 0.615-0.993) and the elderly (OR, 0.693; 95% CI, 0.504-0.953) in the eGFR stage 1,2 group. No significant increase in CV risk was observed between the CT and CU subgroups.

Conclusion: Treatment with cilostazol plus ACEI or ARB was observed to inhibit worsening of renal progression in patients with eGFR stages 1 and 2, whereas cilostazol treatment alone did not suppress the decline in eGFR in advanced CKD patients.

209 Impacts of FDA safety warning and introduction of new class medications on treatment outcomes in patients with type 2 diabetes

Mr Kai-Cheng Chang[1], Mr Jason C. Hsu[2,3,4], Ms Huang-Tz Ou[2,3,4]
[1]Department of Pharmacy, Linkou Chang Gung Memorial Hospital, Taoyuan City, Taiwan, Taoyuan, Taiwan, [2]Institute of Clinical Pharmacy and Pharmaceutical Sciences, National Cheng Kung University, Tainan, Taiwan, Tainan, Taiwan, [3]Department of Pharmacy, National Cheng Kung University, Tainan, Taiwan, Tainan, Taiwan, [4]Department of Pharmacy, National Cheng Kung University Hospital, Tainan, Taiwan, Tainan, Taiwan

Aim/Objective: This study aims to explore the trends of diabetic treatment outcomes and to evaluate the impacts of thiazolidinediones (TZD) safety warning (since May 2007) and dipeptidyl peptidase-4 inhibitors (DPP4i) introduction (since March 2009) on diabetic treatment outcomes.
Methods: This study obtained 2000–2010 type 2 diabetes-related claims data from Taiwan's National Health Insurance Research Database. Yearly rolling diabetes cohorts included patients with metformin plus second-line oral hypoglycemic agents (OHAs) but excluded patients with stable insulin users. The measurements of diabetic treatment outcomes included proportion of patients who added on the third OHAs within 2 years, who added on or switched to insulin within 3 years, and who had hypoglycemia within 1 year; event rate of patients who had incident macro-vascular/micro-vascular diseases within 3 years. We used time series design to analyze the yearly changes of previous outcomes overtime, and used an interrupted time series design and segmented regression to estimated changes in quarterly measurements following TZDs' safety warning and DPP4i's introduction.
Results: There was no significant reduction of macro-vascular diseases following 2007 TZDs' safety warning, instead, the event rate of micro-vascular diseases relatively increased 6.02% at one year after the warning. In addition, no significant changes of proportion of macro/micro-vascular event attributed to TZD-users were detected. On the other hand, proportion of patients who added on the third OHAs and proportion of patients who added on or switched to insulin relatedly decreased by 17.67% and 15.14% following DPP4i's introduction in 2009 respectively, while event rates of macro/micro-vascular diseases did not change significantly.
Conclusion: TZDs' safety warning did not markedly improve the diabetic treatment outcomes. The introduction of DPP4i partly avoided the use of the third OHAs and insulin, but it did not reduce the possibility of macro/micro-vascular events.

210 Development and validation of algorithms to identify drug-induced anaphylaxis in the Beijing pharmacovigilance database

BS Ying Zhao[1], BS Xiaotong Li[1], PhD Haidong Lu[2], BS Guangyao Li[1], PharmD Shusen Sun[3], MS Huilin Tang[4], BS Lulu Sun[5], MS Suodi Zhai[6], PharmD Tiansheng Wang[2]
[1]Department of Pharmacy Administration and Clinical Pharmacy, Peking University Health Science Center, Beijing, China, [2]Department of Epidemiology, University of North Carolina, Chapel Hill, USA, [3]College of Pharmacy, Western New England University, Springfield, USA, [4]Department of Epidemiology, Richard M. Fairbanks School of Public Health, Indiana University, Indianapolis, USA, [5]Department of Pharmacy, Beijing Shijitan Hospital, Beijing, China, [6]Department of Pharmacy, Peking University Third Hospital, Beijing, China

Aim/Objective: Anaphylaxis is a severe life-threatening systemic allergic reaction that occurs rapidly after exposure to an offending agent. In China, very few studies have evaluated the validity of using pharmacovigilance database to identify drug-induced anaphylaxis (DIA). We aimed to develop an algorithm to identify DIA and examine its accuracy using the Beijing Pharmacovigilance Database (BPD).
Methods: We conducted a retrospective study utilizing the BPD data from 94 hospitals in the Beijing region of China. Using diagnosis criteria according to World Health Organization Adverse Reaction Terminology and symptoms of adverse drug reactions, we developed an algorithm to identify patients with potential DIA from the BPD between January 2004 and December 2014. Then a sample of 500 patients was randomly selected. These records were reviewed by two physician adjudicators, and the diagnosis of anaphylaxis and case severity determined using the published clinical criteria and severity definition for diagnosing anaphylaxis as gold standards. We then calculated the positive predictive value (PPV) of DIA defined by our developed algorithm.
Results: 500 patients with potential DIA were obtained using the algorithm. 444 were adjudicated as having anaphylaxis by physicians. The PPV of the entire algorithm was 88.8% (95% CI: 86.0-91.6%). The PPV for algorithm with specific diagnosis of "anaphylactic shock", "anaphylactic reaction", and "anaphylactoid reaction" was 89.6% (95% CI: 86.6-92.4%), which identified 387 (87.2%) patients with DIA. By integrating only the top performing algorithms (PPV>90%) of diagnosis and symptoms for DIA, we further developed a less complex algorithm, which was able to produce the PPV of 93.3%, and identify 417 (93.9%) DIA cases using this modified algorithm.
Conclusion: The PPV for the algorithm with specific diagnosis was higher than the PPV for the entire algorithm. We were able to identify an algorithm that optimized the PPV but demonstrated lower sensitivity for DIA in the BPD.

211 Comparing strategies to monitor for a potential association between teriparatide and adult osteosarcoma

Kirk Midkiff[1], Dr Elizabeth Andrews[1], Dr Alicia Gilsenan[1], David Harris[1]
[1]RTI Health Solutions, Research Triangle Park, United States

Background: Surveillance for rare cancers in the postmarketing setting is challenging, especially when the treatment is also rare.
Objective: To compare characteristics among four postauthorization safety studies designed to monitor for a potential association between teriparatide and osteosarcoma in adults.
Methods: We evaluated characteristics of four studies (Study 1 completed in five Nordic countries; Studies 2-4 ongoing in the United States) implemented in the surveillance program including anticipated study duration, exposure ascertainment method, availability of comparator group, and the detectable level of increased risk.
Results: Study 1 used a case series design, ascertained exposure through chart abstraction over a 10-year study period, with the ability to detect a 12-fold increase in risk, if one exposed case had been observed. Study 2 used a case series design, ascertained exposure through telephone interview over a 15-year study period, and was designed to detect a 3-fold increased risk above the background rate. Study 3 used a prospective cohort "registry" design, obtained exposure by patient report, covered a 15-year study period, and is projected to be able to detect a 4-fold increase in risk. Studies 1-3 used an external population comparator. Study 4 used a matched cohort design with exposure identified through prescription claims in the Medicare database, a 3-year study conduct period (using data covering 8 years), and was designed to detect a 4- to 5-fold increase in risk. All studies utilized cancer registries to identify patients diagnosed with osteosarcoma.
Conclusion: The database study (study 4) required less time, fewer resources for exposure ascertainment, had similar risk detection capabilities, and a more robust analysis (owing to a matched comparator) than the other studies. The other studies provided surveillance beyond spontaneous reporting to detect a very large increased risk of osteosarcoma, had it existed, early in the product's lifecycle.

212 Design considerations for developing smartphone app-based side effect monitoring systems for patients taking oral anticancer medications

Eskinder Eshetu Ali[1], Sharlene Si Ling Chan[1], Jo Lene Leow[2], Lita Chew[1,2], Kevin Yi-Lwern Yap[1]
[1]Department of Pharmacy, National University of Singapore, Republic of Singapore, [2]Department of Pharmacy, National Cancer Centre Singapore, Republic of Singapore

Aim/Objective: To illustrate important design considerations for features of smartphone app-based medication management systems for monitoring side effects of oral anticancer medications and identify facilitators and barriers for potential adoption of such systems based on user centered design principles.
Methods: This was a qualitative study of patients taking oral anticancer medications (n = 15) and oncology practitioners (n = 16), which followed the grounded theory approach. Face-to-face interviews were used to collect data. Audio records of all interviews were transcribed verbatim and the analysis process involved coding of interview transcripts and field notes, writing of detailed memos and constant comparative evaluation of emergent categories.
Results: Design considerations in app-based systems for symptom management were: features with flexible ways of reporting symptoms (selecting symptoms from a structured list and free text entries), ways for assessing symptom severity, automating patient risk identification and assessment and near real time responses to symptom reports. A grounded theory model describing the facilitators and barriers of adoption of such system was developed. Accordingly, the facilitators of intention to use an app-based system for side effect management were: facing medication-related problems, getting useful features in the app other than managing symptoms and being superior to methods currently used by participants (diaries, excel spread sheets or smartphone calendar apps). In contrast, the barriers were: technology illiteracy, having to pay for an app and language related factors.
Conclusion: With the limited number of user-centered apps for symptom management in cancer patients, this study showed that developers should consider multicomponent apps, which enable real time symptom management. Such app-based systems should complement currently used methods by patients in a user friendly and cost efficient manner.

213 Use of epinephrine in patients with drug-induced anaphylaxis: An analysis of the Beijing pharmacovigilance database

Ying Zhao[1], Xiaotong Li[1], Hangci Zheng[1], Huilin Tang[2], Xiang Ma[3], Shusen Sun[4], Yan Xing[5], Hua Zhang[6], Bin Wang[7], Suodi Zhai[3], Tiansheng Wang[8]

[1]Department of Pharmacy Administration and Clinical Pharmacy, Peking University Health Science Center, Beijing, China, [2]Department of Epidemiology, Richard M. Fairbanks School of Public Health, Indiana University, Indianapolis, USA, [3]Department of Pharmacy, Peking University Third Hospital, Beijing, China, [4]College of Pharmacy, Western New England University, Springfield, USA, [5]Division of Pulmonology and Allergy, Department of Pediatrics, Peking University Third Hospital, Beijing, China, [6]Department of Epidemiology, Peking University Third Hospital, Beijing, China, [7]Emergency Medicine, Peking University Third Hospital, Beijing, China, [8]Department of Epidemiology, University of North Carolina, Chapel Hill, USA

Aim/Objective: Few studies assessing the use of epinephrine in drug-induced anaphylaxis (DIA) in the hospital setting are available. We utilized the Beijing Pharmacovigilance Database (BPD) to evaluate the appropriateness of epinephrine for DIA management.

Methods: DIA cases collected in the BPD from January 2004 to December 2014 were adjudicated and analyzed for demographics, causative drugs, clinical signs, outcomes, initial treatment, route, dosing, and cardiovascular adverse events (CAE) of epinephrine. Comparisons were conducted with t tests among continuous variables, and $\chi 2$ or Fisher's exact test among dichotomous variables. Bivariate logistic regression and multivariate logistic regression analysis were performed to identify independent clinical features (risk factors) associated with patients receiving epinephrine.

Results: DIA was primarily caused by antibiotics (38.4%), radiocontrast agents (11.9%), traditional Chinese medicine injections (10.9%), and chemotherapeutic drugs (10.3%). Only 708 (59.5%) patients received epinephrine treatment. Patients who received epinephrine were more likely to experience wheezing ($p < 0.001$) and respiratory arrest ($p < 0.001$). Among 518 patients with a complete record of the epinephrine administration route, the percentage of patients receiving it by intramuscular (IM) injection, subcutaneous (SC) injection, intravenous (IV) bolus injection, or IV continuous infusion was 16.9, 31.5, 43.5, and 8.1%, respectively. Among the 427 patients with a record of both the administration route and the dosing, an overdose was more likely with IV bolus (94.1%) in contrast to IM injection (56.6%; $p < 0.001$) or SC injection (43.7%; $p < 0.001$). Among the patients analyzed for CAE ($n = 349$), 17 patients accounted for 19 CAE, and 13 (76.5%) of these patients were overdosed with epinephrine.

Conclusion: Underuse, inappropriate IV bolus use, and overdosing were the 3 major problems with epinephrine use in DIA in China. Educational training for health care professionals on the appropriate use of epinephrine in managing anaphylactic reactions is suggested.

214 Sequence symmetry analysis of pharmaceutical benefits scheme data for signal detection in the setting of therapeutic goods regulation in Australia

Dr Claire Behm[1], Dr Clare King[1], Mr Loc Thai[2], Ass Prof Nicole Pratt[3], Ms Nichole Craig[2]

[1]Therapeutic Goods Administration, Symonston, Australia, [2]Australian Government Department of Health, Canberra, Australia, [3]University of South Australia, Adelaide, Australia

Aim: The Therapeutic Goods Administration's (TGA) current signal detection methods rely mostly on analysis of spontaneous adverse drug reaction (ADR) reports, notifications from sponsors or information shared by international agencies. Analysis of the Pharmaceutical Benefits Scheme (PBS) database using prescription sequence symmetry analysis (SSA) to detect medicine safety signals has had limited exploration in the regulatory context in Australia. Using heart failure (HF) as a test ADR, we will explore whether SSA of PBS data could enhance signal detection by the TGA.

Methods: We will apply the SSA method to all subsidised single ingredient medicines prescribed on the PBS between 2011 and 2016 in Australia. We will use frusemide initiation as a proxy for new-onset HF. A signal will be considered to be present if the lower limit of the 95% confidence interval for the adjusted sequence ratio is greater than one. We will exclude medicines where HF or oedema is listed in the product information (PI) of that medicine or for any other medicine in the same class. We will also exclude medicines indicated for HF treatment and medicines indicated for diseases that may contribute to the development of HF. Signals detected will undergo further analysis, using established methods for signal verification, to estimate the reliability and feasibility of SSA as a signal detection tool in the regulatory context.

Results: This presentation will outline the project methodology and offer early insights into the potential use of SSA applied to PBS data for signal detection. Preliminary results will be presented.

Conclusion: The detection of medicine safety signals requires analysis of information from a variety of sources. Determination of the potential contribution of SSA of PBS data is an important outcome for therapeutic goods regulation in Australia.

215 Liver injury in the treatment of tuberculosis (TB): evidence from a tertiary hospital in China

M.D., M.S. Minfu He[1], M.D., M.S. Jian Du[2], M.D., M.S. Jingjing He[1,3], M.D., Ph.D. Yongjing Zhang[1], M.D., M.S. Yuhong Liu[2], M.D. Liang Li[2]

[1]Epidemiology, Janssen Research and Development, Beijing, China, [2]Beijing Chest Hospital, Capital Medical University, Beijing, China, [3]School of Public Health, Peking University, Beijing, China

Objective: To characterize drug induced liver injury (DILI) in patients exposed to medications for the treatment of TB at a specialty hospital in Beijing, China.

Methods: Clinical data from the hospital's Healthcare Information System were mapped into a common data model. The study period is from January 1, 2014 to December 31, 2015. Those having records of TB diagnoses, anti-TB medications and liver function tests were included in the analysis. Patients receiving continuous care (having had at least 3 consecutive visits with no gap longer than 45 days) but having no records in the prior two years were selected as newly-treated patients. Patients with cancer, HIV/EBV/CMV/HSV infection, or other non-drug-induced liver/gallbladder diseases were excluded. DILI and related pattern was defined using the criteria provided by the international Drug Induced Liver Injury Expert Working Group.

Results: There were 8,195 patients included in the analysis, among whom 4,820(58.8%) were male. Median age at first anti-TB treatment was 32 years; median treatment duration was 217 days; median number of lab test occurrence was 4 times; antibiotics and hepatoprotective drugs were co-prescribed to 3,942(48.1%) and 7,425(90.6%) of patients, respectively. During the overall period of therapy, 241(2.9%) of patients experienced DILI, and among them 149(61.8%), 75(31.1%) and 15(6.2%) had hepatocellular, cholestatic, and mixed pattern, respectively. There was no significant difference in the proportion of DILI between males (3.2%) and females (2.5%). However, 13.4% (36/269) of the pediatric patients <18 years had DILI, which was significantly higher than patients >=18 years (2.6%) ($P < 0.001$).

Conclusions: For most newly-treated TB patients, hepatoprotective agents were co-prescribed with anti-TB medications. The overall proportion of patients with DILI was 2.9%. Hepatocellular pattern accounted for most of the liver injury and mixed pattern the least. DILI occurred more frequently in pediatric patients than in older patients.

216 The long-term use of biologics in Hong Kong patients

Mr Kenneth Man[1,2], Dr Shirley Li[1], Dr Esther Chan[1], Prof Ian Wong[1]

[1]University of Hong Kong, Hong Kong, Hong Kong, [2]Erasmus University Medical Center, Rotterdam, The Netherlands

Aim/Objective: As availability of new biologics in treatment regimens increases, it is important to understand the utilization of biologics. However, little is known about these agents in Asian countries. This study is to: 1) To investigate drug utilization of biologics in Hong Kong. 2) To estimate long-term retention rate of biologic treatments. 3) To estimate the incidence of infections in patients receiving biologic treatments.

Methods: We identified patients from the Clinical Data Analysis and Reporting System (CDARS) from 2001-2015. Patients who received biologic treatments were identified. The yearly prevalence (per 1,000 persons) of biologic prescribing were evaluated. Long-term retention rates and incidence of infections for each biologic treatment were estimated.

Results: In total, we identified 30,298 patients from CDARS receiving biologic treatments from 2001-2015. The yearly prevalence increased by 110 times from 0.01 per 1,000 persons in 2001 to 1.61 per 1,000 persons in 2015. An increasing trend was found in both genders. Denosumab was the most common treatment in 2015, which was prescribed to 2,581 patients (22.5%), followed by ranibizumab (2,009 patients, 17.5%) and trastuzumab (1,528 patients, 13.3%). Retention rates for each treatment were estimated. Infliximab had the highest first year retention rate of 95.6%, followed by ustekinumab of 90.9% and ranibizumab of 89.5%. Incidence of major infections was high in biologic users. The overall incidence of tuberculosis in biologics users was 0.52 per 100 person-years which was about 5 to 8 times of the background incidence. Incidence of upper and lower respiratory infections in biologics user were 3.24 and 4.99 per 100 person-years respectively. The incidence of herpes zoster and other skin infections were 1.01 and 2.59 per 100 person-years respectively.

Conclusion: With increasing prevalence of biologic treatment prescribing, it is important that healthcare professionals are aware of the effectiveness, as well as the safety, of such treatments.

217 Assessment of drug – Drug interactions in prescriptions received by renally challenged patients

Ms Mary Shanthy[1], Ms Bellamkonda Usha Kiranmayi[1], Mrs Keerthana A[1], Dr Venkata Rao Y[2], Dr Ramesh Adepu[1], Dr Sai Pawan[1]
[1]Vikas College of Pharmaceutical Sciences, Suryapet,telangana State, India, [2]Kamineni Institute of Medical Sciences Hospital, Sreepuram, Narketpally, India

Objective: To assess serious drug interactions in prescriptions received by the patients who are renally challenged.
Methodology: This is a prospective observational study approved by institutional ethics committee. Demographic, clinical and therapeutic details of the enrolled patients were recorded. Prescriptions were assessed for potential DIs using drug interaction assessment software.
Results: A total of 83 prescriptions given for patients (male: 27.05%, Female: 65.92%) with renal challenge were reviewed during the study. Among them, potential DDIs was observed in 35(41.17%) prescriptions. Co-morbidities in patients identified were Hypertension (60%), Hypertension with diabetes (40%), anemia (30%), Diabetes and Gout (10%) and may contribute to cause DDI. Among the drugs prescribed, 52% of them were cardiovascular drugs, oral hypoglycemic agents (8%), antimicrobial agents (11.52%), gastrointestinal drugs (3.03%) respiratory drugs (1.94%) and miscellaneous categories of drugs includes vitamins and minerals causing 23.52% DDI. Based on the severity, 5 interactions were classified as contraindicated for which an alternative medicine was suggested, 3 interactions were classified as major interactions category and 14 were as moderate category. The absolute contraindication include prescriptions with calcium channel blocker (nifedipine) and anticonvulsant (carbamazepine, phenytoin, phenobarbital). The interaction result in diminished therapeutic effect of Nifedipine. The outcomes of the DDIs was found as hypotension or hyperglycemia, hyperkalemia, rhabdomyolysis, increased risk of bleeding, cardiotoxicity, and reduction in drug efficacy etc.,
Conclusion: This study finally concludes that there is a need for systematic monitoring of DDIs in patients with renal challenge and dialysis patients to prevent the negative consequences of drug interactions.

218 Incidence of adverse drug reactions of oral hypoglycemic agents in a tertiary care hospital

Dr Sadanandan Kiron[1], Dr Balakrishnan Valliot[2], Mrs Mondain Saritha[3], Ms S. R Athira[1], Ms KS Arya[1]
[1]Academy of Pharmaceutical Sciences, Kannur, India, [2]Pariyaram Medical College,Kannur, Kannur, India, [3]Crescent College of Pharmacy, Kannur, India

Objectives: This study aims to detect frequency and total burden of different ADRs due to oral anti-diabetic drug use.
Methods: A prospective study was conducted on Type 2 diabetes mellitus patients on oral antidiabetic agents, in inpatients and outpatient department of medicine department in Pariyaram Medical College, Kannur, for 12-month duration after obtains Institutional Human ethical. The causality relationship was assessed by the Naranjo's Causality assessment scale.
Results: A total of 96 patients screened, 78 patients were included, out of which 28 patients suspected of ADRs. 36% of patients on type 2 diabetes mellitus taking oral medication experienced ADR. Among them, Metformin contributed greatest number of ADR, followed by glimepiride. Female (61%)patients experienced more ADR compared to male (39%)patients and also see that age group between 61-70years (35%) experienced more number of ADR compared to other age groups while in males it was seen among age group 51-60years (35%). 66% of the ADRs were due to allergic and idiosyncratic reactions (Type B). On assessing the ADRs using Naranjo causality assessment scale, 52% of the ADRs were possible,37% were probable and 11% definite. When the severity of these ADRs were assessed using Harwig's and Siegels severity assessment scale 60% of the ADRs were mild, which means they were self limitable reactions.
Conclusions: ADRs due to OADs is a frequent problem. Few multicentric studies are needed for developing a strong anti-diabetic drug ADR database in India.

219 Risperidone exposure and the risk of osteoporosis-related fractures

Dr. Eric Clapham[1,2], D. Johan Reutfors[1], Mr. Tobias Svensson[1], Dr Darmendra Ramcharran[3], Dr Hong Qiu[3], Dr Robert Bodén[1,2], Dr Shahram Bahmanyar[1]
[1]Centre for Pharmacoepidemiology (CPE), Department of Medicine Solna, Karolinska Institutet, Sweden, [2]Department of neuroscience, Psychiatry, Uppsala university, Sweden, [3]Janssen Global Research and Development Epidemiology, Titusville, USA

Objective: Serum prolactin may be increased by several antipsychotics, especially risperidone, and some epidemiological studies suggest a possible link between hyperprolactinemia and osteoporosis-related fractures. We therefore investigated the risk of osteoporosis-related fractures among patients exposed to antipsychotics in a nationwide cohort.
Methods: The Swedish health registers were used to identify adults (>18 years) without a history of osteoporosis-related fractures or active cancer, with two consecutive dispensations of risperidone (n=38,303), other atypical antipsychotics (except paliperidone, n=60,735), or typical antipsychotics (n=17,483) within 3 months between 2006 and 2013. An osteoporosis-related fracture was defined as a non-open hip/femur fracture. Risk of non-hip fractures was also investigated, defined as fractures at the spine, rib, clavicle, humerus, radius/ulna, wrist, pelvis, or tibia/fibula, both combined and by individual fracture site. Cox regression models were used to estimate the hazard ratio (HR) and 95% confidence interval (CI) for the associations between antipsychotics and fractures overall, and age-stratified (18-44, 45-64, 65+ years).
Results: Risperidone users were on average older than users of other antipsychotics; the mean age was 68, 44, and 63 years for risperidone, other atypical antipsychotics, and typical antipsychotics, respectively. Compared with other atypical antipsychotics, there was no association between risperidone and osteoporosis-related fractures in the overall (HR=1.06, CI 0.92-1.20) or age-stratified adjusted time on drug analyses (HRs = 0.97, 1.10, and 1.02 for the 18-44, 45-64, and 65+ age groups, respectively). There was a moderately increased risk for typical antipsychotics compared with other atypical antipsychotics (HR=1.26, CI 1.08-1.46) and analyses stratified by age revealed that the association was statistically significant only for the 65+ age group. There was no association between risperidone and combined non-hip fractures (HR=0.95, CI 0.85-1.06).
Conclusion: Risperidone use does not appear to confer an increased risk of osteoporosis-related fracture compared with other antipsychotic agents.

220 Risk of intussusception after rotavirus vaccination: A systematic review and meta-analysis

Zhou Yi-Fan[1], Pan Yu-Ting[1], Cai Ting[1], Li Xue-Chen[1], Zhao Hou-Yu[1], Zhan Si-Yan[1]
[1]School of Public Health, Peking University, Beijing, China

Objectives: To evaluate the risk of intussusception after administration of Rotarix (RV1) and RotaTeq (RV5) in healthy infants.
Methods: PubMed, Embase, Cochrane library, CNKI, Wanfang and VIP were searched for studies on the risk of intussusception after rotavirus vaccination up to March 2016. Reference lists of relevant papers were manually searched for other relevant studies. Basic information, vaccination information, information of intussusception after vaccination and methodology characteristics were extracted. The quality of included studies was evaluated by the Newcastle-Ottawa Scale(NOS) and the Cochrane Collaboration's tool for assessing risk of bias. The data was analyzed using random effect model or fixed effect model.
Results: A total of 54 articles were included and 26 of them were used in meta-analysis. The numbers of intussusception cases per hundred thousand after RV1 and RV5 vaccination based on disease monitoring researches were 3.5 (95% CI: 2.5~4.7) and 1.9 (95% CI: 1.5~2.4) respectively. The relative risk (RR) of intussusception after vaccination of RV1 and RV5 based on RCTs were 0.83 (95% CI: 0.54~1.26) and 0.76 (95% CI: 0.41~1.40) respectively. The odds ratio (OR) of intussusception during the 21-day period after dose 2 of RV1 vaccination based on case control studies was 1.34 (95% CI:1.06~1.69).
Conclusions: The incidence of intussusception after rotavirus vaccination was low. The association between intussusception and rotavirus vaccination was not significant. The risk of intussusception slightly increased after dose 2 of RV1 vaccination.

221 Assessment of adverse events following immunization following pentavalent vaccination to children in Warangal city- India

Mr Varun Paramkusham[1], Mr Prashanth Palakurthy[1], Mr Uday Kiran Redapaka[1], Mr Varun Talla[1], Mr H.N. Vishwas[1]
[1]*Department of Clinical Pharmacy, Talla Padmavathi College of Pharmacy, Warangal, India*

Objectives: Pentavalent vaccine is the most common Pediatric vaccine used in India, which helps in protecting from Diphtheria, Tetanus, Pertussis, Haemophillus influenza type-B, Hepatitis-B. Objective of the present study was to detect adverse events following immunization post pentavalent vaccination in children aged 0-6 months.
Methods: This was a 6-month prospective observational study conducted at 3 Government approved Vaccination centres. Mothers of vaccinated babies were followed to gather information regarding AEFI. Each mother was interviewed in local language using open-ended questions to access type of AEFI such as reactions related to vaccine product, immunization error-related reaction, immunization anxiety-related reaction and coincidental event. Questions were framed based on current literature available and from the inputs given by clinicians and vaccination nursing staff.
Results: A total of 494 children receiving pentavalent vaccine were followed, of that 509 adverse events were identified. Most of them fell into injection site reactions category. 303(59.52%) subjects suffered from mild fever, 70(13.75%) suffered from swelling at the site of injection. 66(12.96%) suffered from pain at the site of injection, 57(11.19%) suffered from sterile abscess at the site of injection. 7(1.37%) suffered from Localized rash at the site of injection, 6(1.17%) children suffered persistent cry for more than 3 hours.
Conclusion: Most of AEFI's were related to injection site reactions and nature of reactions under this category was astoundingly high when compared to studies from developed countries. Considering the heavy work load on the Vaccination staff and improper administration techniques, there is a need for continuous professional training and enhancement of staff at Vaccination centres of India.

222 Live vaccine administration to immunocompromised patients: Use of active surveillance data to enhance vaccine signal investigation

Dr Rona Hiam[1], Dr Angela Gowland[1], Dr Claire Behm[1], Dr Anastasia Phillips[2], A/Prof Kristine Macartney[2]
[1]*Therapeutic Goods Administration, Woden, Australia,* [2]*National Centre for Immunisation Research and Surveillance, Westmead, Australia*

Aim: A comparison of data obtained from spontaneous reporting versus active surveillance in the context of investigating a safety signal related to administration of live vaccine to an immunocompromised patient.
Methods: The use of live attenuated herpes zoster vaccine (HZV; Zostavax) is contraindicated in immunocompromised people. In January 2017 the Therapeutic Goods Administration (TGA) received a report of the death of an immunocompromised patient from disseminated Oka varicella zoster virus (vaccine strain) infection after HZV. An analysis to determine the extent of inappropriate administration of HZV was performed by reviewing spontaneous adverse events reports received by the TGA, AusVaxSafety (active sentinel surveillance) reports and global reports held by the sponsor. The current medical literature and the World Health Organisation's global database of individual case safety reports (Vigibase) were also reviewed.
Results: Over 410,000 doses of HZV had been distributed in Australia by the end of February 2017. The TGA received three reports of immunocompromised patients receiving HZV. An analysis of AusVaxSafety data run by the National Centre for Immunisation Research and Surveillance identified a further possible 36 instances of administration to immunocompromised persons; (n= 6066 total vaccinated to 5 March 2017). Seven of these were confirmed as being significantly immunocompromised although 31 of the 36 were contraindicated as per the product information. Provider uncertainty regarding the degree of immunocompromise that was considered a contraindication for HZV administration was expressed. Spontaneous ADR reports yielded evidence of administration of HZV to immunocompromised patients. However, active surveillance data demonstrated that this was a more frequent occurrence.
Conclusion: This analysis highlighted that active surveillance data provides useful information for signal investigation, particularly when trying to gather more information about people that may have received a vaccine in error, but did not experience an adverse event.

223 Gender differences in hypoglycemic drug-induced acute myocardial infarction

Shi Heng Wang[1], Wei J. Chen[2], Le-Yin Hsu[2], Kuo-Liong Chien[3], Chi-Shin Wu[4]
[1]Graduate Institute of Biostatistics, China Medical University, Taichung City, Taiwan, [2]Institute of Epidemiology and Preventive Medicine, National Taiwan University, Taipei, Taiwan, [3]Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan, [4]Department of Psychiatry, College of Medicine and National Taiwan University Hospital, National Taiwan University, Taipei, Taiwan

Accumulated evidence from epidemiological studies and fundamental research has demonstrated that drug properties and host-drug interaction played a role in the development of drug-induced adverse event. In addition, there are differences in the reaction to a drug among subpopulations with different characteristics. Acute myocardial infarction is a common cause of the withdrawal or restriction of the use of drugs. Cardiovascular risk has been previously researched among hypoglycemic drug users; however, the gender difference in this risk has not been well studied. The U.S. Federal Drug Administration adverse Event Reporting System (FAERS) is a database supporting the postmarketing safety surveillance for approved drugs, and this database consists of the submitted reports on the adverse events and the drugs used by the patients, but lack for detail to population exposed to a specified drug. We applied the case-only study design to explore the interactions between gender and medication in FAERS from 2004 to 2014. A total of seven hundred thousand records of myocardial infarction by a specific drug were identified. The risk of hypoglycemic drug-induced myocardial infarction was 0.4-fold higher in male than the risk in female. We further validated the findings of interactions from the FAERS by utilizing the Taiwan National Health Insurance Research Database (NHIRD) between 1998 and 2014. A total of near 2 million new anti-diabetic drug users were followed up. We applied the nested case-control study design to study if the association between hypoglycemic drug use and myocardial infarction modified by gender, and the results showed that the risk of hypoglycemic drug-induced acute myocardial infarction was higher in man, compared with the risk in women. Our findings supported gender difference for the role of hypoglycemic drugs in acute myocardial infarction and implied the importance of personalized medicine approach.

224 Pattern of potential drug-drug interactions and adverse drug interactions associated with Pharmacotherapy in patients with cardiac arrhythmias

Mr. Sri Harsha Chalasani[1], Dr G R Saraswathy[1], Mr Pavan Kumar Murari[1], Ms. M Nayanathara[1], Dr Naga Mallesh[2]
[1]Dept. of Pharmacy Practice, Faculty of Pharmacy, MSRUAS, Bangalore, India, [2]Narayana Hrudayalaya, Ramaiah Memorial Hospital, Bangalore, India

Background: Cardiac arrhythmias are a group of cardiac rate and rhythm abnormalities that often goes underdiagnosed, and underreported in developing nations despite WHOs' global estimate of 16.7 million cardiac associated deaths. This group of events require intense pharmacotherapeutic interventions, however, the dearth in pharmacoepidemiological evidence warrants for answering certain drug safety concerns.
Aim: To assess the pattern of potential drug-drug interactions associated with pharmacotherapy of cardiac arrhythmias.
Methodology: A six-month long prospective cohort study was conducted in patients admitted with arrhythmia in Cardiology Department. Patients fulfilling study criteria were enrolled and pertaining data was collected by conducting medication history interviews and documented in a suitably designed electronic database. pDDIs were evaluated using Drug Interaction Probability Scale. Levels of interactions were assessed using standard primary and secondary resources.
Results: A total of 170 drug-drug interactions were identified and reported amongst 100 enrolled cardiac arrhythmia patients with a prevalence of 1.7 pDDI for every patient. Amiodarone was commonly prescribed. Of 71 (42%) pharmacokinetic interactions, 49 (29%) resulted in increased risk for toxicity. While 99 (58%) pharmacodynamic interactions resulted in agonistic and antagonistic outcomes 65 (38%), 34 (20%) respectively. Further, 102 (60%) were clinically significant interactions, wherein, 21 (20.5%) episodes of interactions occurred between aspirin and furosemide followed by 68 (40%) moderately severe level. 8% (10) of identified DDIs have resulted in adverse drug interactions (ADIs). The majority of ADIs (40%) were found to be probable followed by, possible (40%) and highly probable (20%). Pharmacist's suggestions were accepted.
Conclusion: DDIs in arrhythmia patients represents the serious problem and often goes undetected in developing nations. Strategies to reduce pharmacokinetic interactions, especially in high-risk medications should be developed along with ADI management protocols. Clinical Pharmacists may assist the health care professionals in uplifting patient-safety.

225 Profile of adverse drug reactions in neurology wards: Prevalence, preventability and reporting

Dr. E Maheswari[1], Ms Grace Jennifer Raju[1], Ms Saina ANN Kurian[1], Dr R Srinivasa[2]
[1]Dept. of Pharmacy Practice, Faculty of Pharmacy, Ramaiah University of Applied Sciences, Bangalore, India, [2]RMC, RGUHS, Bangalore, India

Background: Adverse drug reactions (ADRs) contribute to morbidity and mortality, resulting in increased healthcare cost. Association of Neurological medications with ADRs is common. Active surveillance can play a vital role in alerting the healthcare providers from the possible ADRs and thus protecting the patients receiving neurological medications.
Aim: To identify and report the nature of ADRs in neurology in-patient department.
Methodology: A prospective observational study was carried out for six months in the neurology wards of tertiary care hospital by newly established Department of Pharmacy Practice. All the patients admitted to inpatient wards and satisfying the inclusion criteria were monitored for ADRs. The assessment of causality, severity and preventability of reported ADRs was done as per standard algorithms.
Results: A total of 212 ADRs were reported from 250 enrolled patients with predominance of ADRs in elderly patients (25%). Antiepileptic drugs contributed to the majority of the ADRs (30%). Among which, levetiracetam (31.2%) was found to cause the number of ADRs followed by phenytoin (21.3%) and carbamazepine (13.1%). The most commonly reported ADRs were skin reactions 23 (11%) and, central nervous system (19.8 %) organ system was commonly affected. In 94 (44%) ADRs either the drug was withdrawn or reduction or increase in dose was done and 111(52%) reactions were treated. The majority of these reactions causality was probable 149 (70%) while 15% of the reactions needed hospitalisation. 93% of these reactions were preventable and 73.6% were predictable.
Conclusion: Clinical Pharmacists were welcomed by the Health Care professionals in the respective wards and the present study revealed that Clinical Pharmacist can contribute to the early identification of ADRs, thereby, anticipating better health outcomes.

226 Reports of adverse events associated with intravenous immunoglobulin

Dr. Pakawadee Sriphiromya[1]
[1]Ministry of Public Health, Bangkok, Thailand

Introduction: In 2015, the Thailand drug surveillance system has received two serious adverse reaction reports associated with immunoglobulin intravenous (IVIG) use from hospitals. Thaivigibase is spontaneous adverse drug reaction reports database form hospitals networks. IVIG is bio-similar drug and has been distributed through Universal Coverage scheme to hospitals with specialists in Thailand. The analysis of adverse drug reactions from IVIG in Thai patients were useful for regulatory authorities to decide risk management in IVIG use or other legal measures.
Objective: The objective is to review all adverse events after IVIG use and describe the characteristics of reports including seriousness and causality assessment.
Methods: The study was cross-sectional review of adverse events related to IVIG from 2006 to 2015 (ten years review). The study setting was at Health Product Vigilance center, Ministry of Public Health, Thailand.
Results: A total of thirty-seven adverse events associated to IVIG were reported in ten years retrospective review. The most adverse reactions were skin and appendages system including maculopapular rash or erythema multiforme. Three out of thirty-seven were serious (pulmonary haemorrhage, septic shock and auto antibody response). Two cases were resulted in death.
Conclusions: The serious adverse events associated with IVIG should be further monitored. Thai-Food and Drug Administration has decided to perform active surveillance to manage IVIG risk in Thai patients. Additionally, the risk management plan has also been considered.
Funding Source: There is no funding source and the authors have no conflict of interest in this study.

227 A systematic review on the safety and efficacy of naltrexone for amphetamine and methamphetamine users

Lam Lam[1], Shweta Anand[1], Xue Li[1], Esther WY Chan[1]
[1]*The University of Hong Kong, Hong Kong, China*

Background: Methamphetamine intake has increased substantially in recent years, being the second most abused illicit substance after cannabis. However, there is currently no effective evidence-based pharmacological treatment for amphetamine or methamphetamine use. Naltrexone, an opioid antagonist has been suggested as a possible treatment option by blocking the rewarding effects of amphetamine and methamphetamine.
Objectives: To evaluate the safety and efficacy of naltrexone for treating amphetamine and methamphetamine users
Methods: PubMed, EMBASE, and Cochrane Library were searched. The bibliographies of the retrieved articles were screened to further expand the search. Studies designed to investigate the effects of naltrexone on amphetamine or methamphetamine use were eligible for inclusion. The primary outcomes were defined as attenuated subjective measures using various scales and physiological changes such as blood pressure. The secondary outcome included compliance to treatment and adverse effects.
Results: Among 1753 identified studies, thirteen clinical trials and one cohort study was included after the eligibility assessment. Thirteen studies reported subjective effects after naltrexone, where four studies did not find a significant reduction for amphetamine and methamphetamine users versus placebo. Six studies reported patient compliance to treatment through blood sample, urine sample, or pill count. Four of the six studies showed a significant difference in favor of naltrexone compared with placebo in abstinence rate or amphetamine-negative urine samples. Regarding the safety profile, all studies reported naltrexone as generally well tolerated where mild nausea, fatigue, and headache were the most common side effects.
Conclusion: This review supports that naltrexone is generally well tolerated and could be potentially used for treating amphetamine and methamphetamine users. However, as limited large-scale studies were conducted to confirm the efficacy of naltrexone for amphetamine and methamphetamine dependence, more high-quality studies are warranted to further evaluate the potential use of naltrexone.

228 Association of CD4+ T cell counts after HAART and its correlation with opportunistic infections in Indian HIV patients

Mrs Merugu Divya[1], Dr Radhakrishnan Rajesh[1], Dr Vidyasagar Sudha[2], Dr Verma D Muralidhar[2]
[1]*Manipal College of Pharmaceutical Sciences, Department of Pharmacy Practice, Manipal University, Manipal, India, Manipal, Karanataka, India,* [2]*Department of Medicine, Kasturba Hospital, Manipal University, Manipal, Manipal, India*

Backgrounds: The use of Highly Active Antiretroviral Therapy (HAART) in the HIV treatment decreases immune suppression, as measured by CD4+ T-cell counts. There is a lack of data on opportunistic infection (OIs) with rise in CD4+T-cell count in response to HAART in HIV infected patients
Aims: The study was aimed to determine pattern of OIs and to assess the incidence of OIs relationship with rise in CD4+ T-cell counts before and after initiation of HAART.
Methods: A prospective study was conducted in medicine department of tertiary care hospital from Sep 2012 to May 2013. The Institutional Ethics Committee (IEC) approval was obtained. Patients were enrolled and assessed for pattern of OIs at the baseline and during the follow-up and the incidence of OIs with rise in CD4+ T cell count was assessed using the Mann Whitney test.
Results: Total of 143 HIV positive patients were enrolled in the study. The OIs of pulmonary tuberculosis 31.7% at baseline, 27.9%during six months of post HAART followed by oral candidiasis 16.1% at baseline, 6.5% during six months post HAART was reported respectively. Higher incidence of the OIs before and after initiation of HAART was with Disseminated Tuberculosis (0.09) followed by tuberculosis lymphadenitis (0.08).
Conclusion: Clinician and pharmacist should focus to counsel HIV infected patients with various OIs associated with HIV disease at the time of initiation of HAART and create awareness among HIV infected patients for early prevention of OIs.

229 Antipsychotics use and risk of ischemic stroke in atrial fibrillation patients with dementia

Su Yong Ow[1]
[1]College of Medicine, National Taiwan University, Taipei, Taiwan

Background: Antipsychotic drugs are commonly prescribed to elderly patients with dementia. Evidence accumulated from several studies in recent years have raised strong concern about the association of antipsychotics use and increased risk of stroke in this population especially those with cardiovascular disease.
Objectives:
1. Determine the prevalence of individual antipsychotics use in AF patients with dementia in Taiwan.
2. Investigate the effect of individual antipsychotics use on the risk of ischemic stroke in patients with AF and dementia.
3. Evaluate the dose-response relationship of antipsychotics use in patients with AF and dementia.
Methods: We conducted a retrospective cohort study with data from National Health Insurance Research Database (NHIRD). The cohort consisted of patients with atrial fibrillation (AF) and dementia who initiated antipsychotic treatment between January 1, 2006, and December 31, 2010. The risk of ischemic stroke associated with the use of individual antipsychotic drugs was evaluated by using an adjusted multivariable Cox proportional hazards model with haloperidol as the reference.
Results: Of the cohort, quetiapine was the most commonly prescribed antipsychotic drugs followed by haloperidol and risperidone among patients with AF and dementia. Compared with haloperidol, patients receiving quetiapine were significantly associated with lower risk of ischemic stroke (HR=0.776, 95% CI, 0.631-0.955) while risperidone users showed insignificant lower stroke risk (HR=0.832, 95% CI, 0.653-1.060). High dose of risperidone use was found significantly associated with increased risk of ischemic stroke (HR=1.601, 95% CI, 1.070-2.396) compared to the low-dose group.
Conclusion: Although the study cannot prove causality, the findings provide more evidence of the risk, assisting in decision making for clinicians considering antipsychotics for the treatment of behavioral and psychological symptoms in patients with AF and dementia. When the use of antipsychotics is inevitable, the study suggests prescribing quetiapine in lower possible dose in this population who possess the pre-existing high risk of stroke.

230 Impact of educational intervention to motivate the community pharmacists towards adverse drug reaction reporting and monitoring in South Indian district

Srikanth Siddalinge Gowda[1]
[1]JSS College of Pharmacy, JSS University, Mysuru, India, Mysuru, India, [2]Dr Adepu Ramesh, Principal, VCPS, Suryapet, India

Objectives: To assess the effectiveness of a structured educational program for improving community pharmacist knowledge in ADRs reporting and monitoring.
Methodology: A prospective interventional cross-sectional study was carried out by administering validated knowledge attitude practice (KAP) questionnaire to community pharmacists at South Indian district. At the end of the study, frequencies and percentages were used to measure demographic details of the participant and SPSS software package version-19 was used calculate the influence of educational intervention on KAP scores of the participants. Student T test was used to compare means of two continuous variables. Chi-square test was performed to find the significant difference between the knowledge in ADR reporting system of pre- and post-educational intervention.
Results: About 76 community pharmacists participated in the study, 96.05% (n=73) were male followed by 3.94% (n=03) female. The Mean±SD age of the community pharmacists was 39.69±8.65 years. Majority of the participants were (35.52%) in the age group of 40-44 years. Community pharmacists Mean±SD total score in the knowledge of basics concepts of ADRs significantly increased from 4.12 ± 2.02 to 7.12 ± 0.79 (n=76, P<0.05). Upon education 75% (n=57) of participants could correctly define the ADRs and 77.63% (n=59) of participants were aware of the aware of the consequence of ADR.During the 10 months regular follow–up, 156 ADR reports received from 34 (44.73%) trained pharmacists. Quality of ADRs were satisfactorily only for 69% of reports. However, remaining reports were not of satisfactory quality. Major barriers identified for under reporting were lack of time (78%), inadequate knowledge and skills (65%), and lack of time from patients (56%).
Conclusion: Educational intervention has significantly improved KAP of pharmacists towards ADR reporting. There is a strong need to implement educational and regulatory interventions periodically to improve the understanding of safety reporting among CP.

232 Improving spontaneous adverse drug reaction reporting among healthcare professionals: A systematic review

Mr. Walter-Rodney Nagumo[1], Dr. Robert Akparibo[1], Dr. Richard Cooper[1]
[1]*The University of Sheffield, Sheffield, United Kingdom*

Objectives: This review assessed the effectiveness of interventions to improve adverse drug reaction reporting among healthcare professionals.
Methods: A total of 2721 records were retrieved from a combination of databases; PubMed (578) EMBASE MedLine via Ovid (n=1986), CINAHL (n=6), African Index Medicus for Eastern Mediterranean Region (IMEMR) (n=0), Latin American Caribbean Health Science LILACS (n=0) Cochrane Library (n=2), other resources (n=149). Search terms used were “adverse drug reaction report*” OR “adverse drug reaction*” OR “adverse effect*” AND intervention AND improve AND "healthcare professional*" or doctor* OR nurs$ OR Pharmacist* AND hospital or "healthcare facilit$" Inclusion criteria selected studies investigating ADR reporting, using interventions to influence the behaviour of nurses, doctors, and pharmacist in a hospital setting. Studies were excluded if they focused on: students or allied health staff; specific disease conditions, patients, or specific drugs; or medication errors because the focus was on ADRs. Outcomes measured were ADR rates, relevance and quality of ADR reports, and commonly suspected drugs. Quality assessment was done using the Standard Quality Assessment for Evaluating Primary Research Papers checklist.
Results: Thirty studies were included in the final review after full article screening. 73.3% of studies used educational interventions as their main strategy for improving ADR reporting. They used training, lectures and materials distribution. The highest impact achieved was a 10-fold in reporting rate of ADR. Antibiotics were the most common drug classes evaluated, and skin/appendages were the most common organ systems examined. The most common reasons for low ADR reporting among HCP were indifference, ignorance of reporting procedures and complacency.
Conclusions: Educational interventions contributed positively to the number and quality of ADR reports. There is a need for a clear methodology, sampling, study design and further exploration using qualitative approaches to give a dynamic perspective about why ADRs are underreported.

233 A cross section study on prevalence of neuro-psychiatric disorders and quality of life in post stroke patients

Kiron Sadanandan[1]
[1]*Academy of Pharmaceutical Sciences, Kannur, India,* [2]*Susmitha G, Kannur, India,* [3]*Saritha M, Kannur, India,* [4]*Thomas Iype, Trivandrum, India*

Introduction: Stroke affect one’s physical and communication abilities, as well as causing emotional changes and difference in behaviour. So, present study underlines the importance of monitoring stoke survivors emotional and behaviour alternation.
Aim and Objectives: To determine the prevalence of neuropsychiatric disorders and the quality of life after stroke.
Methodology: The patients diagnosed as stroke and wished to participate were identified from Neurology Department of Government Hospital, Trivandrum and consent was obtained. Cross-sectional study for six-month duration after getting clearance from the Human Ethical Committee (order no: IEC no.07/22/2011/MCT). The patients and caregivers found suitable for inclusion were included and were interviewed using the twelve-subscale version of the Neuropsychiatric Inventory (NPI) for the prevalence. Quality of life were assessed using Stroke Specific Quality of Life scale. Data processing tabulation of descriptive statistics did on statistical software.
Results and Discussion: Out of 52 patients 71.15% were males and 28.84% females. The mean age of the patients was 63.21 (±10.19) years and the median was 65. 85% stroke patients were non-vegetarian. 61% patients had Blood Pressure, followed by 55% Dyslipidymia, 42% Diabetes Mellitus. Depression (46.15%) was observed high in percentage of domain present, subsequently Aggregation (30.77%), Anxiety (26.92%). The total NPI mean score is 8.6 (±10) and median was 4. The total Neuro Vegetative Changes mean score was 5 (±1) and median was 5. Quality of life was highest for family domain because of the support from the family members. Lowest score for health and functioning was found may be because of the older age, co-morbid conditions or may be of long term duration of stroke.
Conclusion: The study showed that the disease has lowered the quality of life of the patients, since majority of the patients are above 60 and need supplementary caring.

234 Parenteral nutrition utilization at a bone marrow transplantation hospital

Dr kashif Ali[1]
[1]*Dow university of health sciences, Karachi, Pakistan*

Background: Parenteral nutrition has become major component of patient care, the risks and costs associated with this therapy must be weighed against the benefits. The Department of Pharmacy services at our renowed Bone marrow transplant hospital has audited the use of Parenteral Nutrition based on criteria devised from guidelines developed by the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.).
Objective: To assess the appropriateness of TPN utilization evaluation in bone marrow transplants patients
Materials and methods: All patients who received PN from 2013-2015 were followed retrospectively. Clinical data and parenteral utilization data were recorded each patient referred for PN was assessed by a consultant hematologist and need for PN evaluated. Laboratory parameters (serum creatinine, urea and electrolytes), were observed during the treatment tenure.
Results: Out of total 15 patients, majority were males 8 (53.3%) whereas 7 (46.7%) were females. AML, ALL and CML were found in 3 (20%) each respectively whereas myelofibrosis was found in 2 (13.3%) and aplastic anemia in 4 (26.7%). Duration of therapy of AML patients was 3 (100%). In ALL patients, short term (up to five days) duration of therapy was found in 1 (33.3%) and long term (greater than 5 days) in 2 (66.7%) patients. In CML and myelofibrosis, patients, long term (greater than 5 days) duration of therapy was found in 3 (100%) patients. In aplastic anemia patients, short term (up to five days) duration of therapy was found in 2 (50%) and long term 2 (50%).
Conclusion: BMT patients routinely require PN backing to meet their supplement needs. While unmistakably multidisciplinary NSTs keep on playing an imperative part in the administration of PN support, composed rules on when to start treatment in BMT patients are inadequate. In a population where mortality is high, every effort should be made to optimize these patients.

235 Inflammatory bowel disease in Australia: Patterns in use and costs of medicines

Dr Christine Staatz[1], Dr Neal Martin[2], Mr David Kong[1], Dr Samantha Hollingworth[1]
[1]*School of Pharmacy, University of Queensland, Brisbane, Australia,* [2]*Department of Gastroenterology and Hepatology, Princess Alexandra Hospital, Brisbane, Australia*

Aim: The Australian government subsidises medicines through the Pharmaceutical Benefits Scheme (PBS) hence broadening their use. There have been no Australian studies examining the use and costs of medicines in inflammatory bowel disease (IBD). The aim of this study was to characterise the use and costs of subsidised medicines to treat IBD in Australia between 2004 and 2015.
Methods: We extracted dispensed use and expenditure data on 5-aminosalicyclic acids and biologic agents to treat IBD from Medicare Australia and analysed temporal trends. We standardised medicine use as the defined daily dose (DDD) per 1,000 population per day.
Results: Use of 5-aminosalicylic acids increased 68% from 1.36 to 2.28 DDD/1,000 population/day between 2004 to 2015, an average annual increase of 5.6%; while total government expenditure increased from A$33.1 million in 2004 to A$90.5 million in 2015. Use of biologic agents increased 871% from 0.029 to 0.280 DDD/1,000 population/day between 2008 and 2015, an average annual increase of 109%; while total government expenditure increased from A$1.2 million in 2008 to A$163.2 million in 2015.
Conclusions: Both the use and costs of medicines are increasing for all IBD indications in Australia. Based on the upward trajectories seen in this study, the financial burden of 5-aminosalicyclic acids and biologics on the PBS looks set to increase. The earlier and more widespread use of biologic agents may well produce cost savings in other areas of patient care, which must be taken into consideration when assessing the cost of IBD treatment.

236 Medication-use evaluation at a state-of-the-art neonatal intensive care unit of a south Indian tertiary care hospital

Mr Krishna Undela[1], Mr Bashar Saad[1], Dr Gurumurthy Parthasarathi[1], Dr Srinivas Murthy[2]
[1]JSS College of Pharmacy, JSS University, Mysuru, India, [2]JSS Medical College & Hospital, JSS University, Mysuru, India

Objective: To evaluate the use of medications at a neonatal intensive care unit (NICU).
Methods: A prospective observational study was conducted at a state-of-the-art NICU of a south Indian tertiary care hospital for a period of nine months. All babies, of either sex admitted to NICU and received at least one medication were enrolled into the study after receiving an informed consent from parent/guardian. Baby's medical diseases and conditions were classified according to the WHO International Classification of Diseases. Medications received were classified and coded according the WHO Anatomical Therapeutic and Chemical Classification (ATC) system.
Results: A total of 405 babies were included in the study; 61% were males and median (IQR) age was found to be 10 (5-22) days. About 132 (33%) babies born pre-term (≤36 weeks) and 178 (44%) had low birth weight (<2500g). The most commonly observed reason for NICU admission was tachypnoea (23%), followed by jaundice (17%), fever (17%) and prematurity care (13%). A total of 72 types and 747 medical diseases and conditions were identified among babies included. Total number of medications prescribed was 2746, including 66 different types of medications with mean 6.7 (±3.64) medications. Most commonly prescribed ATC class of medications was anti-infectives for systemic use (47.5%), followed by alimentary tract and metabolism (16.4%). Interestingly, 74% of all medications prescribed were unlicensed or for off-labelled indication. A total of 225 drug-drug interactions and 20 adverse drug reactions (thrombocytopenia and leucopenia caused by antibiotics like piperacillin/tazobactam, meropenem and gentamicin) were identified.
Conclusion: Pre-term delivery and low birth weight were identified as major attributes for the medical conditions observed and medications prescribed among babies admitted to NICU. Around half of the medications prescribed in NICU were found to be anti-infectives for preventing and treating infectious diseases.

237 The effectiveness and safety of febuxostat in chronic kidney disease patients with hyperuricemia or gout

Chien-huei Huang[1], Yen-Jung Chen[2], Pheng-Ying Yeh Liu[1], Ching-Lan Cheng[1,2], Yea-Huei Kao Yang[2]
[1]National Cheng Kung University Hospital, Department of pharmacy, Tainan city, Taiwan, [2]National Cheng Kung University, Institute of Clinical Pharmacy and Pharmaceutical Sciences, Tainan city, Taiwan

Objective: This study evaluated the effectiveness and safety of febuxostat versus allopurinol in CKD patients (stage 3 to 5) with gout and hyperuricemia.
Methods: This is a historical controlled, retrospective cohort study. We collected data from the National Cheng Kung University Hospital in Taiwan. Patients above 20 years old, with moderate to severe CKD, who received new prescription of allopurinol from 2011 to 2013 or febuxostat from 2014 to 2015 were enrolled. Primary outcome was the proportion of serum uric acid (UA) level lower than 6.0 mg/dL. Secondary outcome was the safety of febuxostat. All patients were followed up for two years or until the occurrence of censored events.
Results: A total of 273 patients in the allopurinol group, and 294 patients in the febuxostat group were enrolled. The differences for baseline characteristics of patients between both groups were age, gender, baseline UA, and renal function. The result of survival analysis showed that febuxostat is significantly more effective than allopurinol (HR for uric acid less than 6.0 mg/dl: 7.01; 95 % CI: 5.30- 9.49; P <0.0001, Figure 1). The advantages are that febuxostat is sustained after the stratification. Most patients in the febuxostat group were prescribed a dose of 40 mg daily (CKD stage 3 :62%, stage 4: 65%, stage 5: 80%), and some patients were prescribed only 20 mg daily. In the allopurinol group, the adverse drug event rate was 3.4%, and some were adverse skin reactions (2.9%). There were no moderate to severe adverse events found in the febuxostat group, only some mild skin rash reactions (0.6%) were observed.
Conclusion: Our study showed that febuxostat is a more effective and safe uric acid-lowering agent than allopurinol in advanced CKD patients with gout and hyperuricemia. And the most effective dose for the patients with renal impairment is 40mg daily.

238 Retrospective evaluation of the clinical dose of vancomycin using different renal filament filtration rate formula

Pei-Ling Chiang Chiang Pei-Ling[1], Zong-Xian Huang Huang Zong-Xian[1], Hui-Chen Su Su Hui-Chen[1]
[1]Chi Mei Medical Center, Tainan City, Taiwan

Introduction: The most commonly used to estimate the rate of renal filament filtration are the Cockcroft-Gault and MDRD (Modification of Diet in Renal Disease) formulas. But there is not enough evidence to show that had the same results in the Asian. The aim of this study was to investigate the dose of vancomycin administered to the elderly based on Cockcroft-Gault and MDRD formulas can speculate that the dose closed to the clinical dosage.
Experiment: Retrospective collection from January 2015 to December 2016, older than 75 years, use vancomycin to treat infectious. According to the trough concentration of vancomycin, divided into normal group (trough: 10-20 mg/L) and abnormal group (trough > 20 mg/L or <10 mg/L). The patients were divided into four groups according to creatinine clearance (Clcr): Clcr 10-30 ml/min, 30-50 ml/min, 50-70 ml/min,> 70 ml/min. Using Clcr or IDMS-MDRD (isotope dilution mass spectrometry-MDRD) formulas to estimate the dose of vancomycin and compared with clinical dosage.
Result: A total of 230 patients with normal and abnormal groups of vancomycin were screened. Exclud the 17 of the patients had haemodialysis and 23 of no SCr data. Patients were divided into four groups according to Clcr. The vancomycin dosage closed to the clinical use ratio is (Clcr: MDRD): Clcr 10-30 ml/min: 70.8%: 37.5%; Clcr 30-50 ml/min: 50.8%: 33.3%; Clcr 50-70 ml/min: 42.6%: 32%; Clcr >70 ml/min: 42.4%: 6.0%.
Discussion & Conclusion: The preliminary of this retrospective analysis showed that in Clcr <30 ml/min or >70 ml/min patients used Cockcroft-Gault to predict vancomycin dosage is more accurate. However, in Clcr 30-70 ml/min patients, used these two formulas were not different. It's expected to provide a reference for physicians to use vancomycin for the elderly.

239 Evaluation of non-selective beta-blocker use for primary and secondary prophylaxis of variceal haemorrhage in decompensated cirrhosis

Ms Kelly Hayward[1,2], Prof Elizabeth Powell[2,3], Dr Preya Patel[2,3], Dr Katharine Irvine[2], Dr Caroline Tallis[3], Dr Katherine Stuart[3], A/Prof Neil Cottrell[4], A/Prof Patricia Valery[5], Prof Jennifer Martin[6]
[1]Pharmacy Department, Princess Alexandra Hospital, Woolloongabba, Australia, [2]Centre for Liver Disease Research, Translational Research Institute, The University of Queensland, Woolloongabba, Australia, [3]Department of Gastroenterology and Hepatology, Princess Alexandra Hospital, Woolloongabba, Australia, [4]School of Pharmacy, The University of Queensland, Woolloongabba, Australia, [5]QIMR Berghofer Medical Research Institute, Herston, Australia, [6]School of Medicine and Public Health, University of Newcastle, Callaghan, Australia

Background: Variceal haemorrhage (VH) is a severe complication of decompensated cirrhosis (DC), occurring at a rate of 10-15% per year and associated with a 6-week mortality of 15-25%. Non-selective beta-blockers (NSBB) and/or endoscopic variceal ligation (EVL) are recommended for prophylaxis of VH to prevent hospitalisation and death. We aimed to examine use of NSBB among ambulatory adults with DC, to evaluate concordance with international best practice guidelines.
Methods: Patients with clinical/biochemical decompensation were interviewed when they attended follow-up at a tertiary hepatology clinic. Current medications, medical history, clinical and demographic variables were obtained via patient interview and medical records. Histology, Fibroscan®, ultrasound and endoscopy reports were used to determine presence of cirrhosis and varices.
Results: Data is available for 114 patients. Mean age was 58.8±10.2 years, 65.8% were male and most patients had alcoholic cirrhosis (47.4%) or hepatitis C (33.3%).
24 patients had a history of VH. 14 patients (58.3%) were receiving secondary prophylaxis with a combination of NSBB plus EVL, as recommended. Six patients received only EVL and two patients were prescribed only NSBB. Two patients (n=1 rectal varices, n=1 stomal varices) were not receiving secondary prophylaxis.
48 patients had known varices that had not bled (n=18 grade 1, n=23 grade 2, n=6 grade 3, n=1 grade not available). Primary prophylaxis with NSBB was prescribed for 28 patients. 11 patients (39.3%) were managed outside of guideline recommendations (n=6 grade 1 varices, n=5 no varices). Among patients with grade 2/3 varices, 16 were prescribed NSBB, two were treated with EVL, and primary prophylaxis was not prescribed for 11 patients. Reasons for non-prescription of NSBB in these patients included respiratory disease (n=2), postural intolerance (n=1) and not documented (n=8).
Conclusion: Variation in patient management compared to international best practice guidelines was observed. Individualised patient treatment may account for some variation.

240 Use of hormone therapy for menopause in Australia over two decades: Does the change in evidence matter?

Mr Rifani Natari[1,2], Dr Treasure McGuire[1,3,4], Assoc. Prof Alexandra Clavarino[1], Dr Kaeleen Dingle[5], Dr Samantha Hollingworth[1]

[1]School of Pharmacy, University of Queensland, Woolloongabba, Australia, [2]Department of Pharmacy, Jambi Psychiatric Hospital, Jambi, Indonesia, [3]Mater Pharmacy Services, Mater Health Services, South Brisbane, Australia, [4]Faculty of Health Sciences and Medicine, Bond University, Gold Coast, Australia, [5]School of Public Health and Social Work, Queensland University of Technology, Kelvin Grove, Australia

Aim: To examine the use of hormone therapy (HT) for menopause in Australia (1995-2016) and the relationship to evidence about the use of HT.

Methods: We measured use of HT (Anatomical Therapeutic Chemical codes G03C, G03D, G03F) in Australia using two data sources: the national subsidised formulary - Pharmaceutical Benefits Schedule (PBS); and non-subsidised pharmacy sales data. We standardised use as the defined daily dose (DDD)/1,000 women/day. We considered product, dose and route of administration.

Results: Prior to 2001, HT use was relatively stable but the use of progestogens decreased (average annualised change -8.7%) and combination products increased (average annual +16.8%). All HT products use decreased sharply after 2002 (19.6 - 51.5%) - the year the Women's Health Initiative (WHI) study showed an increased risk of breast cancer with HT which received widespread coverage. The use of HT only stabilised after 2009 at 48.0 - 60.2 DDD/1,000/day. Medium dose HT use fell by 26.7% after 2002 and continued to decrease after 2004 before stabilising after 2010. Both high and low dose product use decreased after 2000 and stabilised after 2009. In 2014-2016, the use of low dose HT increased and medium dose decreased, which might reflect the substitution of medium for lower dose vaginal HT. Vaginal products' use slightly increased after 2001 while oral and transdermal products' use decreased and stabilised after 2009. Many products, notably oral HT, were removed from the PBS from 2004.

Conclusion: The WHI study was terminated in 2002 due to increased risks of breast cancer in HT users and this likely contributed to decreased use of HT. Although HT use was supported by subsequent WHI reports and the recent consensus statement of various medical societies, HT use remains low in Australia. We need a concerted effort to promote HT for women with troublesome menopausal symptoms.

242 Assessment of treatment pattern and outcome in patients with cerebral venous thrombosis, a relatively uncommon type of stroke

Dr. Varsha Prabhu[1], Dr. Amith Sitaram[2], Dr. Kurupath Radhakrishnan[3], Dr. MK Unnikrishnan[1,4]

[1] Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal University, India, [2]Department of Clinical Neurosciences, Foothills Medical Center, Calgary, Alberta, Canada, , , [3]Department of Neurology, Amrita Institute of Medical Sciences, Ponekkara, Kochi- 682041, , India, [4]National College of Pharmacy, Kozhikode, Kerala - 673602, , India

Aim: to assess the clinical profile, treatment pattern and prognosis in patients with cerebral venous thrombosis (CVT), relatively uncommon form of stroke.

Methods: This retrospective observational study was carried out at a tertiary care hospital in Karnataka, South India between January 2010 and October 2015. Patients diagnosed with cerebral venous thrombosis (ICD code G08) and confirmed by imaging reports were identified from the registry of Medical Records Division (MRD) of the hospital. The study protocol was granted prior approval by the Institutional ethics committee. A case record form (CRF) was developed to collect patient's demographic details, clinical presentation, treatment pattern and prognosis at discharge.

Results: A total of 141 patients were identified from the MRD and data were collected for all the patients. Mean age of patients was 35.45 ± 14.32 (Mean ± SD), age range (3-78) years. Gender–wise distribution showed 112 (79.4%) men and 29 (20.6%) were women. Mean length of hospitalization was 13.6 days. Headache (95; 67.3%) was the most common presenting feature. Treatment pattern showed that 117 (82.97%) were on warfarin, 17 (12%) on acenocoumarol, 5 (3.5%) on heparin. Only 2 (1.41%) were not on anticoagulation treatment at discharge. Prognosis of patients during hospitalization showed that 127 (90.07%) were improved, 4 (2.83%) expired and 10 (7.09%) were discharged against medical advice. Complications of anticoagulation treatment were seen in 9 (6.38%) patients. Recurrent CVT was seen in 12 (8.51%) patients.

Conclusion: Present study showed a higher proportion of men suffering from CVT than women. Headache was the most common presenting feature. Anticoagulation with warfarin was the most common treatment. Majority of the patients improved at discharge. Bleeding was the common complication of anticoagulant therapy.

243 Assessment of prevalence of primary headaches and associated risk factors amongst university residents: A prospective observational questionnaire based study

Mr Sri Harsha Chalasani[1], Ms Bileena K[1], Ms Tinu Merin Thomas[1], Dr Srinivasa R[2], Ms Preethy Mathew Karanath[1]
[1]Faculty of Pharmacy, MSRUAS, Bangalore, India, [2]RMC, RGUHS, Bangalore, India

Introduction:
Although the prevalence of primary headaches has been established in the Indian population, there are fewer studies focused on the prevalence of headache amongst Indian students. The burden attributed to headache can adversely affect students in their prospectus.
Objective: To assess the prevalence and associated risk factors of primary headaches amongst the residents of M.S Ramaiah University of Applied Sciences, Bangalore.
Methodology: The survey was performed employing Headache-Attributed Restriction, Disability, Social Handicap and Impaired Participation (HARDSHIP) questionnaire and the categorization of primary headaches was performed using International Classification of Headache Disorders III criteria. Participants were provided with a supplementary headache diary to record experienced headache episodes and precipitating factors to the best of their knowledge.
Results: A total of 441 voluntary participants were screened. Among which 250 (57%) individuals were included. Tension Type Headache (TTH) was found to be the common primary headache over migraine 139 (55.6%), and 113 (45.2%) respectively. Amongst the migraine population, migraine without aura was found to be the prevalent [71, 62.8%] subtype. The occurrence of a primary headache was more common (145, 58%) amongst females of 18-25 years. Amongst migraineurs, positive correlation was observed between the onset of headache and risk factors such as menstrual cycle, stress, skipping meals, strong odours, obesity, family history, chocolate with an Odd's ratio of 2.019 (5% CI; 0.83-4.83), 1.88 (95% CI;1.001-3.537), 1.07 (95% CI; 0.65-1.77), 2.55 (95% CI;1.46-4.45), 3.176 (95% CI; 1.588-6.34), and 1.01 (95% CI; 0.3-3.403) respectively.
Conclusion: Although a primary headache is a significant health problem, it usually remains underdiagnosed and underreported among students. A Clinical Pharmacist can play a major role by collaborating with physicians and guiding patients to identify individual triggering factors to improving their quality of life.

244 Prevalence and management of anemia in chronic kidney disease patients

Miss Arjuma Begum[1], Mr Prasanna Kumar[1], Dr. Ravindra Prabhu Attur[2]
[1]Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal University, Manipal, Manipal, India, [2]Dept. of Nephrology, Kasturba Medical College, Manipal University, Manipal, India

Objective: To study the prevalence and management of anemia in diabetic and non-diabetic chronic kidney disease patients.
Methods: A retrospective observational study conducted in patients with CKD in a tertiary care hospital over a period of one year. The patients diagnosed under the ICD-18.3 to 18.5 & 18.9 codes were included for the study prevalence of anemia and drug utilization pattern in chronic kidney disease and hemodialysis patients. Three outcomes were assessed: the prevalence of anemia CKD, the prevalence of anemia in subjects with diabetic and non-diabetic CKD, and treatment approach for anemia management.
Results: Total of 562 case records was analyzed. CKD was more common in males, belonged to the age group of 40-60 years followed by 60 – 69 years. The overall mean age was 54.40±13.64 years, 93% had a history of hypertension, and 45% had diabetes. We found that the prevalence of anemia in CKD patients was 58.5% in the year 2015. Our study observes that there was no much difference of anemia prevalence seen in diabetic and non-diabetic CKD patients (60.7% vs 56.7%). But the prevalence of anemia increased with stage of CKD, from 5.4% at stage 3 to 46.7% at stage 5D (dialysis). In anemia management Erythropoietin accounts for 60%, oral iron 25% and IV iron accounts for 5% of patients. Similar trend of drug usage pattern was seen in both the group of CKD patients for anemia management.
Conclusion: Prevalence of anemia progressively increases with advancing stages of CKD. Diabetes mellitus was not influencing the prevalence of anemia in patients with CKD. So, our study observed that diabetes many not be the independent risk factor for the increase of anemia occurrence in CKD patients. Further investigation is needed to determine the impact of anemia on cardiovascular comorbidities.

245 Efficacy of antiepileptic drugs for partial onset seizures and generalized onset tonic-clonic seizures: An overview of Cochrane reviews

Cai Ting[1], Yi Zhan-miao[2], Gao Le[1], Yang Ji-chun[1], Wen Cheng[2], Huang Wei[2], Sun Feng[1], Zhai Suo-di[2], Zhan Si-yan[1]
[1]School of Public Health, Peking University, Beijing, China, [2]Department of Pharmacy, Peking University Third Hospital, Beijing, China

Objective: To provide an overview of the relative efficacy of antiepileptic drugs (AEDs) for the treatment of partial onset seizures (PS) and generalized onset tonic-clonic seizures (GTCS).
Methods: The Cochrane Database of Systematic Reviews (CDSR) was searched for reviews on RCTs evaluating efficacy of AEDs in patients with PS and GTCS, published up to 31 May 2017. 4 primary outcomes of efficacy were extracted, measured as Hazard Ratio (HR) for treatments comparison. Methodological quality of reviews was assessed by AMSTAR and evidence quality of outcomes was ranked by GRADE.
Results: 9 reviews were included, involving 9 comparisons among 8 AEDs: carbamazepine, lamotrigine, phenobarbitone, phenytoin, topiramate, valproate, vigabatrin and oxcarbazepine. All the reviews were assessed as high methodological quality but the evidence grades of the selected outcomes were mostly low or moderate. As compared to carbamazepine, for the outcome of time to treatment withdrawal, the highest HR (95% CI) among the other 7 AEDs is 1.16 (0.98, 1.38) with topiramate and the lowest is 0.61 (0.37, 1.01) with oxcarbazepine; for the outcome of time to first seizure post-randomization, the highest is 1.57 (1.23, 2.02) with vigabatrin and the lowest is 1.06 (0.77, 1.47) with oxcarbazepine; for the outcome of time to 6-month remission, the highest is 1.18 (0.89, 1.55) with vigabatrin and the lowest is 0.86 (0.76, 0.97) with lamotrigine; for the outcome of time to 12-month remission, the highest is 1.10 (0.75, 1.60) with oxcarbazepine and lowest is 0.84 (0.71, 1.00) with topiramate. These results are all statistically insignificant except the HR of time to first seizure for vigabatrin.
Conclusion: No significant differences of the efficacy of the 8 AEDs for treatment of PS and GTCS, except vigabatrin showing higher risk for time to first seizure. The current evidences for the selected outcomes are inadequate.

246 Using spatial analysis to explore the factors related to fatality among patients with ischemic stroke in Taiwan

Yen-Chun Lin[1], Ching-Lan Cheng[2], Yi-Chi Chen[3], Tzu-Ming Liu[4], Yea-Huei Kao Yang[2], Chien-Huei Huang[5]
[1]Institute of Clinical Pharmacy and Pharmaceutical Sciences, National Cheng Kung University, Tainan, Taiwan, [2]School of Pharmacy, Institute of Clinical Pharmacy and Pharmaceutical Sciences, Health Outcome Research Center, National Cheng Kung University, Tainan, Taiwan, [3]Department of Economics, National Cheng Kung University, Tainan, Taiwan, [4]Graduate Institute of Sustainable Tourism and Recreation Management, National Taichung University, Taichung, Taiwan, [5]Department of Pharmacy, National Cheng Kung University Hospital, Taiwan

Aim/Objective: Many risk factors for stroke fatality have been known, however, spatial analysis in order to identify new causal factors such as geographical inequalities of health care across and within country. This study was to identify determinants of fatality after ischemic stroke across 349 townships in Taiwan, by using spatial analysis.
Methods: We conducted a retrospective cohort study by using 2004-2012 National health insurance research database (NHIRD), involving patients (age≥18 years) with first-ever ischemic stroke (ICD-9 codes 433, 434). We observed the cardiovascular drug utilization including thrombolytic therapy, statins, diuretics and antiplatelet agents, for the following 3 months, while the dosage of each prescription was converted into defined daily doses to measure the consumption of medications. The outcome was 1 year fatality rate after ischemic stroke. Local Indicators of Spatial Association (LISA) were applied to detect the spatial clusters of fatality rate. In addition, spatial Durbin panel model was used to identify factors related to fatality rates, including demographics, co-morbidities, post-stroke cardiovascular drug utilization and socioeconomic status at township level. Data were analyzed with ArcGIS, GeoDa and STATA.
Results: A total of 165,732 patients were included, with a mean age of 67.5 years and 58.5% male. All these patients were identified the region of residence, and the LISA statistics showed a high fatality rate was clustered in rural areas. Results from spatial regression model found that atrial fibrillation($p<0.001$), heart failure($p<0.001$) are positively associated with fatality, while the utilization of thrombolytic therapy($p<0.001$) and antiplatelet agents($p=0.01$) had a significant negative association. Unlike studies in other countries, the socioeconomic status showed no significant association.
Conclusion: Our finding indicated that townships with higher utilization of thrombolytic therapy and antiplatelet agents had lower fatality rate, suggesting healthcare providers to improve the utilization of these medications after ischemic stroke in rural areas.

247 Rational use of oral muscle relaxants in community hospitals and primary care hospitals: Results from nationwide health database

Dr. Penkarn Kanjanarat[1], Ms. Chanika Jeantone[2], Dr. Sakon Supakul[1]
[1]Chiang Mai University, Mueang, Thailand, [2]Mae Ta Hosptial, Mae Tha, Thailand

Objective: To determine prevalence, costs, and rational prescribing of oral muscle relaxants in out-patients at community hospitals and primary care hospitals.
Methods: We conducted prescription analyses of prevalence, trends, and costs of 7 oral muscle relaxants; baclofen, diazepam, tizanidine, eperisone, methocabamol, orphenadrine and paracetamol combination, and tolperisone, using data from 1304 hospitals in 8 provinces in the northern region of Thailand from nationwide health database of the Health Data Center, Ministry of Public Health Thailand, during 3 fiscal years from October 2010 to September 2013. Assessment of rational use of baclofen, diazepam, and tizanidine listed in the National List of Essential Medicines (NELM) was conducted based on their indications in the NELM using ICD-10 codes. Prescribing of combined drug of orphenadrine and paracetamol with an additional paracetamol was also analyzed.
Results: From 8,596,019 records, prevalence and costs (USD) of muscle relaxant prescribing was 8.6% (172,181.5), 5.7%(223,765.4), and 5.1%(164,750.8) in 2011, 2012, and 2013, respectively. Top three most prevalent muscle relaxants prescribing were combined orphenadrine and paracetamol (69%), diazepam (20.6%), and tolperisone (10.4%). Two-third (64.3%) of muscle relaxants were prescribed in women (64.3%) and one-third (34.9%) in elderly patients. Prevalence of rational use of muscle relaxant prescribing based on indications was 30.0%. Prescribing of orphenadrine and paracetamol combination drugs with an additional paracetamol in one prescription was 32.8%.
Conclusions: One third of prescribing of muscle relaxants in community hospitals and primary care hospitals was considered rational, while one third of co-prescribing of the drug with an additional paracetamol drug was observed.

248 Assessment of rational drug use in patient with non-communicable diseases in public hospitals based on Rational Drug Use Hospital Indicators

Dr. Penkarn Kanjanarat[1], Ms. Naphaphorn Puripunyavanich[2], Mr. Pongpan Suriyong[3]
[1]Chiang Mai University, Mueang, Thailand, [2]Ministry of Public Health, Mueang, Thailand, [3]Burapha University, Bang San, Thailand

Objective: To assess rational drug use in patients with non-communicable diseases (NCDs) in public hospitals in Thailand using the Rational Drug Use Hospital Indicators (RDUIs)
Methods: We conducted a descriptive cross-sectional study to assess rational use of drugs using the RDUIs. The RDUIs were developed based on WHO rational drug use indicators in primary care settings and expert opinions to monitor the Rational Drug Use Hospital Project. Two core indicators and five NCD indicators from RDUI were selected to assess rational drug use in patients with NCDs, including dyslipidemia, asthma, general hypertension, type 2 diabetes, and chronic kidney disease. Analyses of prescription data in outpatient services from 10 public hospitals (3 teaching hospitals, 3 tertiary care hospitals, 4 community hospitals) during October 1 2015 to March 31 2016 were conducted.
Results: The average number of drugs per prescription was 3.2 ±0.8 with a range between 1.89-4.62. The percentage of prescribing drugs in the National Essential List of Medicines was 89.7%. The percentage of prescribing of moderate to high intensity statins in the National Essential List of Medicines was 40.9% and inhaled corticosteroids in patients with asthma was 70.9%. Dual prescribing of renin-angiotensin blockade in patients with general hypertension was 0.24%, glibenclamide prescribing in type 2 diabetes patients older than 65 years or eGFR < 60 ml/min/1.73m2 was 4.32%, and NSAIDs prescribing in patients with chronic kidney disease stage 3 was 0.37%.
Conclusions: Rational drug use was observed in prescribing drugs in the NELM and treatment of asthma, hypertension, diabetes. Promotion of prescribing recommended statins in dyslipidemia is needed.

249 Socio-demographic profile, patterns and outcomes of poisoning cases in a tertiary care teaching hospital

Dr Abhimanyu Prashar[1], Dr Madhan Ramesh[2]
[1]*Jagadguru Sri Shivarathreeswara University, Mysuru, India,* [2]*Jagadguru Sri Shivarathreeswara University, Mysuru, India*

Aims/ Objectives: To determine the socio-demographic profile, patterns of poisonings and treatment outcomes of the poisoning cases.
Methods: A prospective interventional study was conducted at the department of emergency medicine of a South Indian tertiary care hospital for a period of one year to study socio - demographic profile, pattern and outcomes of poisoning cases. All the patients admitted to department of emergency medicine with accidental/ intentional poisoning were followed and all the required details were collected from various sources and documented. Passive interventions were made by providing treatment protocols for poisoning whenever requested by the physician.
Results: Poisoning cases contributed to 1.96% of the 24151 cases admitted to the department of emergency medicine. Majority of poisonings were observed in male population (64.6%) and among the age group of 21-30 years (40.6%). Intentional poisoning (82.3%) was the leading cause among all the poisoning cases. Poisoning was prevalent in rural population (49.5%) and people engaged in agriculture (28.6%) for the livelihood. Pesticides were the most common agents implicated (56.2%) in poisonings. Based on Glasgow Comatose Scale (GCS) and Poison Severity Scale (PSS) the majority of the poisoning cases presented with Mild (80%) and Minor symptoms (42.9%) respectively. Average duration of the hospital stay due to poisoning was found to be 6.21 ± 5.31 days. A total of 342 Interventions were made by providing the treatment protocols for the patients with poisoning. In 83.4% of the cases, patients recovered while mortality was observed in 4.4 % of cases.
Conclusion: It is observed that the pesticides are the most common agents implicated in intentional as well accidental poisonings. Providing immediate information on management of poisoning cases results in better treatment outcomes.

250 Factors associated with non-steroidal anti-inflammatory drugs use: A community-based survey

Mr Pongpan Suriyong[1], Mr Pranot Leamsukmongkhon[1], Mr Siranat Saynoi[1], Mr Watcharapong Soaythong[1]
[1]*Faculty of Pharmaceutical Science, Burapha University, Thailand, Maung, Thailand*

Aim/Objective: NSAIDs are easily accessed from drugstores and grocery stores in Thailand. This study was aimed to survey the use of individual NSAIDs and explore factors associated with NSAIDs use in community.
Methods: A household cross-sectional survey was conducted in adults 18 or older residing at Wonnapha Beach Community, Chonburi Province, Thailand. Study subjects were systemically random sampling using probability proportional to size (PPS) method by household size. Subject demographics and NSAIDs use behavior data were collected by questionnaire developed for this study. NSAIDs use was collected by interview accompanied with NSAIDs identification chart. NSAIDs use behavior score was categorized as poor or good, while NSAIDs use as low and high groups. Associations between demographic factors and NSAIDs behavior scores and NSAIDs use in DDD were analyzed using multivariate logistic regression.
Results: A total of 100 people were surveyed with average age of 40.38 ± 1.47 years. Half of them were female (55.0%). Fifty-two percentage of the subjects had good NSAIDs use behavior scores, while 54% of the subjects had low NSAIDs use. Average cumulative NSAIDs use in one year was 21.07 DDDs. Top 5 NSAID drug used were ibuprofen, piroxicam, mefenamic acid, diclofenac and naproxen (7.87, 6.94, 3.12, 2.15 and 0.99 DDD/year, respectively). Univariate analyses showed that NSAIDs use behavior score was associated with education (OR 3.7, 95% CI 1.80 - 9.59). NSAIDs use were associated with age>40 (OR 0.44, 95% 0.20 – 0.99), household member>3 (OR 0.41, 95% CI 0.18 - 0.93) and being married (OR 0.44, 95% 0.20 – 0.99). Multivariate analyses did not find any associations.
Conclusion: Adults living in community used very few NSAIDs. Half of them had good NSAIDs use behavioral scores and low NSAIDs use. Age, number of household member, and marital status were associated with NSAIDs use.

251 Assessment of patients admitted for drug-related problems in cancer chemotherapy

Ms Reshma Susan Reji[1], Mr Binit Kumar[1], Dr Sreedharan Nair[1], Dr Girish Thunga P[1], Dr Karthik S Udupa[2]
[1]Department of Pharmacy Practice,Manipal college of Pharmaceutical sciences,Manipal University, Manipal, India, [2]Department of Medical Oncology, Kasturba Medical College,Manipal University , Manipal, India

Objectives: The main objective was to study the chemotherapy drug- related hospital admissions in a tertiary care teaching hospital and to estimate the cost involved in the management of DRP's due to chemotherapy.
Methods: A prospective observational study was done over a period of 6 months. All patients admitted for supportive care management during the study period due to drug related problem were included in the study. Patients with chemotherapy drug-related admissions were prospectively identified from the patient's medical records. The contribution of drug-related problems and cost incurred due to each hospitalization was assessed. Data were analyzed using SPSS ® 20.0 version
Results: Out of 55 patients analyzed drug-related problems (DRPs) were commonly observed in the age group of 51-60 years 25 (45.5%). The frequently occurring DRP was Adverse Drug Reactions 42 (76.4%) which was noticed more in females. Majority of the DRPs were caused by alkylating agents 8(14.5%) and the least by hormonal agents 8(14.5%). The mean length of hospitalization was found to be 9.6±6.5 days. Pharmacoeconomic evaluation for total direct medical cost and total direct non-medical cost was performed. The total direct medical cost was found to be Rs. 31540 ± 42476. Medicine costs Rs16550± 25404 accounted for a major share of the total medical costs.
Conclusion: Our study revealed DRPs is high in elderly patients and among patients with breast cancer. Adverse drug reactions were the predominately identified problem among the DRPs and were reported to be high in females. Medicine charges accounted for a major share among direct medical cost. Direct non-medical charges such as transportation charges and food charges added on to the financial burden of patients with cancer. Pharmacist can provide better patient care by identifying and preventing DRPs and reducing drug-related morbidity and mortality.

252 Consequences of drug-related problems amongst the patients with polypharmacy

Dr. E Maheswari[1], Ms. Lincy Selvan[1], Ms. Greeshma Mohan[1], Dr. S Tharanath[2]
[1]Dept. of Pharmacy Practice, Faculty of Pharmacy, Ramaiah University of Applied Sciences, Bangalore, India, [2]RMC, RGUHS, Bangalore, India

Background: Given the rise in the affordable quality health care and the complexities involved in the management of diseases, polypharmacy is becoming more prevalent in patients. Drug-related problems (DRPs) are on rising tide with the given scenario. Clinical Pharmacist interventions are needed to reduce the DRPs.
Objective: To characterise drug-related problems among patients with polypharmacy.
Methodology: A prospective observational study was carried out for six months in the medical wards of tertiary care hospital by newly established Department of Pharmacy Practice. All the patients admitted to inpatient wards and satisfying the inclusion criteria were monitored for DRPs. Hepler–Strand classification of DRPs was adopted. The assessment of causality, severity and preventability of reported ADRs was done as per standard algorithms.
Results: A total of 150 patient case sheet were reviewed during the study period, out of which 213 DRPs were identified from 78 patients. The most common DRP was found to be ADRs (45%) followed by needs additional drug therapy (26.8%), an untreated indication (13.6%), drug interaction (11.7%), drug use without indication (1.4%). Overdose (1%) and subtherapeutic dose (0.5%). The most frequent suggestions provided by the intervening pharmacist were cessation and addition of drug (31.4%) followed by addition of drug (29.1%), cessation of drug (13.6%), substitution of drug (10.3%), change in drug dose (7.6%), deletion of drug (1.4%), change in route of administration (1%) and needs laboratory monitoring (5.6%). The acceptance rate of recommendations and change in drug therapy was found to be high (67.6%).
Conclusion: Among DRPs, ADRs are the most common problem. Clinical Pharmacist's early intervention can save the patient from iatrogenesis. Future studies must concentrate on developing measures to prevent them.

253 Initiation and evaluation of home medicines review program in Mysuru, a south Indian City

Dr Ramesh Adepu[1], Prof Shilpa Palaksha[2], Mr Sai Teja Thatikonda[2], Mr Shafeek Ali[2], Ms Patibandla Divyanjali[2], Ms Jisna Joseph[2], Mr Ram Lal Dina[2]
[1]Vikas College of Pharmaceutical Sciences, Suryapet, India, [2]JSS College of Pharmacy, JSS University, Mysuru, India

Objective: To initiate and evaluate Home Medicines Review (HMR) services in primary health care settings in Mysuru, a South Indian city.
Methods: A prospective interventional study was conducted over a period of 12 months at Mysore city, South India. Upon receiving referral from the treating physician, the research pharmacist collected patient's demographic and clinical details from the physician. An appointment was taken from the patient for home visit. During the home visit, the case was reviewed by having personal discussion with the patient and family members. Drug related problems were assessed and noted. Medication adherence behaviour was assessed by using 8-item Morisky Medication Adherence Scale. Health related quality of life was assessed by using 5D questionnaire. Report was prepared and it was further discussed with the clinician for suitable action.
Results: During the study period, 69 patients were enrolled. The mean age of study population is 65.23 ± 11.32 years. Female patients were more in the study (65%). 44 patients (80%) were with hypertension and diabetes. A total of 45 drug related problems, were identified and discussed the same with clinician for rectification. According to Morisky Medication Adherence Score, a significant improvement was observed from baseline to final follow up, P=0.001(<0.01) and health related quality of life of patients was found improved. Patients' had expressed a complete satisfaction with the HMR service
Conclusion: The new HMR service found useful in assessing and preventing drug related problems and improving medication adherence behaviour and health related quality of life.

254 The effectiveness of accurate drug usage program by Thai traditional music toward drug knowledge and self-efficacy of Thai diabetic patients

Vanida Prasert[1], Uten Sutin[2], Worrawit Boonthai[3]
[1]Department of Public Health and Epidemiology, Meiji Pharmaceutical University, Tokyo, Japan, [2]Boh Thong Hospital, Chonburi Province, Thailand, [3]Faculty of Sociology and Anthropology, Thammasat University, Pathum Thani Province, Thailand

Objective: This study aimed to study the effectiveness of accurate drug usage program by Thai traditional music toward drug knowledge and self-efficacy of Thai diabetic patients.
Methods: This was quasi-experimental research, the samples were 50 diabetic patients in each control and experimental group. Data were collected by using the questionnaires about accurate drug usage during March–June, 2016. Data were analyzed by using frequency, percentage, mean, standard deviation, pair-sample t-test, and independent-sample t-test.
Results: The results showed that the drug knowledge and self-efficacy average score of diabetic patients in experimental group were significantly higher than the control group ($p < 0.001$). Besides, fasting blood sugar in experimental group was significantly lower than the control group ($p < 0.001$). When comparing the results before and after program implementation in control and experimental group, the drug knowledge and self-efficacy in experimental group were improved. In addition, fasting blood sugar was significantly lower than before ($p < 0.001$). In control group, the drug knowledge, self-efficacy, and fasting blood sugar levels before and after program implementation were not significantly different ($p > 0.001$).
Conclusion: This program was suitable for promoting the accurate drug usage and avoiding adverse drug event in Thai diabetic patients.

255 A systematic review and meta-analysis of adherence and persistence among older (aged ≥65 years) statin users

Mr Richard Ofori-Asenso[1,2], Mr Avtar Jakhu[1], Dr Ella Zomer[1], Dr Andrea Curtis[3], Dr Maarit Korhonen[4], Associate Professor Manoj Gambhir[2], Professor Mark Nelson[5], Professor Andrew Tonkin[6], Professor Danny Liew[1], Professor Sophia Zoungas[3,7,8]
[1]Centre of Cardiovascular Research and Education in Therapeutics (CCRET), Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia, [2]Epidemiological Modelling Unit, Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia, [3]STAREE, Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia, [4]Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Science, Monash University, Melbourne, Australia, [5]Menzies Institute for Medical Research, University of Tasmania, Hobart, Australia, [6]Cardiovascular Research Unit, Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia, [7]Monash Centre for Health Research and Implementation (MCHRI), School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia, [8]Diabetes and Vascular Medicine Unit, Monash Health, Melbourne , Australia

Aim/Objective: Older patients (aged ≥65 years) have distinctive challenges with medication adherence. However, limited reviews of their adherence to statin therapy have been published. Our objective was to synthesize evidence on adherence and persistence among older statin users.
Methods: We searched Medline, Embase, PsycINFO, CINAHL, Database of Abstracts of Reviews of Effects, National Health Service Economic Evaluation Database and Cochrane Central Register of Controlled Trials from inception to December 2016. Studies were screened by two reviewers and authors were contacted for unpublished data when necessary. Data were analysed via descriptive methods and meta-analysis using random-effect modelling.
Results: Ninety-six articles reporting data from >3 million older statin users in 82 observational studies and 52 randomised clinical trials conducted in over 40 countries were included. At 1-year follow up, 59.7% (95% confidence interval [CI] 55.6-64.1) [primary prevention 47.9% (95% CI 39.7-56.1); secondary prevention 62.3% (95% CI 58.2-64.1)] of users were adherent (medication possession ratio [MPR] or proportion of days covered [PDC] ≥80%). Additionally, 55.3% and 28.4% of users were adherent at 3 and ≥10 years, respectively. The proportion of users persistent at 1-year was 76.7% (interquartile range [IQR] 71.4-87.4) [primary prevention 76.0% (IQR 39.5-85.0); secondary prevention 82.6% (IQR 65.0-88.8)]. Additionally, 68.1% and 61.2% of users were persistent at 2 and 4 years, respectively. Among new statin users, 48.2% (95% CI 39.0-57.4) were non-adherent and 23.9% (IQR 17.2-28.9) discontinued within the first year. The proportion of statin users who were adherent based on self-report was 85.5% (95% CI 77.6-92.1). High proportions of clinical trial participants were adherent (90.9%, 95% CI 80.8-97.5) or persistent (93.6%, 95% CI 89.5-96.8).
Conclusions: There is poor short and long-term adherence and persistence among older statin users. Strategies to improve adherence and reduce discontinuation are needed if the intended cardiovascular benefits of statin treatment are to be realised.

256 Risk indicators of non-adherence and discontinuation among older statin users: A meta-analysis

Mr Richard Ofori-Asenso[1,2], Mr Avtar Jakhu[1], Dr Andrea Curtis[3], Dr Ella Zomer[1], Dr Manoj Gambhir[2], Dr Maarit Korhonen[4], Professor Mark Nelson[5], Professor Andrew Tonkin[6], Professor Danny Liew[1], Professor Sophia Zoungas[3,7,8]
[1]Centre of Cardiovascular Research and Education in Therapeutics (CCRET), Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia, [2]Epidemiological Modelling Unit, Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia, [3]STAREE, Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia, [4]Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Science, Monash University, Melbourne, Australia, [5]Menzies Institute for Medical Research, University of Tasmania, Hobart, Australia, [6]Cardiovascular Research Unit, Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia, [7]Monash Centre for Health Research and Implementation (MCHRI), School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia, [8]Diabetes and Vascular Medicine Unit, Monash Health, Melbourne, Australia

Aims/Objective: Older individuals (aged ≥65 years) experience significant barriers towards adhering to statin therapy. The objective of this study was to identify predictors of non-adherence and discontinuation among older statin users in order to inform future interventions.
Methods: We searched Medline, Embase, PsycINFO, CINAHL, Database of Abstracts of Reviews of Effects, National Health Service Economic Evaluation Database and Cochrane Central Register of Controlled Trials to identify articles published up to December 2016. Two reviewers screened all articles and unpublished data were requested from authors when necessary. Meta-analysis was performed using random effect-modeling with inverse variance weighting.
Results: 45 articles reporting data from >1.8 million older statin users from 13 countries were included. The factors associated with increased non-adherence were; black/non-white race (odds ratio [OR] 1.66), female gender (OR 1.08), current smoker (OR 1.12), higher co-payments (OR 1.38), new user (OR 1.58), lower number of concurrent cardiovascular medications (OR 1.08), primary prevention (OR 1.49), having respiratory disorders (OR 1.17) or depression (OR 1.11) and not having renal disease (OR 1.09).The factors associated with increased statin discontinuation were; lower income status (OR 1.20), current smoker (OR 1.40), higher co-payment (OR 1.61), higher number of medications (OR 1.04), presence of dementia (OR 1.18), cancer (OR 1.22) or respiratory disorders (OR, 1.19), not having hypertension (OR 1.13) or diabetes (OR 1.09) and primary prevention (OR 1.66).
Conclusion: Due to the complex interplay between factors associated with non-adherence and discontinuation among older statin users, improvement interventions may need to be tailored to patient-specific circumstances.

257 Self-report of continued medication use by patients after a stroke

Mrs Judith Coombes[1,2], Assoc Prof Neil Cottrell[1], Prof Jenny Whitty[1,3], A/Assoc Prof Debra Rowett[1,4]
[1]University of Queensland, Brisbane, Australia, [2]Princess Alexandra Hospital, Brisbane, Australia, [3]University of East Anglia, Norwich, UK, [4]Drug and Therapeutics Information Service, Adelaide, Australia

Aim/Objective: The aim of this study is to evaluate patient self-reported medication adherence and beliefs associated with the continued use of stroke prevention medication.
Methods: Participants (≥18 years) with a principal diagnosis of stroke or transient ischemic attack (TIA), were recruited from a stroke unit of an Australian teaching hospital. Participants were followed up by telephone approximately five months after discharge. The medicines adherence questionnaire (MAQ)1 was used to provide self-report of adherence. The beliefs about medicines questionnaire (BMQ)2 was used to further explore the participants medication taking behaviour.
Results: Fifty-three of 60 recruited participants were followed up by telephone interview a mean of 154 (SD 34) days after hospital discharge. 48/53 had been prescribed antithrombotics of whom 46/53 agreed they were still prescribed and 34/46 (74%) reported good adherence (MAQ 4/4). 47/53 had been prescribed lipid lowering medication at discharge with 43/53 still prescribed and 33/43(77%) reported good adherence. 29/53 had been prescribed antihypertensive agents with 26/53 still prescribed and 23/26(88%) reported good adherence. Those participants with combined adherence scores of 4/4 (good adherence) showed a trend to higher necessity than concerns scores on the BMQ with a mean difference of 5.1 compared to those with combined adherence scores less than 4 with a mean difference of 2.9 (p=0.06).
Conclusion: In the first five months after discharge from hospital 74%, 77% and 88% of participants reported high adherence to antithrombotics, lipid lowering medications and blood pressure medications respectively.

258 Factors affecting non adherence to anti- hypertensive drugs among hypertensive individuals in rural areas of Udupi Taluk: A cross-sectional study

Ms Teena Joseph Chacko[1], Ms Ida D'Souza[2], Ms Ashma Dorothy Monteiro[3]
[1]Manipal College of Pharmaceuticals Sciences, Manipal University, Manipal, India, [2]Department of Public Health, Manipal University, Manipal, India, [3]Department of Statistics, Manipal University, Manipal, India

Objective: To understand the factors affecting non-adherence to anti-hypertensive drugs among hypertensive individuals in rural areas of Udupi taluk.
Method: Cluster sampling was employed for study. Lottery method was used in choosing 23 villages from 93 villages. A survey was conducted using structured questionnaire and Morisky Medication Adherence Scale.
Results: Prevalence of adherence and non-adherence were 55.8% and 44.2% respectively. People diagnosed as hypertensive for 1-2years were lesser adherent to anti-hypertensive drugs compared to people with hypertension for more than 5 years. A negative association is found in individuals who consider hypertension as serious issue. From 17 individuals who strongly agreed hypertension as serious issue, 41.2% were lesser adherent to anti-hypertensive. Poor adherence to anti-hypertensive therapy was due to confusion and difficulty in following the regimen. Low adherence was found among young individuals, 30-39 years of age. Adherence was high in elderly, 60 years and above. Health care support and relationship between patient and health care providers were also found to be reasons for non-adherence
Conclusion: The study provides reflection on various factors affecting non-adherence to anti-hypertensive drugs. The study showed that factors such as age, knowledge, attitude, perception, drug regimen complexity, previous treatment failure, health care support and relationship between patient and healthcare provider were associated with non-adherence to anti-hypertensive drugs. The findings highlighted few areas to be improved to increase the adherence to anti-hypertensive drugs. Health education should be given to hypertensive individuals and family regarding the diet, exercise to be followed and on the importance of adherence. Special consideration should be given to the individuals who have confusion regarding drug regimen and who had previous treatment failures.

259 Study on medication adherence behavior and quality of life in elderly Diabetic and Hypertension patients in a tertiary care hospital

Dr Kattavenkatesh Ramanath (K.V.Ramanath)[1], Dr K. Sreedara R pai (K.S.R.Pai)[2], Dr M. Mukya Prana. Prabhu (M.M.Prabhu)[3], Dr Krishnadas Nandakumar (K.Nandakumar)[2]
[1]SAC College of Pharmacy, Bg Nagar, India, [2]Manipal college of pharmaceutical sciencies, Manipal, India, [3]Kasturba medical college Hospital, Manipal, India

Introduction: Diabetic and Hypertension are the shared chronic diseases need to maintain appropriately in order to escalate the quality of life. The paucity of data provokes us to conduct this study.
Objective: To assess the medication adherence and quality of life in elderly
Methodology: It is a Prospective, cross-sectional and interventional study conducted in a general medicine department (June 2012- Dec2014) of Kasturba Medical College Hospital, Manipal. The intervention (counseled admission to discharge, even telephonically) & a control group (counseled at discharge) was administered, Morisky 8 Scale & SF36 V2 questionnaire at three follow-ups and also pill count consider. The data was analyses (RM ANOVA) by using SPSS 20
Results and Discussion: Among 495, only 401 completed. In which, 325(81%) have, DM 65(16.2%), DMAKI 8(2%), DMCKD 4(1%), DM Complications non renal 26(6.5%), DMHTN 100(24.9%), DMHTN complication10 (2.5%), HTN 103(25.7 %), HTN complication 9(2.2%). The FBS & PPBS of the mean scores were125.09+25.52, 145.92+28.04 and BP was 84.62+5.096; 132.38+11.26. The mean MAB scores of the diseases at base line (6.68 + 0.70; 6.52 + 0.32; 7.06 + 0.44; 6.73+0.61; 6.73+0.66; 6.67+0.46; 6.61+0.82: 6.41+ 0.45)& at third follow up was (7.74 + 1.02; 7.87 + 0: 7.81 + 0.08; 6.77 +1.93; 7.85+0.17; 7.75+0.16; 7.77+0.684; 7.85+0.09). The total QOL (PCS+MCS) score at baseline (52.61+3.5; 53.63+2.935; 54.25+2.825; 51.88+3.705; 51.51+3.79; 52.15+3.175; 52.26+3.715; 48.83+3.365) & at the third follow comparison (58.31+2.735; 58.58+3.215; 60.62+0.88; 58.84+2.555; 59.07+2.83; 59.4+2.945; 58.8+2.775; 57.5+2.9) showed significant improvement.. The overall P values showed $p<0.01$ to 0.005.
Conclusion: Pharmacist provided patient counseling service becomes a complimentary for health professional and showed enhancement in Medication Adherence Behavior and Quality of life of aging. It also highlights the Pharmaceutical care need in developing countries elderly.

260 Pharmacoepidemiology of arterial hypertension in East Kazakhstan: Analysis of patient compliance to treatment

Mrs Aigerim Musina[1], Dr Raikhan Tuleutayeva[1], Dr Natalya Chebotarenko[2], Dr Matthias Hammerer[3], Mr S Assem Makhatova[1]
[1]Semey State Medical University, Semey, Kazakhstan, [2]World Health Organisation, Kishinev, Moldova, [3]University Hospital of Salzburg, Salzburg, Austria

Aim: To analyse the influence of clinical and pharmacoepidemiological factors on adherence to drug therapy of arterial hypertension in the population of East Kazakhstan.
Materials and methods: The study included 2346 patients with arterial hypertension aged from 25 to 80 years, including 1281 men (54.6%) and 1065 women (45.4%). The average age is 55.2 ± 1.1 years. Was carried the estimation of adherence to the drug therapy at hypertension. Depending on the degree of adherence, the surveyed are divided into 3 groups: "no"; "partial"; "full". As factors, influencing on adherence to drug therapy, was considered: sex; age; degree of arterial pressure increasing; presence of complication from heart and vessels; presence of accompanied diseases (IHD, diabetes melitus); type of pharmacotherapy.
Results: Complete adherence to drug therapy is defined in 41.1% of cases, lack of adherence - in 26.9% of cases. The lowest adherence was determined in young people (25-40 years old) - the differences with the mean for the whole group were significant (for full adherence in men, x2 = 12.43, p = 0.003, in women χ2 = 3.98, p = 0.047).
A high indicator of total adherence is defined in people who have had myocardial infarction. The highest frequency of complete adherence was determined with the use of fixed combinations of antihypertensive drugs. Next, monotherapy with beta-adrenoblockers, calcium antagonists, a combination of separate dosage forms, agonists of imidazolin receptors, angiotensin receptor blockers. Lower rates of complete adherence were found in ACE inhibitors, diuretics.
Conclusions: Adherence to modern combined drugs is higher than for monotherapy and combinations of individual dosage forms. The drugs themselves and their combinations are in this case not the only factor determining the degree of adherence, since the characteristics of the indications for their appointment characterize specific categories of patients with other factors affecting adherence.

261 Assessment of compliance to oral iron supplements amongst iron deficiency anaemic patients

Dr G R Saraswathy[1], Ms Dhoorva Bhat[1], Mr K Kranthi Swaroop[1], Dr Anil Kumar[2]
[1]Dept. of Pharmacy Practice, Faculty of Pharmacy, RUAS, Bangalore - 54, India, [2]RMC, RGUHS, Bangalore, India

Background: Iron deficiency and Iron deficiency anaemia have become one of the most prevalent nutritional disorders in India due to insufficient iron intake, infections and poverty. The effectiveness and success of its treatment are further reduced by non-compliance of the patients to oral supplementation.
Aim: Assessing compliance to oral iron supplements in patients with IDA.
Methodology: A prospective, observational questionnaire based six-month study was conducted amongst anaemic in-patients in general medicine wards of a teaching hospital. For the collection of data, questions from Centre for Disease Control (CDC) questionnaire along with questions from other articles was used.
Results: Among 151 subjects who were enrolled in the study, 147 were assessed for the compliance and the remaining subjects were missed during the follow-up. The average compliance was found to be 79.06% in the present study. The subjects were classified into two groups based on their compliance: 'poor compliance' (<65% compliance) and 'good compliance' (>65% compliance). According to this, 118 (80.27%) subjects were found to be compliant to the physician's orders, while 29 (19.72%) of the subjects were poorly compliant. When assessed based on education, good compliance was seen largely in graduates (85.71%, n=12) and post-graduates (83.33%, n=5). Amongst the socio-economic classes, compliance in subjects from class I (92.3%, n=24) was found to be higher than those of the other classes. When analysed based on domicile, the highest compliance was observed among urban residents (61.86%, n=73), especially women.
Conclusion: The compliance in the present study was found to be satisfactory. Uneducated women and men from lower socio-economic classes and/or rural background were identified as target groups for educational and interventional programs. Thus, motivating the target group to take iron tablets according to the prescribed schedule, thereby improving adherence, is of utmost importance.

262 Prevalence and determinants of inadequate use of folic acid supplementation in Japanese pregnant women: The Japan Environment and Children's Study

Ph.D. Taku Obara[1,2,3], M.D., Ph.D. Hidekazu Nishigori[1,4], Ph.D. Toshie Nishigori[3], M.D., Ph.D. Hirohito Metoki[1,3,4], Ph.D. Mami Ishikuro[1,3], Ph.D. Nozomi Tatsuta[1], Ph.D. Satoshi Mizuno[1], Kasumi Sakurai[1], M.D., Ph.D. Ichiko Nishijima[1,3], Ph.D. Yuriko Murai[2], M.D., Ph.D. Ikuma Fujiwara[1,5], M.D., Ph.D. Takahiro Arima[1], Ph.D. Kunihiko Nakai[1], Ph.D. Nariyasu Mano[2], M.D., Ph.D. Nobuo Yaegashi[1,3,4], M.D., Ph.D. Shinichi Kuriyama[1,3,6]

[1]Environment and Genome Research Center, Tohoku University Graduate School of Medicine, Sendai, Japan, [2]Department of Pharmaceutical Sciences, Tohoku University Hospital, Sendai, Japan, [3]Tohoku University Tohoku Medical Megabank Organization, Sendai, Japan, [4]Department of Gynecology and Obstetrics, Tohoku University Graduate School of Medicine, Sendai, Japan, [5]Department of Pediatrics, Tohoku University Graduate School of Medicine, Sendai, Japan, [6]Tohoku University International Research Institute for Disaster Science, Sendai, Japan

Objective: The aim of the study was to clarify the prevalence and determinants of inadequate use of folic acid supplementation in pregnant Japanese women.
Methods: This study was part of the Japan Environment and Children's Study, a nationwide and government-funded birth cohort study. We collected information on the use of folic acid supplementation before and during pregnancy and characteristics of participants using self administered questionnaire.
Results: Among 9849 women who completed the data collection for this study, the prevalence of inadequate users was 92.6% of the total population and varied from 84.5% to 96.2% among regions. On the basis of multivariate logistic regression analysis, younger age, not married, lower family income, multipara, natural conception and no history of spontaneous abortion were found to be determinants for inadequate users of folic acid supplementation.
Conclusion: Most Japanese pregnant women show inadequate folic acid supplementation use. Japanese women of child-bearing age need to be specifically informed about the need for periconceptional intake of folic acid to prevent neural tube defects.

263 Evaluation of alcoholism and smoking habits and its effects on adherence to HAART in people living with HIV in India

Dr Radhakrishnan Rajesh[1], Mr Shankar B. Abhishek[1], Miss Addanki Sri Sowmya[1], Mr Golsefid Farshad Torabi[1], Dr Muralidhar Verma D[2], Dr Vidya Sagar Sudha[2]

[1]Manipal College of Pharmaceutical Sciences, Manipal University, Manipal, INDIA, Manipal, Karanataka, India, [2]Department of General Medicine, Kasturba Medical College & Hospital, Manipal, India

Objective: To evaluate possible risk factors for alcohol and smoking habits and its adherence to highly active antiretroviral therapy (HAART) in people living with HIV (PLWH).
Method: A prospective pilot study was carried out with intuitional ethical approval. PLWH were enrolled. Risk factors for alcohol and smoking habits and its behavior to HAART adherence was assessed using AIDS Clinical Trial Group (ACTG) and Simplified Medication Adherence questionnaire (SMAQ). Pearson's Chi-Square test was used to assess the adherence rate.
Result: Total of 100 patients were enrolled in the study, out of which 16% were alcoholic and 8% were smokers. In PLWH, majority of them were male (65%) compared to female (35%). In PLWH, employed patients (93.8%), monthly income greater than 20,000 Indian Rupees (INR) (37.5%) was associated with alcohol and smoking habits (p value 0.001). Most of them (25%) was on Lamivudine+Tenofovir+Efavirenz therapy. As per ACTG, Out of 16 alcoholic patient's 50% adherence rate greater than 95% and 50% adherence rate less than 95%. SMAQ adherence rate greater than 95% to 100% was seen in 9 patients (56.2%), 5 (31.2%) 85 to 94% of adherence rate. Smokers showed association with lower adherence rate of Mean (M) ± Standard deviation (SD) of [96.2488±4.15575] compared to non-smokers adherence rate of M±SD [98.3865±3.96632].
Conclusion: Clinicians must focus to bring awareness about association of alcohol use and smoking habits and its effects on HAART adherence in PLWH.

264 Impact of patient education on Interdialytic weight gain and blood pressure in patients undergoing Hemodialysis

Dr Uday Venkat Mateti[1], Ms TPV Rini[1], Dr Janardhan Kamath[2], Dr TS Sanal[3]
[1]Department of Pharmacy Practice, NGSM Institute of Pharmaceutical Sciences, Nitte University, Deralakatte, Mangaluru, India, [2]Department of Nephrology, K.S. Hegde Medical Academy, Justice K.S Hegde Charitable Hospital, Nitte University, Deralakatte, Mangaluru, India, [3]Department of Biostatistics, K.S. Hegde Medical Academy, Nitte University, Deralakatte, Mangaluru, India

Objective: To assess the impact of patient education on interdialytic weight gain (IDWG) and blood pressure in patients undergoing maintenance hemodialysis.
Methods: A quasi experimental pre and post study design has been conducted in an outpatient's hemodialysis unit among 50 patients who have been undergoing maintenance hemodialysis. Prior to the initiation of the study, approval has been obtained from the institutional ethics committee. The patients have been educated by using validated educational materials. The data on IDWG, systolic blood pressure (SBP) and diastolic blood pressure (SBP) have been collected at baseline, 4th, 10th and 16th week. The paired sample t-test was applied to assess the mean change in difference from baseline to 16th week with p value <0.05 has been considered as statistically significant.
Results: The mean SBP has been significantly reduced from baseline (151.60 ± 19.99 mmHg) to 16th week (144 ± 15.70 mmHg) with p value 0.021 in pre hemodialysis patients and also in post hemodialysis patients from baseline (157 ± 21.65 mmHg) to 16th week (144.62 ± 16.03 mmHg) with p value 0.001. The mean IDWG has been significantly reduced after the patient education from baseline (3.44 ± 1.36 kg) to 16th week (2.76 ± 0.90 kg) with p value 0.001 in the hemodialysis session patients. The mean arterial pressure (MAP) in the post hemodialysis session patients have been also significantly reduced after the patient education from baseline (111.34 ± 12.19 mmHg) to 16th week (105.28 ± 8.46 mmHg) with p value 0.003.
Conclusion: The study concludes that patient education complemented with suitably designed and validated educational materials in hemodialysis patients led to decrease in IDWG, SBP in pre and post hemodialysis session patients. The DBP and MAP in post hemodialysis session patients have also been significantly reduced from baseline to post education.

265 Development, validation and user-testing of patient information leaflets on diabetes and hypertension

Mrs Santosha Vooradi[1], Dr. Leelavathi D Acharya[2], Dr Shubha Seshadri[3]
[1]Department of Pharmacy Practice, Srinivas College of Pharmacy, Mangaluru, India, [2]Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, College of Pharmaceutical Sciences, Manipal University, Manipal, India, [3]Department of General Medicine, Kasturba Medical College, Manipal University, Manipal, India

Objective: To develop, validate and perform user-testing of Patient Information Leaflets (PILs) among Diabetes and Hypertension patients in South Indian languages.
Methods: The content of the PILs have been prepared and validated by an expert committee consisting of a physician and four academic pharmacists. The readability of English version of PILs has been assessed by FRE and FK GL and also assessed for layout and design by BALD assessment. The PILs have been translated into the local languages with the help of language experts. For the user-testing of PILs, 10 multiple-choice questions have been prepared and validated based on the content of the PILs on each disease. During the user-testing, baseline knowledge has been carried out before providing the PIL followed by the provision of PILs after allowing the patients to read the leaflet for a period of 20 minutes.
Results: The FRE and FK-GL readability scores achieved for Diabetes PILs is 70.4 and FK-GL score achieved is 6.3 and for Hypertension PILs, the FRE score is 68.3 and FK-GL score achieved is 6.9. The BALD assessment score for English version is 30 and Kannada and Malayalam are 28 and 28 respectively. The PILs on Diabetes and Hypertension in different languages have been carried out on 80 Diabetic and Hypertensive patients. The overall user-testing in Diabetes and Hypertension knowledge assessment mean scores is found to have significantly improved from 44.80 to 87.99 and 63.19 to 90.13 with p value <0.001.
Conclusion: The study concludes that patient education complemented with suitably designed PILs have great impact on knowledge of the patients towards their disease management. The overall user opinion of content and legibility of the PILs is good. The prepared and validated PILs can be considered as an effective educational tool for patients with Diabetes and Hypertension.

266 Antidepressants - the unanswered questions. Analysis of a consumer medicines call centre in Australia

Dr Samantha Hollingworth[1], Prof Mieke Van Driel[2], Dr Treasure McGuire[1,3,4]
[1]The University of Queensland, School of Pharmacy, Woolloongabba, Australia, [2]Faculty of Medicine, University of Queensland, Brisbane, Australia, [3]Mater Health Services, South Brisbane, Australia, [4]Faculty of Health, Sciences and Medicine, Bond University, Gold Coast, Australia

Aim: Consumers may have concerns and information gaps about their medicines but they rarely discuss these with their doctor. Antidepressants are widely used and little is known about consumer perspectives. We examined consumer questions about antidepressants to an Australian medicines call centre.
Methods: Observational study of calls to the national NPS Medicines Line (January 2006 to 30 June 2010), a call center staffed by pharmacists and available at the cost of a local call. We compared calls about antidepressants to rest of calls (ROC). The antidepressant question narratives for questions motivated by a worrying symptom for four main enquiry types were explored thematically.
Results: Antidepressants constituted 15.2% of calls, with callers mainly female (mean age 48 years) and help-seeking for themselves (80.4%). Worrying symptoms prompted over a quarter of calls (26.5%) - much more than for the rest of calls (16.2%). Most enquiries (68.4% vs. ROC 52.3%) related to safety (side-effects, interactions, withdrawal), while efficacy (25.6%), and judicious use (5.4%) were also common. Question types were consistent over time. The top seven antidepressants of interest to consumers were sertraline, venlafaxine, mirtazapine, escitalopram, citalopram, paroxetine, fluoxetine and amitriptyline. Narratives for questions motivated by a worrying symptom revealed that 78% of the withdrawal questions related to three main themes: whether the symptoms are due to withdrawal (45%); how to safely withdraw (lack of instructions, 18%); and the expected duration of withdrawal symptoms (16%).
Conclusions: Despite the widespread use of antidepressants, consumers still have many unanswered questions, particularly about safety. Prescribers and pharmacists should be aware of these often-unasked questions and pre-emptively address these real concerns of their patients.

267 Using electronic dispensing board reminder system to increase the dispensing accuracy in Taiwan

Ms. Hui-Yu Chen[1], Mr. Shih-Chieh Shao[2], Ms. Yuk-Ying Chan[2]
[1]Department of Pharmacy, Linkou Chang Gung Memorial Hospital, Linkou, Taiwan, [2]Department of Pharmacy, Keelung Chang Gung Memorial Hospital, Taiwan

Aim:
Many factors, such as look-alike and sound-alike drugs, are related to dispensing errors, and this study aimed to evaluate the effectiveness of electronic dispensing board reminder system assisting pharmacists to dispense drugs accurately.
Method:
We conducted the retrospective cohort study from January to June 2016 in the inpatient settings of the largest medical center in Taiwan. We implemented the electronic dispensing board reminder system which helped to guide pharmacists to accurate positions of drugs when dispensing. We analyzed the dispensing error rate in pharmacies with the electronic dispensing board reminder system, and compared that in other pharmacies without the electronic system. The descriptive statistics were used for our study aims.
Result:
We included a total of 523,098 pharmacists' dispensing and 134 dispensing errors during study period. The dispensing error rate was 0% when pharmacists dispensed drugs with the assistances of the electronic dispensing board reminder system, compared to 0.03% when pharmacists dispensed drugs without the assistances of the electronic system. Among the reported dispensing errors, most of them were related to wrong drug (n=95, 70.9%), followed by wrong drug amount (n=33, 24.6%) and mixed-up drugs (n=6, 4.5%).
Conclusion:
This study indicated our novel intervention of the electronic dispensing board reminder system was beneficial for reducing pharmacists' dispensing errors in inpatients, such as wrong drug. However, we needed more large studies to determine the effectiveness of this intervention in different pharmacy practice settings in Taiwan.

268 Analysis of non-timing administration errors detected by bar-code medication administration system: Evidence from a medical center in Taiwan

Ms Hui-Yu Chen[1], Mr. Kai-Cheng Chang[1], Mr. Shih-Chieh Shao[2], Ms. Yuk-Ying Chan[2]
[1]Department of Pharmacy, Linkou Chang Gung Memorial Hospital, Taiwan, [2]Department of Pharmacy, Keelung Chang Gung Memorial Hospital, Taiwan

Aim/Objective: The bar-code medication administration system (BCMA) is beneficial to detect the medication errors on drug administration, and this study used this electronic technology to analyze the patterns of non-timing administration errors in the largest medical center in Taiwan.
Methods: This was a retrospective analysis of BCMA records in April 2017 from 3,500-bed inpatients' settings of Linkou Chang Gung Memorial Hospital. We analyzed the complete administration records in the system, and defined the non-timing administration errors as drugs were given to patients beyond one hour by doctors' orders. We used Anatomical Therapeutic Chemical (ATC) codes to classify different agents which were not administrated in time. On the other hand, we compared the rate of occurrences between general units and intensive care units (ICUs) to understand the difference of non-timing administration errors.
Result: We analyzed 1,011,439 records from BCMA and the incident rate of non-timing administration errors was 9.91%. Compare to ICUs, the incident rate was lower than general units (9.29% vs. 10.03%). The most common agents with non-timing administration errors were anilides analgesics (N02BE, 5.24%) and proton pump inhibitors (A02BC, 5.05%). In ICUs, the most common agents with nom-timing administration errors were calcium supplements (A12AA, 6.42%) and fast-acting insulins for injection (A10AB, 5.10%). In general units, anilides analgesics (N02BE, 5.70%) and proton pump inhibitors (A02BC, 5.05%) showed the highest incident rate.
Conclusion: Our study indicated that non-timing administration errors were prevalent in the procedure of inpatients' cares in Taiwan, irrespective of general units or ICUs. The agents with non-timing administration errors showed inconsistent in different units. To enhance healthcare quality, the cause of the errors and the process of administration procedures should be further investigated.

269 Workloads of pharmacists and the performances of pharmaceutical cares in Taiwan

Mr. Shih-Chieh Shao[1,2], Ms. Yuk-Ying Chan[1], Dr. Yea-Huei Kao Yang[3], Dr. Edward Chia-Cheng Lai[2,3]
[1]Department of Pharmacy, Keelung Chang Gung Memorial Hospital, Taiwan, [2]School of Pharmacy, Institute of Clinical Pharmacy and Pharmaceutical Sciences, College of Medicine, National Cheng Kung University, Taiwan, [3] Department of Pharmacy, National Cheng Kung University Hospital, Taiwan

Aims: To assess the correlations between pharmacists' dispensing workloads (PDW) and the performances of pharmaceutical cares by evaluating the prescription suggestion rate (PSR) and dispensing error rate (DER).
Methods: We analyzed all reports about prescription suggestions and dispensing errors from the electronic reporting systems of Chang Gung Medical Foundation (CGMF-ERS) consisting of 2 medical centers, 2 regional hospitals and 3 district hospitals from 2010 to 2016. Two independent pharmacists reviewed the reports to ensure the quality. The PSR and the DER were used as outcome indicators for the performances of pharmacists' review and dispensing respectively, and we tested their correlations with the PDW by Pearson correlation coefficient. Specifically, we calculated the PDW as the number of prescriptions divided by the number of pharmacists, the PSR as the number of prescriptions divided by the pharmacists' suggestion on prescriptions and the DER as the number of prescriptions divided by the pharmacists' dispensing error
Results: We included average 561 (SD 22) pharmacists and 733,920 (SD 51,083) prescriptions by each month in the study period. We found the daily PDW, PSR and DER was 43.0 (SD 2.3), 7.7 (SD 0.9) and 3.2 (SD 0.9) per 100,000 prescriptions, respectively. The findings indicated a statistically significant and negative correlation between the PDW and the PSR (r=-0.31; 95% CI, -0.51 to -0.12). We did not find a correlation between the PDW and the DER (r=-0.07; 95% CI, -0.28 to 0.14).
Conclusion: The findings the implicated high workloads may deprive the chances to review of prescriptions by pharmacists. Predisposing factors of dispensing errors may not include high workloads of pharmacists and require further investigations. The analysis provides foundations for the establishments of strategies to improve pharmaceutical cares in Taiwan.

270 Misadventures in methotrexate dosing

Mr Andrew Case[1], Dr Miranda Harris[1], Dr Grant Pegg[1]
[1]*Therapeutic Goods Administration, Canberra, Australia*

Aim/objective: Inadvertent dosing errors involving oral methotrexate have led to serious harm to patients. We reviewed spontaneous adverse drug reaction reports and published medical literature to quantify the significance of this safety concern in the Australian context and to identify feasible risk minimisation measures.
Methods: Reports from the Therapeutic Goods Administration Database of Adverse Events Notifications (DAEN) received between 2001 and 2017 were reviewed retrospectively. Cases were included if the report indicated that a prescribed weekly dose of oral methotrexate was taken incorrectly. Data from the DAEN was compared to published medical literature and information received from international regulators.
Results: Twenty-five reports, including six fatalities, met the inclusion criteria. In reports of accidental daily administration, the dose ranged from 2.5mg daily to 30mg daily. The duration of dosing was generally three to ten days. The minimum fatal dose was 2.5mg daily. The most frequently reported adverse effects were haematological (pancytopenia, thrombocytopenia, neutropenia), stomatitis, mucosal inflammation or ulceration, and gastrointestinal effects. When identifiable, incorrect dosing could be attributed to errors in prescribing, dispensing and/or administration. Confusion with another medicine contributed in four cases (one fatal) involving patient error. Folic acid was implicated in three of these cases. Dispensing practices including dispensing error were identified in six cases, including one fatal case. The source of error was unclear or not documented in eleven cases (three fatal).
Conclusion: A narrow safety margin exists in cases of accidental methotrexate overdose. The limitations of spontaneous reporting prevented a detailed analysis of a number of cases. This prevented the quantification of a dose-toxicity relationship. However, accidental dosing errors involving oral methotrexate continue to be a health concern. Possible risk minimisation measures will be discussed.

271 Imputation of medication errors: Assessment of medication errors in a tertiary care teaching hospital

Sri Harsha Chalasani[1], Dr Madhan Ramesh[2]
[1]*Faculty of Pharmacy, MSRUAS, Bangalore, India,* [2]*Department of Pharmacy Practice, JSS College of Pharmacy, Mysore, India*

Background: Medication Errors were rarely perceived as patient safety improvement reports in developing countries due to fear of punitive measures. Emphasising non-punitive medication error reporting system and creating awareness on reporting medication errors remains need of the hour.
Aim: To assess the reporting pattern of Medication errors by various health care professionals
Methodology: A prospective cohort study was conducted among patients aged ≥ 18 years hospitalised in emergency wards and general medicine wards from April 1, 2014 - March 31, 2015, in a south Indian hospital. On a daily basis, patients, patient's caregivers, and healthcare professionals (HCPs) were interviewed regarding the medication use process and patients' notes were reviewed for identifying and evaluating outcomes of ME using the National Coordinating Council for Medication Error Reporting and Prevention standards.
Results: In the newly established system, a total of 714 MEs were reported by various HCPs. Of all, Clinical Pharmacist (CP) has identified and reported 470 (65%) MEs. Followed by Nursing staff 140 (20%), Doctors 72 (10%) and Dispensing pharmacists 32 (4%). Of these, 236 (33%) were medication administrative errors. In which, wrong time administration errors were 108 (15%). Followed by 150 (21%) Dispensing errors, prescription errors (15%). The majority of the events had an outcome of category A 267 (37.3%) followed by Category B 202 (28.2%). Each error has multiple contributing factors. Inter personal communications 283 (20%; n=1435), work-load 278 (19.3%), distractions 146 (10%), fatigue 134 (9%) and inadequate knowledge 112 (8%) were commonly reported factors.
Conclusion: Doctors reported fewer MEs that CP. Peer pressures, fear of punitive actions and reputation prevent the doctors from reporting. Senior doctors and hospital management should encourage HCPs to report MEs maintaining the integrity of the Patient Safety.

272 A study of usage pattern of prescription medications dispensed over the counter (OTC) in community settings of Mysuru City, India

Dr. Ambed Mishra[1], Mr. BR Jaidev Kumar[1], Mr. Tito Luvanda[1], Mr. Anil Kumar[1]
[1]*Department of Pharmacy Practice, JSS College of Pharmacy, JSS University, Mysuru, India*

Background & Objective: Prescription medications are medications that are sold as per the prescription of a registered medical practitioner. Since there is no list of Over-The-Counter (OTC) medications in India, most of the drugs are dispensed OTC by the dispensing pharmacist. The aim of this study was to assess the usage pattern of prescription medicines sold OTC.
Method: A cross-sectional observational study was conducted at one community-setting in Mysuru. Only those customers who visited the pharmacy to purchase prescription medications without prescriptions, agreed for written informed consent were enrolled. Enrollment on daily basis (4-6 pm) was done for nine months and enrolled customers answered a specially-designed questionnaire. Data was analyzed by using SPSS-version-20.
Results: Out of a total of 962 customers, 560 purchased prescription medications without a prescription during our research period. A total of 282 (50.36%) customers agreed to answer the questionnaire. Self-medication was highly prevalent among educated individuals aged between 21-40 years (45.71%; 256). Most common purchased prescription medications OTC were analgesics (41.25%; 231), followed by antibiotics (32.50%; 182). Lack of knowledge among consumers and less trained community pharmacy staffs were the main reasons for such practices. This practice was also influenced by easy availability, expediency, shorter waiting time, cost reduction, availability of credit, flexible opening hours and lack of stringent enforcement of drug-dispensing policies in India.
Conclusions: Overall, this research study concluded that most commonly purchased medications without prescription were analgesics and antibiotics. Drug regulatory authorities in India should enforce stringent laws to ensure sale of safe OTC medications.

273 Negative outcomes associated with extramedical use of prescription opioid analgesics in Australia: A scoping review

Samanta Lalic[1,2], Natali Jokanovic[1], Dr Jenni Ilomäki[1], Dr Belinda Lloyd[4], Prof Dan Lubman[4], Assoc Prof Simon Bell[1]
[1]*Monash University, Parkville, Australia,* [2]*Austin Health, Heidelberg, Australia,* [3]*National Drug and Alcohol Research Centre, UNSW Australia, Sydney, Australia,* [4]*Turning Point, Eastern Health, Melbourne, Australia*

Aim: Evidence is accumulating globally about the negative outcomes of extramedical prescription opioid analgesic (POA) use. This scoping review aimed to identify the risk factors and types of negative outcomes associated with the extramedical use of POA in Australia.
Methods: MEDLINE, EMBASE, PsychINFO and Cumulative Index to Nursing and Allied Health Literature were searched for original studies published between January 2000-June 2016. Studies were eligible for inclusion if: (1) PO use was explicitly reported, (2) extramedical use was evident (3) harm was explicitly reported, (4) data were collected during or after the year 2000, and (5) the study was conducted in Australia.
Results: We identified 381 original articles, 12 of which met the inclusion criteria. Study designs included surveys (n=6) and retrospective audits of coronial data (n=6). Extramedical use included deliberate overdose, use without a prescription, PO use from an unknown source, PO illicitly obtained, injection of PO. Seven studies reported death from PO use, with drug toxicity being the most common cause. Concomitant use of PO and other psychoactive drugs was reported in all studies. Eleven studies reported overdose, three studies reported injection-related injuries or diseases, one study reported engagement in property and violent crime, two studies reported health care service utilisation and one study reported loss of employment.
Discussion: Consistent with findings in the US and Canada, this review has shown that the extramedical use of POA in the Australian population is associated with a number of negative outcomes and individual risk factors. There are no published Australian data on the incidence of these outcomes in relation to extramedical use of POA in individuals who were prescribed opioids for legitimate clinical indications. Longitudinal studies are required to examine the association between extramedical use of POA and negative outcomes, particularly in the general population.

275 Estimation of Cardio-metabolic risk prediction profile in population without known cardiovascular and metabolic diseases in Surat district

Bhavin Vyas[1], Manisha Mistry[1], Shrikant Joshi[1]
[1]*Maliba Pharmacy College, Tarsadi, India*

Aim and Objectives: This was an observational study for estimation of Cardio-metabolic Risk prediction profile without known Cardiovascular and Metabolic Diseases in Surat district.
Methods: Subjects were screened as per inclusion and Exclusion criteria mentioned in approved protocol. They were informed through printed information included in inform consent form. Written consents were obtained from the subjects who were interested in participating in the study willingly. After evaluation of all the inclusion and exclusion criteria, subjects who met all the inclusion criteria and none of exclusion criteria were enrolled in study. Total 200 subjects were enrolled. Indian Diabetes Risk Score (IDRS) was determined by using parameters like Age, Gender, level of physical activity, Family history of Diabetes, Body Mass index (BMI). Cardiovascular risk was predicted by using WHO/International Society of hypertension risk prediction charts. Risk factors had involved age, gender, smoking, BMI, blood pressure and diabetes. From these parameters Indian Diabetes risk score and cardiovascular diseases risk were calculated.
Results: Among 200 Subjects, for Diabetes risk, highest numbers of Subjects were found with Moderate risk 103 (51.5%) in which 55 (53.4%) were males and 48 (46.6%) females, followed by High risk 61 (30.5%) in which 38 (62.3%) were males and 23(37.7%) Females and then Low risk 36 (18%) in which 10 (27.8%) were Males and 26 (72.2%) Females. For CVD risk (SBP vs. BMI), Maximum number of Subjects were Found with Low risk 151(75.5%) followed by Moderate risk 33 (16.5%) and then High risk 36 (18%). For CVD risk (SBP vs. Blood glucose), highest number of subjects found with Low risk 172(86%), followed by Moderate risk 16(8%) and then High risk 12(6%).
Conclusion: Our study suggests that IDRS and CVD Prediction Charts are simple and cost-effective screening tool for diabetes and CVD mortality risk, respectively in resource limited settings.

276 Utilisation and impact of the 'drug' in drug-eluting stents

Associate Professor Nicole Pratt[1], Ms Emmae Ramsay[1], Mr John Barratt[1], Professor Libby Roughead[1]
[1]*Quality Use of Medicines and Pharmacy Research Centre, University of South Australia, Adelaide, Australia*

Aim/Objective: To assess the utilisation of drug-eluting stents (DES) by product type and eluting-drug and to examine whether the change in the duration of clopidogrel and use of dual therapy with aspirin following insertion of a DES affected rates of death, bleeds and re-hospitalisation for myocardial infarction or angina (MI/angina).
Methods: Using the Australian Government Department of Veterans' Affairs administrative claims data patients with a DES who were initiated on clopidogrel within 6 weeks of DES insertion were identified and classified into six cohorts according to the year of DES insertion; cohort1:2002-2003 to cohort 7:2014-2015. Cox-proportional hazards models were used to estimate the risk of each event within 2 years of DES insertion stratified by cohort and drug used in the stent.
Results: There were 23 DES products implanted over the study period. In cohort 1, sirolimus-eluting (73%) and paclitaxel-eluting (27%) stents were used whereas in cohort 7 everolimus-eluting (76%) and zotarolimus-eluting (23%) stents were used. In cohort 1, 50% of patients had ceased clopidogrel by 12 months compared to only 20% in cohort 7. Dual use of aspirin and clopidogrel increased over time from 30% in cohort 1 to 55% in cohort 7 with much of the increase due to the introduction of the clopidogrel/aspirin combination product. No difference in the risk of death or bleeds was observed between cohorts. Re-hospitalisation for MI/angina was significantly decreased in cohorts 7 compared to cohort 1 (Hazard Ratio: 0.76 95% Confidence Interval 0.58-0.99).
Conclusion: The 'drug' in drug-eluting stents, the duration of clopidogrel and the prevalence of dual antiplatelet therapy after DES insertion has changed rapidly over time. Despite variations in practice, outcomes after DES have remained similar with the exception of re-hospitalisation for MI or angina, which showed a lower risk in the era where use of aspirin is highest.

277 The proliferation of fixed dose combinations (FDCs) of cardiovascular medicines in Australia

Mrs Louise Bartlett[1,2], Dr Lan Kelly[2], Professor Libby Roughead[2]
[1]Department of Health, Woden, Australia, [2]Quality Use of Medicines Pharmacy Research Centre, University of South Australia, Adelaide, Australia

Background: Since the early 2000s, when guidelines began recommending combinations of antihypertensive and lipid lowering therapies, there has been an increasing number of fixed dose combinations (FDCs) marketed and subsidised in Australia.
Aim: The aim of this study was to quantify the number of new FDC products subsidised by the Pharmaceutical Benefits Scheme (PBS) from 2000 onwards and to describe the proliferation of these products across different classes of cardiovascular medicines.
Method: The number of new FDCs listed on the PBS was identified from the "PBS Item History Table", an electronic record of all changes to medicines listed on the PBS. FDC items (forms and strengths) were identified in two ways: Anatomical Therapeutic Class (ATC5 codes) corresponding to cardiovascular combination products; and the legislated medicine name. PBS item code, listing date, delisting date, form, strength and medicine name were retained. The number of brands listed in October 2016 for each FDC were obtained by manually searching the PBS schedule. A network map for the visualisation of all PBS cardiovascular FDCs was created from the final dataset using the R package igraph.
Results: In October 2016, there were 81 different FDC items involving 290 brands listed on the PBS for cardiovascular disease. The medicines classes with the most number of FDCs items were: angiotensin receptor blockers (48), diuretics (37) and calcium channel blockers (30). Hydrocholorothiazide was found in 12 combinations with different medicines and amlodipine was in six. Four of the medicines combined with amlodipine were also available in separate combinations with hydrochlorothiazide.
Conclusion: FDCs products have proliferated in Australia. The availability of medicines such as valsartan, hydrochlorothiazide and amlodipine in a large number of products may contribute to prescriber and patient confusion, with potential for inadvertent duplication of therapy.

278 Drug utilisation evaluation of antiarrhythmic drugs in patients with atrial fibrillation

Dr. G R Saraswathy[1], Dr E Maheshwari[1], Mr. Pavan Kumar Murari[1], Ms. M Nayanathara[1], Dr Nagamallesh[2]
[1]Dept. of Pharmacy Practice, Faculty of Pharmacy, RUAS, Bangalore - 54, India, [2]Narayana Hrudayalaya, Ramaiah Memorial Hospital, Bangalore, India

Background: Anti-arrhythmics are high-risk medicines that require extended monitoring for drug safety issues. However, the prescribing patterns are not extensively studied in developing nations. This situation has made the choice of anti-arrhythmic therapies ambiguous and complex.
Aim: To evaluate drug utilisation evaluation of antiarrhythmics in patients with atrial fibrillation
Methodology: A six-month long prospective cohort study was conducted in patients admitted with arrhythmia in Cardiology Department. Patients fulfilling study criteria were enrolled and pertaining data was collected by conducting medication history interviews and documented in the suitably designed electronic database.
Results: A total of 100 cardiac arrhythmia patients were enrolled during the study period, out of which, 43 were diagnosed with atrial fibrillation. Of the admitted, 17 (40%) patients received Amiodarone for rhythm control as their mainstay therapy. Further, 12 (28%) patients received rate control drugs alone, i.e., verapamil was commonly prescribed 6 (14%) followed by digoxin and beta-blockers, 4 (9%) and 2 (5%) respectively. A combination of rate and rhythm control drugs was employed in 14 (33%) patients. Amiodarone and Digoxin were commonly prescribed combination followed by Amiodarone + Verapamil combination in 8 (20%) and 3 (7%) patients respectively.
Conclusion: Although, the guidelines recommend class I anti-arrhythmic drugs as first-line agents for rhythm control and class III agents when specific contraindications exist for the class I drugs, the Class III drugs were administered as first-line therapy at the study site. Clinical pharmacists must promote the need for adhering to the standard guidelines in order to improve therapeutic outcomes.

279 Changes in cardiovascular medication use in long-term care facilities in Finland over an eight-year period

Ms Natali Jokanovic[1], Assoc Prof Simon Bell[1], Anna-Liisa Juolab[2,3], Helka Hosia[2,4], Mariko Teramura-Gronblad Teramura-Gronblad[2], Helena Soini[5], Niina Savikkob[2,6], Prof Kaisu Pitkälä[2]
[1]Centre for Medicine Use and Safety, Monash University, Parkville, Australia, [2]Helsinki University Central Hospital, University of Helsinki, Helsinki, Finland, [3]Health Services, Porvoo, Finland, [4]Tapiola Health Centre, Home Care, Espoo, Finland, [5]Social Services and Health Care Department, Helsinki, Finland, [6]Elderly care, Espoo, Finland

Aims: Polypharmacy is highly prevalent and burdensome to residents and staff. Multiple medications are often recommended for the management of cardiovascular conditions. The aim of this study was to investigate the change in cardiovascular medication use over an eight-year period in nursing home and assisted living facilities in Helsinki, Finland.
Methods: Data from three cross-sectional studies of residents aged ≥65 years in nursing homes in 2003 (n=1987) and 2011 (n=1576) and in assisted living facilities in 2007 (n=1377) and 2011 (n=1586) in Finland were combined. The prevalence of cardiovascular medication use across time periods were compared. Polypharmacy was defined as the use of nine or more regular medications.
Results: Polypharmacy increased in assisted living facilities (44.7% to 50.6%, p<0.001) but decreased in nursing homes (40.4% to 32.4%, p<0.001). The prevalence of cardiovascular medications decreased in nursing homes (67.0% to 52.9%, p<0.001) and assisted living facilities (72.5% to 66.8%, p<0.001). The prevalence of diuretics, nitrates and digoxin decreased, but the prevalence of statins increased in both settings. The prevalence of antithrombotics decreased in both nursing homes (55.4% to 49.0%, p<0.001) and assisted living facilities (62.2% to 55.8%, p<0.001).
Conclusion: The prevalence of polypharmacy significantly decreased in nursing homes but has increased in assisted living facilities. Significant reductions in the use of cardiovascular and antithrombotics suggest improved assessment of the risk-to-benefit ratio of these medications in the long-term care setting.

280 Lipid management in primary care using MedicineInsight data

Daniel Taylor[1], Natalie Raffoul[1], Jeannie Yoo[1], Allan Pollack[1], Alistair Merrifield[1], Yien Soo[1], Freddy Sitas[1]
[1]NPS MedicineWise, Sydney, Australia

Optimal lipid management is a critical part of primary and secondary prevention of cardiovascular disease (CVD). The importance of adopting an absolute CV risk approach is well recognised and the under and over-prescribing of lipid-modifying medicines places patients at increased risk of CVD or unnecessary harm. MedicineInsight is a quality improvement program used to help general practices draw clinical insights from their data. Approximately 600 practices are currently providing national data from their clinical information systems on about 3.8 million patients. We used (whole of practice, longitudinal) MedicineInsight data to assess general practitioner prescribing behaviour in relation to the management of lipids and reduction of CV risk.
In May 2017, 214,160 patients aged 45-74 years were at high CV risk, half were treated with statins and 52% of those not treated with statins had established CVD. Of 69,303 patients currently on statins, 51% were at high CV risk, 15% were at moderate risk and 34% were at low CV risk prior to initiation of antihypertensive or lipid-modifying therapy (pre-treatment risk). Of 219,157 patients on lipid-modifying therapy, 20% were achieving a LDL-cholesterol target of < 2 mmol/L in the last 12 months. Approximately 23% of patients with LDL-cholesterol levels over 4.0 mmol/L in the last 12 months were prescribed high intensity statins.
Individualised practice reports are produced (by consent) for each participating MedicineInsight practice, comparing their prescribing data to their peers' and aggregated national data. To our knowledge this is the first time pre-treatment CV risk has been calculated in an Australian general practice setting. Our results help provide a picture of the under and over-prescribing of statins. A large portion of patients at high CV risk (including those with established CVD) were not prescribed statin therapy whilst some patients at low CV risk may have been unnecessarily prescribed a statin.

281 Statin induced cataract in cardiovascular patients: A retrospective cohort study of a tertiary healthcare facility

Dr Rahul Tripathi[1], Dr Kshipra K[1], Dr Kesia Shaji Oommen[1], Dr Sonal Sekhar Miraj[1], Dr Ranjan Shetty[2]
[1]Dept. of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal University, Udupi, India, [2]Dept. of Cardiology, Kasturba Medical College, Manipal University, Udupi, India

Objective: To assess the effect of statins on cataract development when used for secondary prevention.
Methods: Retrospective cohort study based on the hospital database of patients aged ≥ 30 years, without any previous statin prescription and admitted in the Department of Cardiology for a major cardiovascular event or procedure between 1st January 2009 and 31st December 2013. Two cohorts were constructed for the analysis of the study: one for study cohort (newly prescribed statin users) and another for a reference cohort. Among 561 patients met study criteria, we identified 429 were as statin users and 132 were non-users. We took the date of entry into study cohort as the date of first statin prescription (index date) and the date of exit as the date of subsequent admission/diagnosis for cataract, date of death or ending date of the study, whichever will be the earliest. We calculated incidence rate and relative risk of cataract in the cohorts.
Result: The incidence of cataract among statin users and statin non-users are 16.8% and 4.5% respectively. Risk of developing cataract in statin users is 3.692 times more than statin non-users. There is a positive relation between duration of statin use and development of cataract. The relative risk of development of cataract among patients treated with rosuvastatin was found to be 0.972 times more than atorvastatin users.
Conclusion: There is a higher incidence of cataract among statin users in cardiovascular patients. The risk of development of cataract is more among statin users than non-users. There is a relation between the duration of statin use and development of cataract. Rosuvastatin has higher risk of causing cataract than atorvastatin. We calculated number needed to harm (NNH). On average, 8.1 patients would have to receive statin for one additional patient to develop cataract.

282 Effectiveness of generic versus branded rosuvastatin for treatment of dyslipidemia at a hospital in Southern Taiwan

Cheng Chih-Jen[1], Lin Jung-An[1]
[1]Kaohsiung Veterans General Hospital Tainan Branch, Tainan, Taiwan

Aim/Objective: Generic rosuvastatin (Rotlip®) is based on bioequivalence with branded rosuvastatin (Crestor®). Costs are a consideration in selecting drug, but clinical effectiveness and safety are more important. Therefore, we compared the effectiveness and safety of Rotlip® and Crestor®.
Methods: Medical records of hospitalized geriatric patient who received rosuvastatin from January 2016 to December 2016 were reviewed. The medical records of the patients who received generic and branded rosuvastatin were included. Clinical outcome development or progression of Acute Coronary Syndrome(ACS) hospitalization, Low-density lipoprotein cholesterol (LDL-C), High-density lipoprotein cholesterol (HDL-C), Triglyceride(TG), Totalcholesterol(TC),
were considered for efficacy comparisons.
Results: The study included 321 patients (female: 52.34%). 156 patients received generic rosuvastatin while 165 received branded. The average of age were 62.62 and 61.13, respectively (p= 0.256 for non-inferiority). The average of Low-density lipoprotein cholesterol were 114.60 and 109.96, respectively (p= 0.498). The average of High-density lipoprotein cholesterol were 48.99 and 49.47, respectively (p= 0.737). The average of Triglyceride were 133.37 and 145.96, respectively (p= 0.248). The average of Totalcholesterol were 187.83 and 189.39, respectively (p= 0.760).
Conclusion: Generic and branded rosuvastatin exhibited similar responses as measured by the LDL-C, HDL-C, TG, TC as well as similar clinical efficacy and safety outcomes.

283 Occurrence, causes, and outcome after switching from Ticagrelor to Clopidogrel in real world: Focused on Ticagrelor-related dyspnea

Yi Ming Hua[1], Sin Yi Yu[2], Hui Chen Su[1]
[1]*Chi-Mei Medical Center, Tainan City, Taiwan,* [2]*National Cheng Kung University Hospital, Tainan City, Taiwan*

Aim/Objective: Dual Anti-Platelet Therapy with Aspirin and Ticagrelor, is the gold therapy for Acute Coronary Syndromes (ACS). In Taiwan, Ticagrelor is covered by Health insurance for 9 months. However, cases that switched from Ticagrelor to Clopidogrel have been observed in clinical practice. Our objective is to evaluate the pattern for the switching. Ticagrelor-related dyspnea and cardiovascular (CV) outcome will be also discussed.
Methods: A retrospective study was conducted by using a single medical center database. Patients who were diagnosed as ACS and prescribed with Ticagrelor during 2015 to 2016 would be included. We extracted the information about characters, medication, side effects and CV events. Data were entered and analyzed by SPSS.
Results: From 2015 to 2016, 337 patients were included, and followed up until May 2017. Overall, 135 patients were switched to Clopidogrel or discontinued. The pattern of prescription after acute phase was: keep Ticagrelor (59.9%), change to Clopidogrel (23.4%), and discontinue Ticagrelor (16.6%). The switching occurred within 2 months, and the most frequent causes were health insurance, dyspnea and bleeding. For patients who switched to Clopidogrel, the main reason was dyspnea (29.1%) while health insurance was the major cause in Ticagrelor withdrawn group (57.1%). Recurrent CV events were higher with patients switched to Clopidogrel (11.9%; 25.3%, p=0.005).
Conclusion: Dyspnea is a common side effect related to Ticagrelor. Based on the results of clinical trials, 10%-38% of participants who treated with Ticagrelor had dyspnea but few of them discontinued medication. Keeping use of Ticagrelor was encouraged unless dyspnea was intolerable. In the aspect of downgrade to Clopidogrel, the ischemic protection after switching was evaluated by observational studies. However, the evidence was unclear due to short follow up time. Unfortunately, Prasugrel is unavailable in Taiwan; consequently, switching to Clopidogrel may be an option.

284 Analysis of warfarin usage and INR control in atrial fibrillation: A retrospective study

Ms Florence James[1], Mr Jefry Jose[1], Mr Ashok Kumar Addepalli[1], Dr Surulivel Rajan Mallayasamy[1], Dr Ranjan Shetty[2], Dr Rajesh Vilakkathala[1]
[1]*Department of Pharmacy Practice, Manipal college of pharmaceutical science, Manipal University, Manipal, Manipal, India,* [2] *Department of Cardiology, Kasturba Medical College and Hospital, Manipal University, Manipal, India*

Objective: To find the mean time in therapeutic range (TTR) of warfarin and to determine the INR control in patients with atrial fibrillation (AF) who were administered warfarin as primary anticoagulant.
Methods: Retrospective Observational study: The data were analyzed using descriptive statistics in Microsoft Excel and also by utilizing the Rosendaal method of calculating TTR and CHA2DS2-VASc scoring for stroke risk analysis
Results: The mean age of 183 patients was 58±14 years. The male to female ratio was 0.86:1. The predominant co-morbidity was hypertension (34.43%, n=63) and anti-hypertensives were the most common concomitant medication (86.34%, n=158). The average CHA2DS2-VASc score was 2.74 ± 1.72 with a yearly stroke risk of 3.32 ± 2.71 (%). There were 29 cases of bleeding, with 5 recorded UGI bleeds, in which 17 cases were treated with Vitamin K as mono-therapy. The mean TTR was concluded to be 17.37±22.67(%) using the Rosendaal method, and 17.59±20.73(%) using the traditional method. 40% patients were identified to be having a TTR of 0%. Out of 1337 hospitalized days, the INR of the patients were found to be 1.0-2.0 for 794 days.
Conclusion: This study revealed that 94% of the patients with AF receiving warfarin had a TTR <60% which correlates to a higher risk of vascular events and increased mortality. The INR range of 1.0-2.0, probably indicated that patients were either under-dosed or the treatment was ineffective which placed them at a higher risk of developing stroke as per CHA2DS2–VASc scores. This revealed a desperate need to have a closer look at how warfarin is being utilized in the hospital. TTR needs to be elevated significantly in order to avoid therapeutic failure.

285 Evaluation of appropriate use of Anti-coagulants in patients with atrial fibrillation

Dr. G R Saraswathy[1], Ms. M Nayanathara[1], Mr. Pavan Kumar Murari[1], Dr Nagamallesh[2], Dr Paramesh[2]
[1]Dept. of Pharmacy Practice, Faculty of Pharmacy, RUAS, Bangalore - 54, India, [2]Narayana Hrudayalaya, Ramaiah Memorial Hospital, Bangalore, India

Background: Atrial fibrillation poses an increased risk of stroke complications and has an annual global incidence of approximately 4.5%, although this varies greatly based on the presence or absence of risk factors. This warrants for appropriate anticoagulant prophylactic therapy.
Aim: To evaluate the pattern of use of Anticoagulants in patients with atrial fibrillation
Methodology: A six-month long prospective cohort study was conducted in in-patients with arrhythmia at cardiology department. Patients fulfilling study criteria were enrolled and pertaining data was collected by conducting medication history interviews and documented in the suitably designed electronic database. CHA2DS2VASC Scoring for atrial fibrillation stroke risk was employed for the study purpose.
Results: A total of 100 cardiac arrhythmias patients were enrolled during the study period, of whom, 43 (43%) were diagnosed with atrial fibrillation. Among them 36 (83.7%) patients received prophylactic anticoagulant therapy, 2 (5%) received anti-platelet drugs based on their CHA2DS2VASC scores. However, 5 (12%) patients did not receive any prophylactic therapy despite the scores. Unfractionated heparin was administered to 14 (38.88%) patients and oral acenocoumarol was prescribed in 5 (14%) patients, whereas 4 (11%) patients received factor Xa inhibitors. The combination of unfractionated heparin and acenocoumarol was used in 5 (13.88%).
Conclusion: Although the American College of Cardiology/American Heart Association guidelines recommends warfarin as the first choice anticoagulant in patients with atrial fibrillation for stroke prevention, it was rarely used at the study site. This deviation from the standard guidelines requires a pragmatic consensus of prescribers and patients in marinating desired INR values while preventing stroke. Clinical Pharmacists plays an important role in evaluating the safety concerns associated with current prescribing patterns.

286 Comparison of Antiplatelet in preventing major adverse cardiovascular events among male patients with coronary heart disease after percutaneous coronary intervention

Hendra Wana Nur'amin[1], Iwan Dwiprahasto[2], Erna Kristin[2]
[1]Faculty of Medicine, Lambung Mangkurat University, Banjarmasin, Indonesia, [2]Faculty of Medicine, Lambung Mangkurat University, Yogyakarta, Indonesia

Objective: Men have a higher risk of coronary heart disease (CHD). CHD patients who had percutaneous coronary intervention (PCI) are recommended to be given antiplatelet therapy to prevent major adverse cardiovascular events (MACE). Previous studies suggested that ticagrelor is superior to clopidogrel, but similar study on male population was not common, especially in Indonesia. Therefore, we conducted a study to assess the effectiveness of antiplatelets in preventing MACE in male CHD patients after PCI.
Methods: A retrospective cohort study was conducted with observation for up to one year since PCI. A total of 335 male patients consisted of 103 patients treated with ticagrelor and 232 patients with clopidogrel. The outcome was a composite of repeat revascularization, myocardial infarction, and all-cause death (MACE). Cox proportional hazard regression was used to analyze the association between treatment and outcome, adjusted for age, comorbidities, and concomitant drugs.
Results: There were 23.0% subjects experienced MACE. The risk of MACE (Hazard Ratio (HR) 2.42, 95%CI 1.16-5.04) and repeat revascularization events (HR 2.56, 95%CI 1.02-6.44) were significantly higher in the clopidogrel group compared to ticagrelor. There were no differences in the risk of myocardial infarction (HR 1.93, 95%CI 0.67-5.54) and all-cause death (HR 1.53, 95%CI 0.17-13.74).
Conclusion: The risk of MACE and repeat revascularization events were higher in male CHD patients treated with clopidogrel compared to those treated with ticagrelor, but there were no differences in the risk of myocardial infarction and all-cause death.

287 Comparisons of diabetic retinopathy events associated with glucose-lowering drugs in T2DM patients: A systematic review and network meta-analysis

Guangyao Li[1], Huilin Tang[2,3], Ying Zhao[1], Lulu Sun[4], Tiansheng Wang[1,5]
[1]Department of Pharmacy Administration and Clinical Pharmacy, School of Pharmaceutics Sciences, Peking University, Beijing, China, [2]Department of Epidemiology, Richard M. Fairbanks School of Public Health, Indiana University, Indianapolis, USA, [3]Department of Pharmacy, Peking University Third Hospital, Beijing, China, [4]Department of Pharmacy, Beijing Shijitan Hospital, Beijing, China, [5]Department of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, USA

Objective: Diabetic retinopathy (DR), a microvascular complication of diabetes mellitus, is the most frequent cause of blindness in adults. However, the effects of glucose-lowering drugs on DR events remains uncertain. We aimed to assess the comparative effects of glucose-lowering drugs risk on DR risk in patients with type 2 diabetes.
Methods: We systematically searched Cochrane Library Central Register of Controlled Trials, PUBMED, and EMBASE through January 17, 2017 to identify the randomized controlled trials (RCTs) which reported the events of DR of with at least 24 weeks' duration. A random-effects network meta-analysis was performed to calculate the odds ratio (OR) with 95% confidence interval (CI). We ranked the comparative effects of all drugs with surface under the cumulative ranking probabilities.
Results: A total of 35 RCTs with 1254 events among 86,176 patients were included. Sodium-glucose cotransporter-2 inhibitors (SGLT2i) was significantly associated with lower risk of DR events than placebo (OR, 0.79; 95%CI, 0.55 to 1.13). Dipeptidyl peptidase 4 inhibitors (DPP-4i) (OR, 1.25; 95%CI, 1.04 to 1.50), glucagon like peptide-1 receptor agonist (GLP-1RA) (OR, 1.32; 95%CI, 1.07 to 1.61), and sulfonylureas (OR, 1.82; 95%CI, 1.15 to 2.86) were significantly associated with increased risk of DR as compared with placebo. SGLT2i was associated with decreased risk of DR when compared with DPP-4i (OR, 0.63; 95%CI, 0.42 to 0.95), GLP-1RA (OR, 0.60; 95%CI, 0.40 to 0.91), sulfonylureas (OR, 0.44; 95%CI, 0.25 to 0.77), thiazolidinediones (OR, 0.50; 95%CI, 0.27 to 0.92). Among these available treatments, SGLT2i was ranked as the lowest risk, while α-glucosidase inhibitor was ranked as the highest risk.
Conclusions: In summary, our study shows that SGLT2i might provide a protective effect against DR complications, while DPP-4i, GLP-1RA, and sulfonylureas might increase the risk. However, these effects are uncertain given the quality of evidence, further studies are required to confirm our findings.

288 Metformin-associated risk of liver injury in patients with type 2 diabetes mellitus: A cohort study

Yang Xu[1], No title (Student) Yixin Sun[1], Professor Siyan Zhan[1]
[1]Department of Epidemiology and Biostatistics, School of Public Health, Peking University, Beijing, China

Aim/Objective: Recent guidelines governing anti-diabetic medications increasingly advocate metformin as first-line therapy in patients with type 2 diabetes mellitus(T2DM). However, more and more adverse drug reaction(ADR) reports about metformin and liver injury were submitted to National Center for ADR Monitoring, China. We therefore evaluated the risk of liver injury associated with metformin in T2DM patients without baseline liver injury.
Methods: The regional community based data of Yinzhou District at Ningbo City (2009/01/01-2017/03/20) was examined in a cohort study that included initiators of metformin or sulfonulureas(SU) treatment without baseline liver injury. Liver injury endpoint was defined with an outpatient or inpatient diagnosis code. Using a propensity score-adjusted Cox model, we estimated hazard ratios(HR) and 95% confidence interval(CI) for liver injury.
Results: We included 1835 T2DM patients which consist of 789 metformin initiators and 1046 SU initiators. The incidence rate per 1000 person-years for liver injury was 4.77(95%CI 2.63-6.92) in metformin and 1.17(95%CI 0.43-2.56) in SU. The propensity score-adjusted HR for liver injury was 4.01(95%CI 2.07-7.79) in metformin vs. SU, which indicates that the hazard of liver injury with metformin was higher relative to SU.
Conclusion: Among T2DM patients initiating metformin was associated with a greater risk of liver injury compared to SU initiators.

289 Drug utilization of anti-diabetic medications in patients with type 2 diabetes mellitus from 2010-2017 in Yinzhou, China

Yixin Sun[1], Yang Xu[1], MD,PhD Siyan Zhan[1]
[1]*Department of Epidemiology and Biostatistics, School of Public Health, Peking University., Beijing, China*

Objective: The present study aimed to characterize the utilization of anti-diabetic medications in type 2 diabetes mellitus(T2DM) patients in Yinzhou, further to identify T2DM pharmacological treatment patterns in the real world.
Methods: The regional community based database of Yinzhou District at Ningbo City was used to conduct this retrospective study. Data for T2DM patients registered during Jan 1, 2010 to Mar 20, 2017 was extracted. Patterns of pharmacological treatment were examined including the usage of oral hypoglycemic agents (OHAs), insulin and no drug therapy. Proportion of anti-diabetic drugs and drug combinations for T2DM patients were tabulated and ranked overall.
Results: The cohort consisted of 27,463 patients who were dispended 678,855 prescriptions for anti-diabetic drugs, 47% were male and the mean age was 60.8±11.8 years. The mean fasting blood glucose value was 8.9±2.9 mmol/L and mean diabetes duration was 2.3±3.5 years at baseline. Of all the patients analyzed 74.5%(20471 patients) received at least one type of drug treatment rather than only lifestyle education. It was found 60.8% were treated with OHAs alone, while 11.8% had OHAs combined with insulin. 1.9% were treated with insulin or insulin analogs only. Among patients treated with anti-diabetic drugs, the most commonly prescribed drug class was sulphonylureas(49.8%), followed by biguanides (43.5%). Metformin was the most frequently used drug (43.5%), followed by Gliclazide (40.6%) and acarbose (30.0%). Monotherapy was prescribed in 53.2% of patients, while 35.6% given a two-agent combination. The most common dual therapy was metformin plus Gliclazide (9.9%).
Conclusions: In Yinzhou China, a majority of T2DM patients were treated with anti-diabetic drug therapy, especially with OHAs only. Metformin, as first-line therapy recommended in guideline, was the most commonly prescribed drug. More than one-third of the patients treated with anti-diabetic drugs were given combination therapy.

290 Systematic review of studies on type 2 diabetes mellitus case definitions from Taiwan National Health Insurance Research Databases

Ms. Yi-Chien Sung[1], Mr. Shih-Chieh Shao[2], Ms. Yuk-Ying Chan[2]
[1]*Department of Pharmacy, Linkou Chang Gung Memorial Hospital, Taiwan,* [2]*Department of Pharmacy, Keelung Chang Gung Memorial Hospital, Taiwan*

Aims: This study aimed to evaluate selecting algorithms of type 2 diabetes mellitus (T2DM) cases on recently published studies using Taiwan National Health Insurance Research Databases (NHIRD).
Methods: We searched MEDLINE (via PUBMED), EMBASE using free-text and MeSH terms relating to T2DM, NHIRD to identify relevant articles in English from 2015 to April 30, 2017. We also identified other potentially eligible studies by searching other electronic resources. We only included full-text publications that identified T2DM patients in studies from Taiwan NHIRD. Two independent reviewers selected studies for the review. Data on research questions, case definitions and their validity were extracted onto Excel spreadsheets, and we used descriptive analyses to meet our study aims.
Results: We identified 195 relevant articles based on our searches, and 93 studies met all of our inclusion criteria. Most of eligible studies focused on the research questions related to “etiology/harm” (n=56, 60.2%), followed by “prevention/therapy” (n=35, 37.6%). Most of studies only used T2DM-related diagnosed codes (n=69, 74.2%) and T2DM-related diagnosed codes plus treatments (n=16, 17.2%) to identify T2DM patients, but few studies (n=19, 20.4%) presented the results of validity in their selecting algorithms.
Conclusions: Most of NHRID studies identified T2DM patients by using T2DM diagnoses without providing the validity of their selecting algorithms. Further studies needed to evaluate the potential impacts of misclassification bias due to these selecting algorithms on the study results.

291 The impact of dipeptidyl peptidase-4 inhibitors (DPP-4i) on depression among type 2 diabetes mellitus(T2DM): A systematic review and network meta-analysis

Jun Yang[1], Shanshan Wu[2], Le Gao[1], Yang Xu[1], Ting Cai[1], Zhirong Yang[3], Siyan Zhan[1], Feng Sun[1]
[1]Peking University(PKU), Beijing, China, [2]National Clinical Research Center of Digestive Diseases, Beijing Friendship Hospital, Beijing, China, [3]Primary Health Care Center, Cambridge University, Cambridge, UK

Background: Dipeptidyl peptidase-4 inhibitors (DPP-4i) is a new class of anti-diabetic drugs whose effect on depression in patients with type 2 diabetes mellitus (T2DM) has not raised much attention yet in spite of its heavy mental burden.
Objective: To systematically evaluate the effect of DPP-4i on depression in patients with T2DM.
Method: Cochrane Library, Embase, Medline and Clinical Trials were searched from inception through May, 2017 to identify randomized controlled trials (RCTs) assessing the safety of DPP-4i versus placebo or other anti-diabetic drugs in patients with T2DM. Trails which lasted more than 24 weeks and had available data on depression events were included. We applied both DerSimonian-Laird and network random-effect model in Bayesian framework to estimate odds ratios (ORs) and their 95% confidence intervals (CIs).
Results: 18 RCTs were included, enrolling 33795 patients, including 9 treatments: 5 DPP-4i (Alogliptin, Linagliptin, Saxagliptin, Sitagliptin and Vildagliptin), placebo, Glucagon-like peptide-1 receptor agonists (GLP-1RAs), Sulfonylurea (SU) and thiazolidinediones (TZDs). In pairwise meta-analysis, no significant effects on depression was found (range of ORs: 0.32-3.14). While network meta-analysis detected that significant decreasing effects on depression were found when TZD versus Vildagliptin (OR=0.23, 95%CI: 0.04-0.87). Ranking probability analysis indicated that TZD, Sitagliptin and SU decreased the risk of depression most among all 9 treatments with probabilities of 82.6%, 62.6% and 60.1%. Visually symmetrical funnel plot and node-split method indicated that the risk of publication bias and inconsistency were relatively low separately.
Conclusion: TZD seems associated with decreased risk of depression compared with DPP-4i and other anti-diabetic treatments which may indicate its profitable effect on depression.

292 Utilization of sodium-glucose cotransporter 2 inhibitors in patients with type 2 diabetes mellitus: Evidence from a medical center in Taiwan

Mr Kai-Cheng Chang[1], Ms Huang-Tz Ou[2,3,4], Ms Hui-Yu Chen[1]
[1]Department of Pharmacy, Linkou Chang Gung Memorial Hospital, Taoyuan, Taiwan, [2]Institute of Clinical Pharmacy and Pharmaceutical Sciences, National Cheng Kung University, Tainan, Taiwan, [3]Department of Pharmacy, National Cheng Kung University, Tainan, Taiwan, [4]Department of Pharmacy, National Cheng Kung University Hospital, Tainan, Taiwan

Aim/Objective: Sodium-glucose cotransporter 2 inhibitors (SGLT2i) are a newer class of antidiabetic agents with a potential benefit of reducing cardiovascular disease risk. SGLT2i has been introduced in Taiwan since2015, and however, the utilization pattern of SGLT2i in Taiwan and associated factors with use of SGLT2i remains lacking.
Methods: The study population were derived from the Chang Gung Memorial Hospital (CGMH) Research Database, which consist of patients with type 2 diabetes from the northern, middle and southern branches of (CGMH) in Taiwan. Notably, the prescriptions from the CGMHs account for approximately one-third of total prescriptions in Taiwan. The use of antidiabetic drugs, including metformin (Anatomical Therapeutic Chemical: A10BA02) sulfonylurea (A10BB), dipeptidyl peptidase-4 inhibitors (A10BH), thiazolidinediones (A10BG), alpha-glucosidase inhibitors (A10BF), glinides (A10BX02, A10BX03), glucagon-like peptide-1 analogue (A10BJ), and SGLT2i (A10BK), was measured in the percentages of quantity (in terms of defined daily dose) and cost for each antidiabetic drug in total antidiabetic drugs in each calendar year from 2014 to 2017.
Results: The utilization and cost associated with SGLT2i significantly increased during 2016 to 2017. The percentages of SGLT2i use in antidiabetic drugs were 2.62 % and 7.86% in 2016 and 2017, respectively. The costs of SGLT2i among antidiabetic drugs were 6.41% and 15.85% in 2016 and 2017, respectively. The spending of SGLT2i in 2017 became the second biggest spender in antidiabetic drugs (the first one was DPP4i; 37.50%).
Conclusion: Significant growing utilization and spending of SGLT2i highlights a need for research on its long-term effectiveness in real-world practice setting.

293 Impact of dipeptidyl peptidase-4 inhibitors (DPP-4i) on headache and dizziness among type 2 diabetes: A systematic review and network meta-analysis

Le Gao[1], Zhi-xia Li[1], Jun Yang[1], Shan-shan Wu[2], Wei-wei Wang[3], Zhi-rong Yang[4], San-bao Chai[5], Si-yan Zhan[1], Feng Sun[1]
[1]Department of Epidemiology and Biostatistics, Peking University School of Public Health, Beijing, China, [2]National Clinical Research Center of Digestive Diseases, Beijing Friendship Hospital, Capital Medical University, Beijing, China, [3]National Clinical Research Center for Mental Disorders, Beijing Anding Hospital, Capital Medical University, Beijing, China, [4]Primary Health Care Center, Cambridge University , Cambridge, UK, [5]Department of Endocrinology, Peking University International Hospital, Beijing, China

Background: Dipeptidyl peptidase-4 inhibitors (DPP-4i) have led to concerns about its central nervous system safety such as headache and dizziness in patients with type 2 diabetes(T2DM).
Objective: To systematically review the effects of DPP-4i on headache and dizziness among T2DM.
Methods: Medline, Embase, Clinical trials and Cochrane library were searched from inception through April 09 2017 to identify randomized clinical trials (RCTs) assessed safety of DPP-4i in T2DM. Network meta-analysis within a Bayesian framework was performed to calculate odds ratios for the incidence of headache and dizziness.
Results: 138 RCTs (100778 participants) were enrolled in this study, including 15 treatments: 8 DPP-4i (Alogliptin, Anagliptin, Gosogliptin, Linagliptin, Saxagliptin, Sitagliptin, Teneligliptin, Vildagliptin), placebo and 6 other anti-diabetic drugs (Sodium-dependent Glucose co-Transporters-2(SGLT-2), Glucagon-like peptide-1 receptor agonists (GLP-1RAs), Insulin, Metformin, Sulfonylureas (SUs), and Thiazolidinediones (TZDs)). Significant decreased risk on headache were detected when Gosogliptin versus Anagliptin, GLP-1RAs, Metformin, Sitagliptin, SUs and Vildagliptin (range of ORs: 0.10-0.48). Compared with SUs, all 7 DPP-4i (without Gosogliptin) decreased the incidence of dizziness (range of ORs: 0.11-0.59). Ranking probability analysis was performed later, which indicated Gosogliptin, Linagliptin and Tenegliptin decreased risk of headache most with probabilities of 95.6%, 80.1% and 79.5% while Anagliptin, SUs and GLP-1 RAs showed a poor performance with the lowest probabilities of 12.2%, 16.3% and 22.9%. For dizziness, Anagliptin, Tenegliptin and SGLT-2 showed a protective effect with probabilities of 94.6%, 82.3% and 72.7%, while SUs, Metformin and Linagliptin are with the lowest probabilities of 2.6%, 24.4% and 37.1%.
Conclusion: Gosogliptin, Linagliptin and Tenegliptin seem to show a protective effect in T2DM on headache, as well as Anagliptin and Tenegliptin on dizziness. However, Anagliptin is associated with increased risk on headache, and so is Linagliptin on dizziness.

294 Impact of glucagon-like peptide-1 receptor agonists (GLP-1RAs) on hypoglycemia among type 2 diabetes: A systematic review and network meta-analysis

Le Gao[1], Jun Yang[1], Zhi-xia Li[1], Shan-shan Wu[2], Ting Cai[1], Zhi-rong Yang[3], San-bao Chai[4], Si-yan Zhan[1], Feng Sun[1]
[1]Department of Epidemiology and Biostatistics, Peking University School of Public Health, Beijing, China, [2]National Clinical Research Center of Digestive Diseases, Beijing Friendship Hospital, Capital Medical University, Beijing, China, [3]Primary Health Care Center, Cambridge University, Cambridge, UK, [4]Department of Endocrinology, Peking University International Hospital, Beijing, China

Background: Just as other anti-diabetic drugs, Glucagon-like peptide-1 receptor agonists (GLP-1RAs) have led to concerns about its metabolism safety such as hypoglycemia in patients with type 2 diabetes mellitus (T2DM).
Objective: To systematically review the effects of GLP-1RAs on hypoglycemia among patients with T2DM.
Methods: Medline, Embase, Clinical trials and Cochrane library were searched from inception through April 09 2017 to identify randomized clinical trials (RCTs) assessing efficacy and safety of GLP-1RAs versus placebo or other anti-diabetic drugs in T2DM. Network meta-analysis within a Bayesian framework was performed to calculate odds ratios for the incidence of hypoglycemia. Funnel plot and node-split model were used to test the publication bias and inconsistency respectively.
Results: 104 RCTs (47637 participants) were enrolled in this study, including 14 treatments: 7 GLP-1RAs (Albiglutide, Dulaglutide, Exenatide, ExenatideLAR, Liraglutide, Lixisenatide, Taspoglutide), placebo and 6 other anti-diabetic drugs (Insulin, Glargine, Metformin, Sulfonylureas (SUs), Sitagliptin, and Thiazolidinediones (TZD)). Compared with insulin, SUs and glargine, Albiglutide significantly decreased the risk of hypoglycema, with ORs of 0.38 (95%CI: 0.25, 0.58), 0.20 (95%CI: 0.12, 0.33) and 0.24 (95%CI: 0.06, 0.92) respectively. Compared with SUs, all 7 GLP-1RAs decreased the incidence of hypoglycemia (range of ORs: 0.19-0.31). The results from the Bayesian network meta-analysis model could be used to rank all the treatments included, which showed that placebo, Albiglutide and Sitagliptin decreased the risk of hypoglycemia most with probabilities of 97.4%, 78.8% and 67.0% while SUs, Glargine and Insulin showed a poor performance with the lowest probabilities of 2.1%, 10.3% and 13.8%.
Conclusion: Albiglutide seems to show a protective effect in T2DM on hypoglycemia compared to other anti-diabetic drugs.

295 SGLT2 inhibitors and diabetic ketoacidosis - Review of product information and comparison with American College of Endocrinology position statement

Dr Genevieve M Gabb[1,2], Ms Sonya J Conrad[3], Dr Emily Meyer[2,4]
[1]General Medicine, Royal Adelaide Hospital, Adelaide, Australia, [2]Department of Medicine, University of Adelaide, Adelaide, Australia, [3]Women's Information Service, Adelaide, Australia, [4]Endocrine and Metabolic Unit, Royal Adelaide Hospital, Adelaide, Australia

Sodium glucose-cotransporter 2 (SGLT2) inhibitors are a new drug class for type 2 diabetes mellitus. They are available as single ingredient products, or as a combination product together with metformin. Case reports of diabetic ketoacidosis (DKA) in association with their use have emerged in clinical practice. In mid-2016 the American Association of Clinical Endocrinologists (AACE) and the American College of Endocrinology (ACE) issued a position statement on SGLT-2 inhibitors and DKA.
Objective: To review and compare Australian Product Information for SGLT-2 inhibitors (single and combination) regarding information on DKA, and also compare with information in the AACE/ACE position statement.
Method: Text analysis for key information regarding DKA including frequency, risk factors, clinical presentation, diagnostic issues, management, risk mitigation strategies and specific advice in relation to surgery.
Results: All PI's had revision dates after the AACE/ACE position statement. All PI's listed DKA, in the precautions and adverse events sections. All identified usual presenting DKA symptoms, but that blood sugar levels may be lower than expected. Risk factors and precipitants were identified, although there was variation in relation to identification of surgery as a precipitant. There was variation in relation to information on disease severity, from no information, to identification that the outcome may be fatal. No PI's included information on diagnostic difficulties or specific recommendations listed in the position statement. Management information varied, regarding urgency, need for hospitalisation and specific treatments. Specific advice in relation to management around surgery was generally lacking for single products, although recommendations to withhold before and after surgery were present for combination products due to presence of metformin.
Conclusion: There is variation between Product Information statements of SGLT2 inhibitors regarding DKA, and useful clinical information from the AACE/ACE position statement is not fully represented. Risk mitigation could be improved with further modification of Product Information.

296 Pioglitazone treatment on non-alcoholic fatty liver disease: Case description

Chi Mei Medical Center Hsiang_ju Huang[1], Chi Mei Medical Center Tsung-Hsien Huang[1], Chi Mei Medical Center Huei-Jhen Su[1]
[1]Chi Mei Medical Center, Yongkang District, Tainan City, Taiwan

Background: Nonalcoholic fatty liver disease (NAFLD) are increased at risk of non-alcoholic steatohepatitis (NASH) and at a higher risk of death from cirrhosis, hepatocellular carcinoma and cardiovascular disease. Certain health conditions make more likely to develop NAFLD and NASH, including obesity, metabolic syndrome, and type 2 diabetes. But now no medicines have been approved to treat NAFLD and NASH ; Pioglitazone is a thiazolidinedione antidiabetic agent and could be reversed NAFLD or NASH.
Case Report: We describe a case of 64-year-old woman with hypercholesterolemia and fluctuating GPT for years who received Rosuvastatin and Pioglitazone.Conclusion: The initial starting dose of pioglitazone is 15mg from October 2014, and after 1 year the patient's liver enzyme levels(ALT,AST) were reduced to 46,33 U/L , which were both within normal limits.

297 An Australian perspective on medication-related quality of care (MRQOC) in residential aged care

Dr Jodie Hillen[1], Dr Agnes Vitry[2], Dr Gillian Caughey[1]
[1]University of South Australia, Quality use of medicines and pharmacy research centre, Adelaide, Australia, [2]University of South Australia, School of Pharmacy and Biomedical Sciences, Adelaide, Australia

Objective: To describe medication-related quality of care (MRQOC) using an evidence-based indicator set developed specifically for Australian aged care residents.
Methods: A retrospective cohort study was undertaken using the Australian Department of Veterans' Affairs administrative health care claims database. The study included 17672 aged care residents who were alive at 1st January 2013 and had been a permanent resident for at least three months. Twenty-three MRQOC indicators were included that assessed the use of appropriate medications in chronic disease, exposure to high-risk medications and access to collaborative health services. Analyses included stratification by history of dementia.
Results: Key findings included underuse of cardiovascular medications (56.1%) and overuse of medications associated with falls (73.5%), benzodiazepines (41.4%) and antipsychotics (33.2%). Additionally, collaborative health services were underutilised (42.6%). Good MRQOC was demonstrated through low usage rates of several high-risk medications including NSAIDs (9.0%) and antispasmodics (4.3%). For residents with a history of dementia, use of antipsychotics (42.3% Vs 28.7%) and medications with moderate to strong anticholinergic properties (50.8% Vs 43.3%) was significantly higher and use of preventative medications in cardiovascular disease (42.3% vs 57.1%) and benzodiazepines (38.5 Vs 40.1%) were significantly lower compared to residents without a history of dementia.
Conclusion: MRQOC activities in this population should be targeted at monitoring and reducing exposure to antipsychotics and benzodiazepines, improving the use of preventative medications for cardiovascular disease and improving access to collaborative health services. Residents with dementia should be targeted for MRQOC activities to ensure risk assessment of medication use has been established. This study's results are similar to reports from the other countries including the UK, US, Canada and Belgium, which may present an opportunity for an internationally collaborative approach to evaluating and improving MRQOC for aged care residents.

298 Are medications and prescribing patterns associated with hospitalisation risks in residents of aged care facilities? A systematic review

Ms Kate Wang[1], Assoc Prof J Simon Bell[1,2,3], Ms Esa Chen[1,2], Dr Julia Gilmartin-Thomas[3,4], Dr Jenni Ilomäki[1,3]
[1]Centre for Medicine Use and Safety, Monash University, Melbourne, Australia, [2]NHMRC Cognitive Decline Partnership Centre, Hornsby Ku-ring-gai Hospital, Hornsby, Australia, [3]Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia, [4]Research Department of Practice and Policy, University College London School of Pharmacy, London, United Kingdom

Aim: To systematically review the association between medications and prescribing patterns with hospitalisations from residential aged care facilities (RACFs).
Methods: Literature was sourced from MEDLINE, EMBASE, Cumulative Index to Nursing and Allied Health literature (CINAHL) and International Pharmaceutical Abstracts (IPA). Databases were comprehensively searched using a combination of subject headings and key terms related to hospitalisations, residential aged care facilities, medications and prescribing patterns. The study selection process, data extraction and quality assessment using the Joanna Briggs Institute Critical Appraisal Checklist Tools were completed by two independent investigators.
Results: Twenty-eight studies were included in the systematic review. All studies on polypharmacy (n=4) and potentially inappropriate medications (PIMs) (n=4) reported an association with increased all-cause hospitalisation. Studies on psychotropic medications produced conflicting results for all-cause and cause-specific hospitalisations (n=11). Influenza vaccination reduced hospitalisation for influenza symptoms (n=2). Oseltamivir as influenza prophylaxis was not associated with all-cause or influenza hospitalisations (n=2). No associations were found between statins and hospitalisation (n=1). Long-term use of aspirin was not associated with hospitalisation in residents with heart failure taking angiotensin-converting enzyme inhibitors (n=1). One study reported an association between warfarin use and bleeding-related hospitalisations but no association was found for other antithrombotic medications. Non-steroidal anti-inflammatory drugs (NSAIDs) of varying type were associated with increased gastrointestinal-related hospitalisations (n=1). One study reported no association between multivitamins and hospitalisations (n=1). No associations were identified between β-blocker therapy and rehopsitalisation (n=1).
Conclusion: Polypharmacy and PIMs are associated with increased hospitalisation risk among residents living in RACFs, while influenza vaccination reduced hospitalisation risk. Further studies are required to better understand the relationship between other classes of medications and hospitalisation risk in RACFs.

299 Are medications associated with fall-related hospital admissions from residential aged care facilities? A case-control study

Ms Taliesin Ryan-Atwood[1], Ms Mieke Hutchinson-Kern[1], Dr Jenni Ilomäki[1], Professor Michael Dooley[1,2], Ms Susan Poole[1,2], Professor Carl Kirkpatrick[1], Ms Elizabeth Manias[3], Dr Biswadev Mitra[4], Associate Professor Simon Bell[1]
[1]Centre for Medicine Use and Safety, Monash University, Melbourne, Australia, [2]Pharmacy Department, Alfred Health, Melbourne, Australia, [3]School of Nursing and Midwifery, Deakin University, Melbourne, Australia, [4]Emergency Department, Alfred Health, Melbourne, Australia

Objective: To investigate whether polypharmacy and falls-risk medications are associated with fall-related hospital admissions from residential aged care facilities (RACFs) compared to hospital admissions for other causes.
Methods: This was a matched hospital-based case-control study of patients aged ≥65 years hospitalized from RACFs between 2013 and 2015. Cases were 474 patients with falls and fall-related injuries. Controls were 168 patients admitted for infections. Polypharmacy was defined as the use of nine or more regular pre-admission medications. Falls-risk medications included psychotropic medications and those that can cause orthostatic hypotension. Conditional logistic regression was used to calculate adjusted odds ratios (OR) and 95% confidence intervals (CI) for the associations between polypharmacy and falls-risk medications with fall-related hospital admissions.
Results: There was no association between polypharmacy and fall-related hospital admissions (adjusted OR=0.97; 95%CI=0.63-1.48). However, the adjusted odds of fall-related hospital admissions increased by 16% (95%CI=3%-30%) for each additional falls-risk medication. In sub-analyses, medications that can cause orthostatic hypotension (adjusted OR=1.25; 95%CI=1.06-1.46) but not psychotropic falls-risk medications (adjusted OR=1.02; 95%CI=0.88-1.18) were associated with fall-related hospital admissions. The association between medications that can cause orthostatic hypotension and fall-related hospital admissions was strongest among residents with polypharmacy (adjusted OR=1.44; 95%CI=1.08-1.92).
Conclusion: Polypharmacy was not an independent risk factor for fall-related hospital admissions. However, medications that can cause orthostatic hypotension were associated with fall-related hospital admissions, particularly among residents with polypharmacy. The risk of falls should be considered among older residents in RACFs prior to prescription of medications that can cause orthostatic hypotension.

300 The association between polypharmacy and the incidence of falls, fractures and weight loss in Australian residential aged care facilities

Dr Jenni Ilomäki[1], Dr Kris M Jamsen[1], Ms Leonie Picton[1], Professor Michael J Dooley[1,2], Professor Carl M Kirkpatrick[1], Ms. Maree Cameron[4], Mr. Brett Morris[4], Associate Professor J Simon Bell[1]
[1]Centre for Medicine Use and Safety, Monash University, Parkville, Australia, [2]School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia, [3]Pharmacy Department, Alfred Health, Melbourne, Australia, [4]Ageing and Aged Care Branch, Department of Health and Human Services, State Government of Victoria, Melbourne, Australia

Aim: Polypharmacy, falls and fall-related fractures and unplanned weight loss rates are used as quality indicators for residential aged care facilities (RACFs). It is unclear whether the polypharmacy indicator is predictive of falls, fractures and weight loss in this setting. The aim of this study was to determine whether polypharmacy is associated with incidence of falls, fractures and weight loss.
Methods: We conducted a longitudinal study in 201 RACFs providing 13.7 million bed days of care from July 2007 to December 2013. Indicator data were collected quarterly at the RACF level. Polypharmacy rate was calculated as the number of residents using ≥9 regular medications divided by the occupied bed days per quarter. The numbers of falls, fractures and residents with unplanned weight loss of ≥3 kg in the following quarter were recorded. Generalized Estimating Equations with Poisson distribution were used to compute incidence rate ratios (IRRs) with 95% confidence intervals (CIs) for the effect of polypharmacy rate on the incidence of falls, fractures and weight loss
Results: There was no overall association between polypharmacy rate and the incidence of falls (IRR 1.003, 95%CI 0.982-1.024) or fractures (IRR 1.045, 95%CI 0.992-1.101) in adjusted analyses. In sub-analyses, each 1-unit increase in polypharmacy rate was associated with a 7.4% increase in fractures in RACFs providing high-level care (IRR 1.074, 95%CI 1.008-1.144). There was no association with weight loss (IRR 1.007, 95%CI 0.988-1.025).
Conclusion: Facilities with higher rates of polypharmacy do not necessarily have higher rates of falls, fractures or weight loss. However, polypharmacy rate was associated with a small increase in fracture risk in high-level care.

301 Development and implementation of three strategies to address polypharmacy in residential aged care services

Ms Leonie Picton[1], Ms Taliesin Ryan-Atwood[1], Professor Michael Dooley[1,2], Professor Carl Kirkpatrick[1], Ms Natali Jokanovic[1], Dr Jenni Ilomaki[1], Associate Professor J Simon Bell[1]
[1]Centre for Medicine Use and Safety, Monash University, Parkville, Australia, [2]Pharmacy Department, Alfred Health, Prahran, Australia

Aim: Data from Victoria's Quality Indicator Program for Residential Aged Care Services indicates that the prevalence of polypharmacy is increasing in residential aged care services (RACS). The aim was to describe the development and implementation of three strategies to address polypharmacy and medication appropriateness in RACS in Victoria.
Methods: Expert consultation identified 16 possible strategies to address the prevalence and appropriateness of medication use, three of which were prioritised for implementation. The first strategy involved audit and feedback via collecting and reporting three new medication-related indicators (proton-pump inhibitors, antipsychotics, five or more administration times). The second strategy involved development of communication tools to facilitate deprescribing; and the third strategy involved optimising the role of medication advisory committees (MACs).
Results: Strategy 1: Specifications and training videos to support the three new medication-related indicators have been developed and pilot-tested in four regional health services. The new medication-related indicators will be collected and reported alongside Victoria's existing quality indicators. Strategy 2: 'Deprescribing champions' have proposed sample dialogues to assist clinicians and residents discuss the topic of deprescribing. These dialogues have been converted to video format and will be incorporated into an educational package to be made available via the RACS online learning platform. Strategy 3: To date, four focus groups and 15 semi-structured interviews have been conducted to assess what aspects of MACs are currently working well, what could be improved and to identify new strategies better assist MACs to promote the quality use of medicines.
Conclusions: The three strategies developed to address polypharmacy and medication appropriateness have a high level of stakeholder support. Implementation of the three strategies is underway with the outcomes being monitored on a quarterly basis over time.

302 What we know about the association between frailty and medicines use among community-dwelling older people: A literature review

Dr Imaina Widagdo[1], Assoc. Prof Nicole Pratt[1], Prof. Elizabeth Roughead[1]
[1]Quality Use of Medicines and Pharmacy Research Centre, Sansom Institute for Health Research, University of South Australia, Adelaide, Australia

Aim/Objective: To describe the association between assessment of frailty and medicine use in a community dwelling, older population.
Methods: A literature search was conducted using the electronic databases: MEDLINE, Embase, CINAHL, Scopus, and International Pharmaceutical Abstracts (IPA) from the beginning date of the databases until 14 December 2016. The Medical Subject Heading (MeSH) terms and keywords used were: 'frail', 'frailty', 'older', 'aged', 'ageing', 'elder', 'geriatric', 'prescribing', 'pharmacotherapy', 'pharmacology', 'medication', 'medicine', 'drug therapy', 'drug use', 'population-based' and 'community dwelling'. The inclusion criteria were older people aged 65 years or over, frailty was assessed using validated measures, and the studies aimed to examine the association between frailty and medicine use. The quality of the included articles was assessed using a quality assessment tool for observational cohort and cross-sectional studies from the United States National Institute of Health. Data extraction included information on the study population and study design, types of frailty measure, types of medicine, and the measure of association.
Results: There were nine articles included in the review, six of the articles were deemed to be of good quality. Eight articles used the Frailty Phenotype to assess frailty and one article used the Frailty Index. The cross-sectional analyses found that there were more frail older people than those who were non-frail that had medicine-related problems, including: underuse of medicine, use of multiple medicines, and use of medicines with anticholinergics or sedating effects.
Conclusion: The studies suggest that there is an association between frailty status and the use of certain medicines. Since the majority of studies were cross-sectional, it is unclear whether frailty causes the use of certain medicines or the use of medicines causes frailty.

303 Development and validation of an implicit tool to simplify medication regimens in residential aged care

Ms Esa Chen[1,2], Dr Janet Sluggett[1,2], Dr Jenni Ilomäki[1,3], Prof Sarah Hilmer[2,4], Ms Megan Corlis[2,5], Dr J Simon Bell[1,2]

[1]Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Australia, [2]NHMRC Cognitive Decline Partnership Centre, Hornsby, Australia, [3]Department of Epidemiology and Preventive Medicine, School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia, [4]Kolling Institute, Sydney Medical School, The University of Sydney and Royal North Shore Hospital, St Leonards, Australia, [5]Helping Hand Aged Care, North Adelaide, Australia

Objective: To develop and validate an implicit tool that health professionals can use to simplify medication regimens.

Method: A purposively-selected multidisciplinary expert panel used modified nominal group technique to identify and prioritise factors that determine whether a medication regimen can be simplified. Medication regimens could be simplified by reducing the number of medications, the variety of formulations, frequency of administration times and special dosing instructions. Five prioritised factors were formulated as questions, pilot-tested using non-identifiable medication charts and refined by panel members. The final tool was validated by two clinical pharmacists who independently applied the tool to a random sample of 50 residential aged care medication charts. Inter-rater agreement was calculated using Cohen's kappa.

Results: The Medication Regimen Simplification Guide for Residential Aged Care (MRS-GRACE) comprised five questions: 1) Is there a resident related factor that precludes simplification?, 2) Is there a regulatory or safety imperative that precludes simplification?, 3) Is simplification likely to result in any clinically significant drug-drug, drug-food, or drug-time interactions?, 4) Is there an alternative formulation that can support less complex dosing?, and 5) Is simplification likely to result in any unintended consequences for the resident or facility?. Using the tool, two independent pharmacists identified opportunities to simplify 29/50 and 30/50 medication charts, respectively (unweighted Cohen's kappa 0.38, 95% CI 0.120-0.640). Changing an administration time comprised 75% of the two pharmacists' recommendations (n=45/60 and 34/46 recommendations). Each pharmacist identified opportunities to reduce the number of regular administration times for 18/50 residents. Paracetamol was the most frequently targeted medication for simplification (n=10/60 and 8/46 recommendations).

Conclusion: By applying MRS-GRACE, two clinical pharmacists independently simplified two-thirds of residents' medication regimens with moderate agreement. MRS-GRACE is a promising new tool to guide medication regimen simplification in residential aged care.

304 Potentially inappropriate medication of geriatric patients in community hospital, Thailand

Vanida Prasert[1], Aiko Shono[2], Farsai Chanjaruporn[2], Chanuttha Ploylearmsang[3], Kamolnut Muangyim[4], Thanased Wattanapongsatit[5], Uthen Sutin[6], Manabu Akazawa[1]

[1]Department of Public Health and Epidemiology, Meiji Pharmaceutical University, Tokyo, Japan; [2]Social and Administrative Pharmacy Excellence Research Unit, Faculty of Pharmacy, Mahidol University, Bangkok, Thailand; [3]Social Pharmacy Research Unit, Faculty of Pharmacy, Mahasarakham University, Maha Sarakham, Thailand; [4]Department of Pharmacy, Sirindhorn College of Public Health Chonburi Province, Chonburi, Thailand; [5]Health Strategy Development, Public Health Office, Chonburi, Thailand; [6]Community and Family Medicine Unit, Bothong Hospital, Chonburi, Thailand

Objective: Potential inappropriate medication (PIM) prescribing is a major problem among Thai elderly patients. These patients frequently receive medicines without knowing the indication and follow a polypharmacy pattern of use. The Lists of Risk Drugs for Thai Elderly (LRDTE) was developed as a new screening tool to identify PIM use. The prevalence of PIM use using the LRDTE has not been determined in Thailand. The main objective of this study was to examine the prevalence of PIM use based on the LRDTE. In addition, we aimed to address the PIM problem by identifying factors that influence PIM use among elderly patients in Thailand.

Methods: A retrospective, cross-sectional, descriptive study was conducted using a computerized database at four community hospitals in Thailand in 2014. The LRDTE criteria were used as a screening tool for identifying the medicine items of PIM use. Descriptive statistics and multivariate logistic regression were used to identify common and Thai region-specific predictors of PIM use.

Results: Of 13274 elderly patients, 79% were prescribed at least one PIM as indicated by the LRDTE criteria. Amlodipine (32%), omeprazole (30%), and tramadol (18%) were the most commonly prescribed PIMs in elderly patients aged 60 years and older. Hospital and physician characteristics were identified as independent predictors after adjustment for patient and utilization factors.

Conclusion: PIM use in Thai elderly patients was highly prevalent in community hospitals because the LRDTE criteria reflected clinical practice in Thailand. Hospital and physician factors were identified as Thai region-specific factors that were highly associated with PIM use. Revision of hospital formularies and educational programs for physicians are needed to improve prescribing and avoid PIM use.

Keywords: Community hospital; Elderly patients; Lists of risk drugs for Thai elderly; Potentially inappropriate medication

305 Rapid virological responses of direct-acting antiviral agents in chronic hepatitis C patients in Taiwan

Mr. Sian-De Liu[1], Mr. Shih-Chieh Shao[2,3], Ms. Yuk-Ying Chan[2], Dr. Rong-Nan Chien[4], Dr. Edward Chia-Cheng Lai[3]
[1]Department of Pharmacy, Linkou Chang Gung Memorial Hospital, , Taiwan, [2]Department of Pharmacy, Keelung Chang Gung Memorial Hospital, , Taiwan, [3]School of Pharmacy, Institute of Clinical Pharmacy, National Cheng Kung University, , Taiwan, [4]Department of Gastroenterology and Hepatology, Keelung Chang Gung Memorial Hospital, , Taiwan

Aims: To investigate the responses of direct-acting antiviral agents (DAA) at 4-week in chronic hepatitis C virus (HCV) infected patients with advanced hepatic fibrosis who failed to previous ribavirin plus pegylated Interferon therapy in Taiwan.
Methods: We retrospectively reviewed the medical charts from four Chang Gung Memorial Hospitals in northern Taiwan between 24th January and 31th March 2017. We selected a cohort of genotype 1 (majority of 1b) chronic hepatitis C (CHC) patients with advanced hepatic fibrosis who failed to ribavirin plus pegylated interferon therapy previously (non-responder, partial responder or relapse) and treated by oral DAA therapy either ombitasvir/paritaprevir/ritonavir + dasabuvir or daclatasvir + asunaprevir. Rapid virological response (RVR) was defined as viral loads dropped by >2 log10 from baseline and less than 15 IU/ml at 4-week after DAA treatment. The clinical course and RVR was evaluated.
Results: We included a total of 214 genotype 1 CHC patients with the mean age of 65.6 (SD 8.9) years and 61.2% of female. All the patients showed hepatic fibrosis ≧ 3 either by liver biopsy or non-invasive hepatic fibrosis assessment such as fibroscan. 10 patients (4.7%) infected by genotype 1a received ombitasvir/paritaprevir/ritonavir + dasabuvir + ribavirin therapy, the remaining 204 (95.3%) infected by genotype 1b took daclatasvir + asunaprevir (26%) or ombitasvir/paritaprevir/ritonavir + dasabuvir (74%). The mean baseline HCV viral loads were 3.4 (SD 5.8) million IU/ml. There were 3 patients (1.4%) discontinued from DAA treatment due to intolerances of side effects. The rate of RVR was 99.5% by per protocol analyses.
Conclusions: High RVR of DAA therapy in genotype 1 CHC patients with advanced hepatic fibrosis who failed to previous ribavirin plus pegylated interferon therapy in Taiwan. The sustained virological response rate of these patients is awaited.

306 Budget impact and cost-effectiveness analyses of direct-acting antivirals for chronic hepatitis C virus infection in Hong Kong

Xue Li[1], SN Nicole Chan[1], WY Anthony Tam[1], FN Ivan Hung[2], WY Esther Chan[1]
[1]Centre for Safe Medication Practice and Research, Department of Pharmacology and Pharmacy, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, [2]Division of Gastroenterology & Hepatology, Department of Medicine, The University of Hong Kong, Hong Kong SAR

Aim/Objective: To evaluate the budget impact and cost-effectiveness of direct-acting antivirals (DAAs) for the treatment of hepatitis C virus (HCV) infection in Hong Kong.
Methods: A decision analytic model was developed to compare short-term costs and health outcomes of patients with chronic HCV genotype 1 infection in Hong Kong who were treated with an interferon (INF)-based treatment (dual therapy of pegylated interferon and ribavirin) or DAA-based treatments (sofosbuvir or ledipasvir/sofosbuvir or ombitasvir/paritaprevir/ritonavir plus dasabuvir). One-way sensitivity analysis was conducted to test the robustness of baseline conclusion under diverse clinical and economic scenarios.
Results: Compared to INF-based treatment, DAA-based treatments yielded an incremental cost of $24,677–$31,171 per course while improving the rate of sustained virologic response (SVR) from 59–66% to 82.3–99.8%. The incremental cost-effective ratios of DAA-based treatments ranged from $9724 to $29,189 per treatment success, which were all below the cost-effectiveness threshold of local GDP per capita ($42,423 in 2015). Introducing DAAs resulted in a 126.1% ($383.7 million) budget increase on HCV infection management over 5 years. A 50% change in DAA medication costs reflected a change in the incremental budget from $55.2 to $712.3 million.
Conclusions: DAA-based treatments are cost-effective alternatives to INF-based treatment in Hong Kong. Introducing DAAs to the public hospital formulary yields a considerable budget increase but is still economically favourable to the local government.

307 Proton Pump Inhibitor (PPI) utilization pattern in US, UK, and Japan: A cross-national drug study

Ting Zhang[1], Yongjing Zhang[1], Minfu He[1], Hong Qiu[1]
[1]*Global Epidemiology, Janssen Research and Development*

Objectives: To examine the most frequently reported gastrointestinal (GI) diagnoses associated with PPI prescriptions among patients in US, UK, and Japan.
Methods: A retrospective observational study was conducted in Truven Commercial Claims and Encounters (CCAE), Medicare (MDCR), and Medicaid (MDCD) in US, Clinical Practice Research Datalink (CPRD) in UK, and Japan Medical Data Center (JMDC). Patients who filled at least 1 PPI prescription between January 1, 2010 and December 31, 2014 were included as exposed subjects in this study. The GI diagnoses occurring between 7 days before and 7 days after the prescription dispensing date were considered as those associated with the PPI. The proportions of patients for each condition in 2010-2014 were calculated.
Results: Gastroesophageal reflux disease (GERD) with esophagitis was the predominant GI diagnosis associated with PPI prescriptions in JMDC (74.53%); GERD without esophagitis accounted for only 0.74% patients. GERD was the predominant GI diagnosis in the 3 US databases, accounting for 26.92%-43.70% patients prescribed PPIs, followed by GERD with esophagitis in and 5.19%-6.66%. However, GERD was the second most common associated GI diagnosis in CPRD (6.14%; GERD with esophagitis in 3.36%) while indigestion was the most common (13.20%). Gastric ulcer was the second most common GI diagnosis associated with PPI dispensing in JMDC (39.08%), a diagnosis that was not commonly seen in US and UK. Similarly, chronic gastritis (29.17%) and gastritis (15.53%) were also common diagnoses in JMDC, but were not among the 5 most common GI diagnoses in US and UK. In CPRD, epigastric pain (6.04%) and heartburn (3.03%) were another two common diagnoses.
Conclusions: In general, GERD was the most frequent GI diagnosis associated with a pharmacy dispensing of a PPI in the US, UK, and Japan. Gastritis and gastric ulcer were frequently associated with PPIs in Japan.
Keywords: drug utilization; PPI; GI diagnosis; database.

308 The association between proton pump inhibitors and myocardial infarction: A self-controlled case series study

Angel Y.S. Wong[1], Dr Celine S.L. Chui[2], Prof Ian C.K. Wong[3], Prof Wai K. Leung[4], Dr Esther W. Chan[1]
[1]*Centre for Safe Medication Practice and Research, Department of Pharmacology and Pharmacy, the University of Hong Kong, Hong Kong,* [2]*School of Public health, Li Ka Shing Faculty of Medicine, the University of Hong Kong, Hong Kong,* [3]*Research Department of Practice and Policy, UCL School of Pharmacy, London, UK,* [4]*Department of Medicine, Li Ka Shing Faculty of Medicine, the University of Hong Kong, Hong Kong,*

Aim/Objectives: There has been concern over the acute risk of myocardial infarction (MI) associated with proton pump inhibitors (PPI) in the general population. This study aimed to investigate the association between PPIs and MI.
Methods: The self-controlled case series analysis was conducted using the data from Hong Kong Clinical Data Analysis and Report System. Patients aged≥18 years with at least one outpatient oral PPI prescription and an incident MI in 2003-2014 were identified. The age adjusted incidence rate ratios (IRRs) were estimated using conditional Poisson regression. The risk periods were predefined as 14 days pre-exposure, day 1-14 since prescription initiated, days 15-30 and days 31-60. Any remaining exposed time longer than the predefined risk periods from baseline was removed. A random subset of H_2 receptor antagonist (H_2RA) users was included to conduct the negative exposure tracer analysis. The crude absolute risks of MI during the first 60 days since prescription initiated for both PPIs and H_2RAs were estimated.
Results: There were 2,341,849 and 2,656,934 outpatient PPI and H_2RA prescriptions (among the random subset) respectively. A total of 2,802 and 1,889 patients with MI who had PPIs and H_2RAs respectively were included. An increased risk was observed during day 1-14 for both PPIs [IRR: 1.90 (95% confidence interval 1.45-2.48)] and H_2RAs [IRR: 1.92 (1.49-2.47)] but not in all other risk periods versus baseline. The estimated crude absolute risks of MI were 6.1 (5.2-7.2) and 6.3 (5.4-7.4) per 100,000 prescriptions respectively for PPIs and H_2RAs.
Conclusions: The association between PPIs and MI was unlikely to be causal as a similar temporal pattern was also found for H_2RAs. Given low crude absolute risk and a lack of epidemiological link to support such association, the prescribing practice should not be altered.

309 Retrospective assessment of the influence of proton pump inhibitors on the patient renal function

Tsung-Hsien Huang[1], Huei-Jhen Su[1]
[1]*Department of Pharmacy, Chi Mei Medical Center, Tainan, R.O.C*

Introduction: Proton pump inhibitors(PPIs) are a gastric acid inhibitor, commonly used in the treatment of gastric ulcer. Although the use of PPIs is safe, some studies have shown that PPIs may cause acute kidney injury and interstitial nephritis. In this study, we evaluated the influence of PPIs on the patient's renal function by observing the change in creatinine before and during the use of PPIs.
Methods: Patients using PPIs (dexlansoprazole, lansoprazole, pantoprazole) or ranitidine were enrolled from January 2015 to December 2016, to assess the influence of PPIs on renal function by observing changes in creatinine before and during the use of PPIs
Results and discussion: A total of 622 cases were collected, 606 cases in the PPIs group (experimental group) and 16 cases in the ranitidine group (control group). The incidence of creatinine increased by ≧ 50% was 4.9% (2/41) vs 13.0% (35/269) vs 6.4% (19/296) vs 6.3% (1/16); the incidence of creatinine values from normal change to abnormal was 12.2% (5/41) vs 15.2% (41/269) vs 13.5% (40/296) vs 0% (0/16). In the ≧ 65 years old, the incidence of creatinine increased by≧ 50% was 8.3% (2/24) vs 16.0% (30/188) vs 9.0% (17/188) vs 9.1% (1/11); the incidence of creatinine values from normal change to abnormal was 16.7% (4/24) vs 18.6% (35/188) vs 18.1% (34/188) vs 0% (0/11).
This study shows that compared with ranitidine and other PPIs, lansoprazole has a higher creatinine increase incidence and abnormal rate, and PPIs have a higher creatinine increase incidence and abnormal rate in the elderly than others.
Conclusion: Some studies have demonstrated that PPIs use is associated with the developing of ESRD in patients with renal disease. This study shows that PPIs will raise the creatinine, so for the elderly and patients with kidney disease need to be particularly careful.

310 Evaluation of the acute biochemical changes and incidence of infections associated with CHOP with or without rituximab in DLBCL patients

Dr Kashif Ali[1]
[1]*Dow university of health sciences, Karachi, Pakistan*

Background: Diffuse large B-cell Lymphoma is a major hematologic cancer, if left untreated it may lead to death. CHOP and R-CHOP is gold standard chemotherapy regimen in overall survival of DLBCL patients. The CHOP and R-CHOP produces significant adverse effects and prolong hospital stay and pharmacoeconomic burden on patients and health care system.
Objective: This study was conducted to determine the changes in biochemical or metabolic profile disturbances and the incidence of varicella zoster virus infection, mycobacterium infection and infusion reaction induced by RCHOP or CHOP.
Method: Baseline readings of metabolic profile was taken and treated as control readings of patients. Post-treatment readings of aforesaid parameters was taken after 20 days and treated as post-treatment group. Means readings was compared with common terminology criteria for adverse events v3.0 2006 (CTCAE) to find the differences in biochemical parameters at baseline and 20 days post-treatment.
Results: Patients treated with CHOP therapy, significant difference of ALP (p-value 0.009), direct bilirubin (p-value 0.034) and SGPT (p-value 0.004) was observed before and after the treatment whereas patients treated with RCHOP group, only 3 (19%) had infusion reaction. Among them 2 (12%) patients have moderate infusion reaction and 1(6%) had mild infusion reaction as per the NCI CTCAE 2006 toxicities. Whereas 2 (12%) of patients had herpes simplex viral infection after the RCHOP chemotherapy. Patients treated with CHOP 1 (6.6%) had HSV manifestation. As far as bacterial Pneumonia was concerned only 1 (5%) was reported after RCHOP cycle. Only 1 (5%) had CMV manifestation after the rituximab containing therapy
Conclusion: In summary, subjects at baseline metabolic impairments should be corrected rigorously at the start of chemotherapy of CHOP or R-CHOP cycles, leads to life threatening renal and hepatic toxicities. Regarding safety concern R-CHOP is well tolerated than CHOP in term of toxicities.

311 Risk factors of treatment-related peripheral neuropathy in patients with multiple myeloma

Jia-Shan Chou[1], Yen-Hui Chen[1,2], Shang-Yi Huang[3], Yi-Hsiu Lin[2]
[1]Graduate Institute of Clinical Pharmacy, College of Medicine, National Taiwan University, Taipei, Taiwan, [2]Graduate Institute of Pharmaceutical Sciences, School of Pharmacy, National Taiwan University, Taipei, Taiwan, [3]Division of Hematology, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

Aim/objective: Botezomib induced-peripheral neuropathy (BIPN) is a common adverse effect in multiple myeloma (MM) patients, which negatively affects clinical endpoints and quality of life. Dose modification or discontinuation of bortezomib are required for BIPN. However, there are no consistencies in the risk factors of BIPN as well as the administration routes for PN attenuation. The aim of this retrospective cohort was to study the impact of administration routes and risk factors of PN in MM patients treated with bortezomib-based regimen.
Methods: Study subjects were the patients who were diagnosed with MM and received bortezomib between April 1, 2006 and June 30, 2016 at a cancer center in Taiwan. We performed inverse probability of treatment weight (IPTW) analysis to reduce selection bias. Kaplain-meier survival curve and cox-proportional hazards regression model were applied to examine the impact of different administration route on the risk of PN. Subgroup analysis and sensitivity analysis were used to confirm the results. Univariate and multivariate cox proportional hazards regression model were applied to examine the association between PN and other potential risk factors.
Results: We identified 421 bortezomib new users who were diagnosed with MM. The incidence of PN for IV and SC administration was 0.533/person-year and 0.407/person-year, respectively. SC administration was associated with lower risk of PN in MM patients receiving bortezomib-based regimen (HR=0.486, 95% CI=0.323-0.731, p=0.0005). Similar results were reconfirmed in the subgroup and sensitivity analysis. Age > 75 years was a risk factor for PN caused by bortezomib-based regimen (HR=1.786, 95 % CI=1.096-2.908).
Conclusion: SC bortezomib was associated with lower risk of PN in "real-world" clinical practice. In addition, neurological exacerbation should be cautiously evaluated in patients >75 years to reduce the negative impact of PN induced by botezomib-based regimen.

312 Comparison of efficacies between Gefitinib and Erlotinib in the treatment of EGFR-mutated NSCLC in Macau – a retrospective analysis

Pui-I Chao[1,2], Gregory Cheng[1]
[1]Macau University of Science and Technology, China, [2]Centro Hospitalar Conde de São Januário de Macau, , China

Objective: The objective of this study was to compare the efficacies of gefitinib and erlotinib in treating EGFR-mutated NSCLC patients in Macau.
Methods: 319 non-small-cell lung cancer (NSCLC) patients with known EGFR mutation who had been treated with gefitinib or erlotinib at a Macau government hospital between 2005 Jan and 2015 Dec were retrospectively reviewed. Demographic and clinical data, treatment response and survival time data were collected. Primary end point was overall survival (OS), progression-free survival (PFS) and disease control rate (DCR) were also analyzed. Patients who had switched to other EGFR-TKIs or having concurrent chemotherapy were properly excluded.
Results: 259 patients were included in the OS analysis. Nearly all patients were Asian (>99%). The median age of patients in gefitinib group and erlotinib group were 62.5 and 60 respectively. Most patients were at a late stage of disease (stage III and IV ~85%) and >60% of patients received EGFR-TKI as first-line treatment. More than 90% of patients had either exon 19 or exon 21 mutations. Female patients predominated in gefitinib group (71.8% vs 46.6%, p<0.0001) and there was significantly more smokers or ever-smokers in erlotinib group (35.0% vs 19.2%, p=0.0046). More patient in the erlotinib group had brain metastasis (19.4%, p=0.0090). The median OS and PFS in gefitinib group and erlotinib group were 20.2 versus 26.3 months (HR: 0.75, p=0.0912) and 13.4 versus 11.9 months (HR: 0.73, p=0.0162) respectively. The disease control rate (DCR) of gefitinib group and erlotinib group was 72.1% versus 81.1 % (p=0.0799). Although erlotinib resulted in better outcome, the difference was only significant with progression-free survival.
Conclusion: Gefitinib and erlotinib resulted in similar overall survival and disease control rate, but erlotinib demonstrated a significantly longer progression-free survival in the treatment of EGFR-mutated NSCLC patient in Macau.

313 Application of state-space model to TERMS questionaries' results

Mr Heita Kato[1], Dr Yuko Shirakuni[1], Dr Norihito Kawashita[2], Dr Yu-shi Tian[1], Prof Tatsuya Takagi[1], Prof Masao Nasu[3]
[1]Graduate School of Pharmaceutical Sciences, Osaka University, Suita, Japan, [2]Graduate School of Science and Engineering, Kindai University, Higashiosaka, Japan, [3]Faculty of Pharmacy, Osaka Otani University, Tondabayashi, Japan

Although Thalidomide was recalled in early '60s due to the drug disaster, it was approved again in 2008 in Japan for Multiple Myeloma under the strict risk management program, TERMS (Thalidomide Education and Risk Management System). Since then, the TERMS Independent Evaluation Committee has carried out the questioner for patients who were prescribed Thlidomide in order to confirm the patients' knowledges about its teratogenesis as well as its correct use. In order to analyze the time-series data (answers of the questionnaires), we have utilized several data mining methods including change-point detection method and co-occurrence network. In this study, we applied State-Space Model (SSM) to elucidate and visualize the trends as well as variations of patients' knowledges. SSM applies self-regression and ordinal regression simultaneously. Markov chain Monte Carlo method was adopted for estimating the model due to its non-linearity as well as disnormality. In the case of the question, 'Was a doctor's or a nurse's explanation easily understandable?', change-point detection could find no change-points. However, SSM could find gradual change. Similarly, the desirable answer ratio for the question, 'Were explanation materials easily understandable?' is gradually changed. These results might indicate the possibility that doctors or nurses made their explanations more difficult recently. We also used Mann-Kendall test to detect their trends. The abovementioned questions were detected as lowering of correct answer ratios. We will show some figures visualized by SSM at this conference.

314 Development and evaluation of OncoNurse practice - A smartphone application for oncology nurses

Ms Reena Joseph Chacko[1], Ms Nimmi Zaviour[1], Mr Sonal Sekhar M[1]
[1]department of Pharmacy Practice, Manipal, India

Objective: To develop a cancer-focused smartphone app- OncoNurse Practice for oncology nurses and also to assess the acceptability and usage of the app.
Method: The smartphone app, OncoNurse Practice was designed and developed over a period of 6 months using the Android mobile platform. A multi-centre survey was conducted among 106 oncology nurses working across South India through structured questionnaires.
Results: Approximately, 92.5% perceived the need to access cancer-focused smartphone apps and online tools such as drug references. Of these, 18.9% had previously used smartphone apps. This showed that the highest need for its implementation was perceived in cities (62.3%) and villages (47.2%). After installing app into their devices for a month, majority stated the app was good (76.4%), user-friendly (88.7%) and was useful in-patient education (95.3%). 99.1% of the surveyed nurses were satisfied with the app. 97.2% recommended its use. 56.6% of the nurses had used the app at least twice per day. Safe handling of chemotherapy was the most frequently searched information.
Conclusion: This study found that the app was widely accepted among oncoNurses. Majority of them accessed the app more than once daily to enhance their knowledge on hazardous drugs and ensure effective handling. It further enabled them to provide improved quality of care for the cancer patients.

315 Role of Clinical Pharmacist in rational usage of anti-cancer drugs in patients with lung cancer

Ms. Aakanksha Sharma[1], Dr Gurumuthy Parthasarthi[1], Mr. Himanshu Patel[1], Dr Avinash CB[2]
[1]JSS College of Pharmacy, Mysuru, India, [2]Bharath Hospital and Institute of Oncology, Mysuru, India

Aim: This study was conducted to evaluate treatment patterns and their appropriateness in patients with lung cancers.
Methods: It was a prospective observational study conducted at a private academic oncology care setting for a period of 5 months. The newly detected patients with carcinoma of lung irrespective of type, stage and co-morbid conditions were enrolled. The treatment orders were reviewed and compared with the treatment standards developed with respect to international recommendations by the clinical pharmacist in close association with the oncologist. All the treatment non-compliance were recorded and discussed with concerned oncologists in order to strengthen treatment policies at the study hospital.
Results: A total of 70 treatment orders corresponding to 47 patients were studied. The study population included small cell lung carcinoma (SCLC) 11%, non-small cell lung cancer (NSCLC) 74%, carcinoid 6% and unknown type 9%. The first line chemotherapy regimen was Etoposide based, second line being Paclitaxel based for SCLC. The most common regimens for NSCLC was Pemetrexed based 40%, Paclitaxel based 20% as first line and second line was Gefitinib 23%. Etoposide based regimen was also prescribed for a few patients (20%) with NSCLC due to financial limitations. Based on these findings treatment policies of the study hospital were revised. Common non-compliance was observed with regards to administration of anticancer agent (14%), use of antiemetics (53%) and use of colony stimulating factor (3%). Antiemetic non-compliance was observed in regards to selection (9%), dosing (8%) and post chemotherapy management (33%).
Conclusion: This study provided us an opportunity to correct some of the discrepancies in the treatment process and patterns. For majority patients, treatment selection was in compliance with treatment standards developed. Non-compliance in treatment was observed due to financial limitation of treatment schemes.

316 Chemotherapy utilization among NSCLC patients after first-/second-line tyrosine kinase inhibitor treatment failure: Findings from nationwide data in Taiwan

MSc. Jen-Yu Chang[1], Ph.D. Fang-Ju Lin[1,2,3], Ph.D. Chi-Chuan Wang[2,3]
[1]Graduate Institute of Clinical Pharmacy, National Taiwan University, Taipei, Taiwan, [2]School of Pharmacy, National Taiwan University, Taipei, Taiwan, [3]Department of Pharmacy, National Taiwan University Hospital, Taipei, Taiwan

Aim/objective: Tyrosine kinase inhibitors (TKIs) have been widely used in treating advanced/metastatic non-small cell lung cancer (NSCLC), and were first reimbursed as the first-line therapy among patients with epidermal growth factor receptor (EGFR) positive mutation in Taiwan in 2011. To date, there remains scarce data documenting the real-world chemotherapy utilization pattern after TKI treatment failure among Asians. Our study aimed to evaluate the subsequent chemotherapy regimen between patients receiving TKI as the first-line therapy and as the second- or late-line therapy.
Methods: This study was conducted with the 2011-2014 National Health Insurance Research Database. Patients with NSCLC who initiated a TKI (gefitinib, erlotinib, and afatinib) after 2012 were included. Chemotherapy regimens, including platinum doublets, monotherapy of vinorelbine, cisplatin, carboplatin, gemcitabine, and docetaxel, were compared between patients receiving TKI as the first-line therapy and as ≥ second-line therapy.
Results: Through 2012-2014, 2,678 patients received subsequent treatment after experiencing TKI treatment failure. Of the 1,122 patients receiving TKI as the first-line therapy, cisplatin/carboplatin + pemetrexed was the most commonly prescribe regimen (33.4%), followed by other platinum doublets (22.6%), vinorelbine (21.8%), pemetrexed (14.3%), and other monotherapies (10.3%). On the other hand, among the 1,556 patients who received TKI as ≥ second-line therapy, monotherapy accounted for over 80% of the subsequent therapy, and docetaxel (20.9%) and vinorelbine (20.9%) made up half of the monotherapies.
Conclusions: While platinum doublets appeared to be a favored subsequent treatment option in patients receiving TKI as the first-line therapy, monotherapies were more frequently seen in those receiving TKI as ≥ second-line therapy. Further studies are warranted to compare the effectiveness of different subsequent chemotherapy regimens in real-world settings among subpopulations.

317 Alcohol intake, gene polymorphisms of alcohol metabolizing enzymes and the risk of colorectal cancer

Yi An Wu[1], Yen Hui Chen[1,2], Ming Jium Shieh[3], Yunn Fang Ho[1,2], Hui Hsin Huang[2]
[1]Graduate Institute of Clinical Pharmacy, College of Medicine, National Taiwan University, Taipei, Taiwan, [2]Graduate Institute of Pharmaceutical Sciences, School of Pharmacy, National Taiwan University, Taipei, Taiwan, [3]Department of Internal Medicine, College of Medicine, National Taiwan University, Taipei, Taiwan

Objective: The purpose of this study is to assess the impact of alcohol metabolizing enzyme gene polymorphisms, alcohol consumption and their interactions with the risk of colorectal cancer (CRC) in Taiwanese.
Methods: This is a case-control study. Data collected from the study subjects include baseline characteristics, lifestyle information and venous blood of each subject for analysis of gene polymorphisms of ADH, ALDH and CYP2E1. The odds ratios (OR) and their corresponding 95% confidence intervals (CI) of the risk factors were calculated for the risk of CRC using logistic regression models.
Results: A case group of 73 colorectal cancer patients and 67 family members of the case group defined as the control group were enrolled according to the inclusion and exclusion criteria in our study. Age, hypertension and alcohol consumption were identified as independent risk factors for CRC with the ORs and 95% CI 1.07 (1.04-1.11), 2.61 (1.04-6.54) and 2.93 (1.31-6.52). Risk alleles of ADH1A (rs1230025) and ADH1B (rs1042026) were associated with CRC. The alcohol drinkers with variant alleles of ADH1A (rs1230025) and ADH1B (rs1042026) had higher risk of CRC with the ORs and 95 % CI 7.18 (1.96-26.31) and 8.94 (2.58-30.91) when compared to the non-drinkers with wildtype alleles.
Conclusions: Age, hypertension and alcohol consumption are independent risk factors for CRC. The variations of ADH1A rs1230025 and ADH1B rs1042026 are associated with the risk of CRC in Taiwanese. Alcohol consumption increases the risk of CRC in the subjects carrying the risk alleles.

318 Evaluation of treatment patterns and resulting utility in patients of head & neck cancers under private payment and government scheme

Avinash Khadela[1], Himanshu Patel[2], Parthasarathi Gurumurthy[2], Y Madhavi[3]
[1]Maliba Pharmacy College, Surat, India, [2]JSS College of Pharmacy, Mysore, India, [3]Bharath Cancer Hospital, Mysore, India

Aim: To compare the treatment patterns and resulting quality adjusted life year (QALY) in patients of Head & Neck cancers under private payment scheme (PPS) and government scheme (GS).
Methods: In a prospective study treatment orders of patients on chemotherapy for head & neck cancers were reviewed. Patients were interviewed for six treatment cycles to assess treatment patterns in an oncology hospital. Direct medical cost, indirect medical cost and non-medical costs associated with treatment were calculated for patients under PPS and GS and were compared. EQ-5D-5L instrument was administered to assess patient utility with treatment during each cycle.
Results: A total of 104 patients (n = 49 under PPS, n = 55 under GS) were enrolled in the study after obtaining their informed consent. Majority of the patients under PPS were on Paclitaxel based regimen (63%) followed by primary protocol ((Docetaxel+ Cyclophosphamide+ Fluorouracil, (8%)). Patients under GS were treated with Cisplatin with radiation therapy (82%) and none of the eligible patients had privilege of treatment with primary protocol due to limited budget. Treatment compliance to NCCN guidelines for patients under PPS and GS was 89% and 58% respectively. Common adverse events like vomiting, constipation, neutropenia, fatigue and myalgia were higher in patients under GS than PPS. Average cost of treatment for PPS and GS per cycle was $162 and US $39 respectively. QALY gained by patients under PPS and GS after six cycles was 0.024 and 0.014 respectively and the difference was found to be statistically significant ($p < 0.05$).
Conclusions: Treatment patterns in patients under PPS were well compliant to NCCN guidelines. Limited budget of government scheme in a developing country does not allow clinicians to prescribe required anti-cancer medicines and supportive care. Patients under GS can be benefited with more utility with additional increment in the budget.

319 Drug related problems experienced by cancer patients undergoing cancer

Dr. Harminder Singh[1], Dr. Raja Paramjeet Singh[2], Mr Baltej Singh[3]
[1]Baba Farid University of Health Sciences, Faridkot, India, [2]Baba Farid University of Health Sciences, Faridkot, India, [3]Baba Farid University of Health Sciences, Faridkot, India

Aims & Objective: The objective of this cross-sectional, non intervention 8-months observational study was to investigate the prevalence, type and risk factors of Drug related problem (DRPs) in cancer patients admitted to the tertiary care center.
Methods: A cross-sectional 8 months study was conducted from January to August 2016. A total of 283 cancer patients were recruited in the present investigation analysis.
Results: A total of 283 cancer patients participated in this current study, out of which 135 (47.70%) were males and 148 (52.30%) were females. Adverse drug reactions (ADRs) were the most common DRP, nausea and vomiting was the most common ADR (155). Female subjects experienced more DRPs 56% as compare to 44% in male cancer survivors.
Conclusion: This study showed that DRPs were common in our setup and the risk factors associated with DRPs were female gender, number of medications, Body mass index and extremes age (in year) ranges. Early detection and timely intervention is the key to ensure a better therapeutic outcome.

320 Detection of HBV, HCV and incidence of febrile neutropenia associated with CHOP with or without Rituximab in DLBCL treated patients

Dr Kashif Ali[1]
[1]Dow university of health sciences, Karachi, Pakistan

Background: Reactivation of Hepatitis B virus, Hepatitis C virus and febrile neutropenia are common in DLBCL (diffuse large B-cell lymphoma) patients undergoing CHOP (cyclophosphamide, hydroxyrubicin, oncovin and prednisolone) or Rituximab plus CHOP chemotherapy. This ultimately leads to delaying the therapy, increasing hospital stay and raising the pharmacoeconomic burden on patients.
Objective: This study was conducted to determine the frequency of Hepatitis B virus, Hepatitis C virus and febrile neutropenia.
Material Methods: This was retrospective study, 35 recruited subjects was DLBCL patients from National Institute of blood diseases and bone marrow transplantation hospital Karachi Pakistan, who underwent R-CHOP and CHOP Chemotherapy, HBV and HCV related markers was performed after rituximab-conventional treatment in patients with DLBCL and were followed up for at least 6 months after the start of R-CHOP or CHOP. None of the patients were screened for HBsAg and Anti-HCV before the start of chemotherapy
Results: Out of 19 patients who underwent R-CHOP chemotherapy, only 2(10%) patients were HBsAg reactive. As far as febrile neutropenia was concerned 2(10%) was readmitted after a cycle due to fever and for that reason, blood culture, urine culture and throat swab was sent for diagnostic evaluation and the identified organism was E-Coli. Anti-HCV reactive was negative among both the treated group of CHOP and R-CHOP. Whereas the second group, who underwent CHOP therapy, out of 16 patients only one was 1(6.25%) Anti-HBs-reactive. However, febrile neutropenia was occurred only in 1(6.25%) out of 16 patients.
Conclusion: The recent study highlighted the risk of detection of HBV, HCV and febrile neutropenia However, patients undergoing R-CHOP or CHOP chemotherapy in DLBCL should be screened for viral markers and must be administer GCSF within 7 days post-chemotherapy. More studies are needed to conduct on large scale in multiple hospitals

322 Usage of anti-infectives at a neonatal intensive care unit of a south Indian tertiary care hospital

Mr Krishna Undela[1], Dr Bashar Saad[1], Dr Gurumurthy Parthasarathi[1], Dr Srinivas Murthy[2]
[1]JSS College of Pharmacy, JSS University, Mysuru, India, [2]JSS Medical College & Hospital, JSS University, Mysuru, India

Objective: To evaluate the use of anti-infectives at a neonatal intensive care unit (NICU).
Methods: A prospective observational study was conducted at a NICU of a south Indian tertiary care hospital for a period of nine months. All babies, of either sex admitted to NICU and received at least one medication were enrolled into the study after receiving an informed consent from parent/guardian. Baby's medical diseases and conditions were classified according to the World Health Organization (WHO) International Statistical Classification of Diseases and Related Health Problems 10th version.
Results: A total of 405 babies were included in the study; 61% were males and median (IQR) age was found to be 10 (5-22) days. About 132 (33%) babies born pre-term (≤36 weeks) and 178 (44%) had low birth weight (<2500g). Certain conditions originating in the perinatal period (eg: unconjugated hyperbilirubinemia, hypoxic ischemic encephalopathy and meconium aspiration syndrome, etc.) were the most commonly diagnosed conditions [455 (61%)], followed by certain infection and parasitic diseases (eg: neonatal sepsis, dengue, parvovirus, etc.) [125 (17%)]. Among all babies included, 394 (97%) babies received 1310 (48%) of anti-infectives out of a total 2746 medications prescribed. Around 166 (42%) babies received anti-infectives for probable sepsis, 146 (37%) for risk of sepsis, 44 (11%) for clinical sepsis and 38 (10%) for proven sepsis. Ciprofloxacin (23%) and gentamicin (23%) were the most frequently prescribed anti-infectives followed by amikacin (13%), piperacillin+tazobactam (12%), metronidazole (5%) and meropenem (5%). Among all anti-infectives prescribed, 1063 (81%) were unlicensed or for off-labelled indication. Piperacillin/tazobactam, meropenem and gentamicin were identified to cause 20 adverse drug reactions like thrombocytopenia and leucopenia.
Conclusion: Around half of the medications prescribed in NICU were found to be anti-infectives for preventing and treating infectious diseases like sepsis.

323 Predisposing factors, incidence and severity assessment of antibiotic-induced hypersensitivity reactions in inpatients of a tertiary care hospital in India

Dr. Ambed Mishra[1], Mrs. Shilpa Palaksha[1], Ms. R. Chaithra[1], Dr. P. A. Mahesh[2]
[1]Department of Pharmacy Practice, JSS College of Pharmacy, JSS University, Mysuru, India, [2]Department of Chest and Tuberculosis, JSS Medical College & Hospital, Mysuru, Mysuru

Aim/Objective: Antibiotics are extensively used drugs globally including Indian hospital settings and are associated with various Adverse Drug Reactions (ADRs) including dermatologic-hypersensitivity reactions. Antibiotics- induced hypersensitivity reactions constitute nearly 6-10% of all reported ADRs. The aim of this study was to identify and evaluate predisposing factors, incidence and severity assessment of antibiotic-induced hypersensitivity in hospital admitted patients receiving antibiotics in departments of Medicine, Surgery and Pulmonology of an 1800-bed tertiary-care hospital.
Methods: A prospective observational study was conducted for a period of nine months in selected inpatient departments of a tertiary care teaching hospital. Hypersensitivity reactions were assessed for its severity, preventability and predictability causality by using various standard causality assessment scales.
Results: A total of 25293 patients who had received Aminoglycosides (n=650), Penicillin (n=2207), Tetracyclines (n=5389), Quinolones (n=6464) and Cephalosporins (n=10583) antibiotics in nine months of study period were followed for hypersensitivity. Sixty-two patients developed antibiotic-induced hypersensitivity, 58% were male. The most common hypersensitivity reactions were rashes (43.5%) followed by itching (20.9%) and moderate severity (89%). Incidence rates found were Aminoglycosides (0.46), Penicillin (0.4), Cephalosporins (0.3), Quinolones (0.21) and Tetracyclines (0.07). There were cases who had allergic history but no alert-card resulted in same drugs being used again unknowingly and hypersensitivity reactions. Numerous other possible factors for hypersensitivity including age, gender, multiple drugs, genetic and disease state were observed.
Conclusions: Aminoglycosides, Penicillin and Cephalosporins were found to be the most commonly implicated classes of antibiotics associated with hypersensitivity. Alert-cards and medication history databases are needed for better monitoring and care of cases of hypersensitivities.

324 Trends of antibiotic consumption after the implementation of a 3-year national antibiotic stewardship action plan in China

Dr Xiao dong Guan[1,2], Chun Xia Man[1], Guoying Wang[1], Professor Lu wen Shi[1,2]
[1]Department of Pharmacy Administration and Clinical Pharmacy, School of Pharmaceutical Sciences, Peking University, China, [2]International Research Center of Medicinal Administration, Peking University, , China

Objective: Chinese government launched a 3-year action plan for antibiotic stewardship targeting antibiotic overuse and misuse in public hospitals. Plenty of evidence showed that consumption of antibiotics reduced during the intervention period while evidence on trend of antibiotic consumption after the intervention was deficient. The aim of the study was to evaluate changes in antibiotic consumption after the end of the plan.
Methods: Interrupted time-series was conducted to progress data of antibiotics with ATC J01 &J02 as well as 486 selected heat-clearing and detoxifying Traditional Chinese Medicine (TCM) from 686 public hospitals. The data was divided into two segments: (1) Jan.2011 to Dec.2013 as the intervention period; (2) Jan.2014 to June 2016 as the post-intervention period. The outcome measures included: (1) expenditures and volume; (2) expenditure ratio & volume ratio.
Results: The end of the intervention was associated with a significant increase in slope and level of antibiotic expenditure ratio (slope difference 0.18% per month, p=0.001; level 1.32%, p=0.006) and DDDs ratio (slope difference 0.032% per month, p=0.000; level 0.19%, p=0.042), special-use antibiotic expenditure ratio (slope difference 0.0690% per month, p=0.000; level 0.3931, p=0.052) and DDDs ratio (slope difference 0.00588% per month, p=0.000;level=0.0383, p=0.004). Expenditure and volume of different ATC group increased in either slope or level except Penicillin and Antifungals. Expenditure and volume of heat-clearing and detoxifying TCM declined significantly in trend (slope difference -5870 thousand RMB per month, p=0.000) and level (-624 thousand DDD, P=0.005) respectively.
Conclusion: Overall, expenditure ratio and DDDs ratio of antibiotics increased after the intervention. On contrary to antibiotics, expenditures and volume of heat-clearing and detoxifying TCM declined.

325 Antibiotic use in China after the national antibiotic stewardship program

Houyu Zhao[1], Jiaming Bian[2], Minmin Wang[3], Siyan Zhan[1]
[1]Department of Epidemiology and Biostatistics, School of Public Health, Peking University, Beijing, China, [2]Chinese PLA Army General Hospital, Military Network for Rational Use of Drugs, Beijing, China, [3]School of Public Health, Peking University, Beijing, China

Aim/Objective: This study was a post-policy antibiotic use analysis and was aimed to investigate the utilization of antibiotic in China after the National Antibiotic Stewardship Program (ASP) implemented from 2011 to 2014.
Methods: We used a data from a national monitoring network for rational use of drugs in China. The data consists of outpatient prescriptions from 187 hospitals in 30 provinces of China mainland. A total of 150,407,840 prescriptions during Oct 1,2014 to Dec 31,2016 were extracted. A descriptive analysis of outpatient antibiotic prescribing was performed. The frequency, density, expenditure and prescription pattern of antibiotics were analyzed and descripted in the study.
Results: The percentage of antibiotic prescriptions were 13.52% and 11.08% in Chinese secondary and tertiary hospitals, respectively. 26.98% and 21.11% antibiotic prescriptions were for antibiotic combination therapy with 2 or more agents in secondary and tertiary hospitals. The number of defined daily doses (DDDs) per 100 patient visits were 79.40 in secondary hospitals and 68.03 in tertiary hospitals. The average costs per prescription were 67.30$ and 89.37$ in secondary and tertiary hospitals, among which drug costs accounted for 51.85% and 56.78%, respectively. The average antibiotic costs per prescription were just 2.06$ and 2.17$ in secondary and tertiary hospitals, accounting for only 5.91% and 4.27% of the total drug costs. The antibiotic prescription patterns were similar in secondary and tertiary hospitals. Broad-spectrum agents were the most used antibiotics. The second and third generation cephalosporins, macrolides, quinolones accounted for 17.53%, 21.70%, 14.33%, 14.56% of all prescribed antibiotics, respectively.
Conclusions: After the ASP, antibiotic use and patients' costs on antibiotics in Chines hospitals are generally low, but still higher than some developed countries. Nevertheless, patients' costs on drugs remain very high. Policies beside the ASP are needed to control the Chinese patients' drug costs.

326 Sensitivity and usage patterns of reserved antibiotics in the intensive care unit of a tertiary care teaching hospital

Ms Nayak Ashwini[1], Dr Girish Thunga[1], Dr Kunhikatta Vijayanarayana[1], Dr Nair Sreedharan[1], Dr KN Shivashankar[2]
[1]Department of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal University, Manipal, India, [2]Department of Medicine, Kasturba Medical College, Manipal University, Manipal, Manipal, India

Objective: To evaluate the use of reserve antibiotics, its sensitivity-resistance patterns in ICU setting.
Methods: This was a prospective observational study conducted in medicine ICUs of tertiary care teaching hospital. The inclusion criteria was patients of both gender, 18 years and above prescribed with a reserve antibiotic(s). Patient demographics, clinical diagnosis, previous infection, length of hospital stay, reserve antibiotics administered and its indication, sensitivity – resistant patterns, concurrent use of drugs were collected. Statistical Package for Social Sciences (SPSS) version 20.0 was used to analyze the results.
Results: Among 250 patients prescribed with reserve antibiotics, sepsis (56.8%) was found to be most common infection. The common organism was found to be Klebsiella pneumoniae (24.5%). Among the reserve antibiotics prescribed, meropenem (88.8%) was highly prescribed, followed by colistin (23.6%) and teicoplanin (30%). Piperacillin/tazobactum (46%), cefaperazone sulbactum (22%) and azithromycin (28.8%) were the other antibiotics prescribed. Carbapenem (88.8%) was the highly prescribed antibiotic. An increase in Carbapenem (26.8%) resistance cases was observed.
Conclusion: Our study reveals an increase trend in the growing resistance among gram-negative pathogens and resistance to carbapenems and high-end antibiotics like piperacillin/tazobactum. Understanding of the niceties of these reserved antibiotics is critical for upgrading of reserve antibiotic policies which helps in combating resistant bacterial strain in ICU patients.

327 Antibiotic prescription guide as a tool for rational use of medicines in dental practice: Simple but powerful

Dr. Farsai Chanjaruporn[1], Ms Pichaya Rochanadumrongkul[2], Assoc. Prof. Cha-oncin Sooksriwong[1]
[1]Faculty of Pharmacy, Mahidol University, Rajathevi, Thailand, [2]Faculty of Dentistry, Mahidol University, Rajathevi, Thailand

Objective: To explore the effects of antibiotic prescription guide (APG) on the utilization of antibiotics in Dental Hospital Mahidol University, Thailand
Methods: This study aimed to explore the utilization of ten antibiotics before and after the introduction of APG (1 August 2016). The study was performed in the outpatient department. Patients who were prescribed with antibiotics were included. Patients' antibiotic use history was retrieved through the hospital database. Data collected was divided into two periods; pre-intervention (April 2015 through July 2016) and post-intervention (August 2016 through February 2017). Statistics used included descriptive statistics i.e. percentage, mean and standard deviation together with t-test and Mann-Whitney U test.
Results: After the introduction of APG, the utilization of all antibiotics decreased considerably from 2,315,471 to 1,528,796 units/month or 33.97%. The decrease for each antibiotic was statistically significant with the range of 85.40% to 1.22% (p-value < 0.05, $\alpha = 0.05$). The highest decrease was observed in doxycycline 100 mg tablet, followed by amoxicillin and clavulanate potassium 625 mg tablet (44.84%) and amoxicillin 500 mg capsule (20.49%), respectively. When comparing the utilization of all antibiotics after the introductory date of APG for each month with the usage in July 2016, the study revealed a decreasing trend at the average rate of 30.77%. The rate of reduction tended to increase during the first six months of observation (August 2016 to January 2017). However, a slight drop was noticeable after that and a descending trend might be expected.
Conclusion: The use of APG has proved to decrease the amount of antibiotics prescribed dramatically. Therefore, for successful implementation of rational use of medicines, it is necessary to employ this simple but powerful tool for other groups of medicines. Furthermore, for sustainability of rational use effects, monitoring for long-term use is needed.

328 Prescribing pattern of antibiotics for Acinetobacter infection therapy in a tertiary care hospital

Miss. Kavitha Elsa Varghese[1], Mr. Vinayak Sudhapalli[1], Mr. Deepak Kanad[1], Dr Chiranjay Mukhopadyay[2], Dr Rajesh Vilakkathala[1]

[1]Dept of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal University, Manipal, India, [2]Dept of Microbiology, Kasturba Medical College, Manipal, India

Objective: To assess the resistance pattern and drug utilization pattern of patients undergoing treatment for Acinetobacter infection.

Methodology: A cross sectional, observational, retrospective study, performed over a period of 6 months. The data collected was analysed to understand its significance with respect to patient demographics, prescription patterns, co-morbidities as risk factors to infection, and resistance pattern.

Results: The study revealed that male patients were at a greater risk of A.baumannii infections within age distribution of 41-60 years and 61-80 years.Bacteria were found to be resistant to almost all categories of drugs. The average length of stay of a patient with A.baumanni infection was 23.51±27.97 days. Empirical antibiotic therapy was prescribed to most patients and drugs Tigecycline and Cefixime were used in 47(97.9%) patients. The least prescribed antibiotic was Piperacillin – Tazobactam in 25 (42.9%) patients. Cefoperazone-sulbactam was also found to be active against the bacterium.

Conclusion: This study concluded that male patients were at a greater risk of A.baumannii infections. Tigecycline and Cefixime were the most prominently used antibiotics.The strain in this study was resistant to almost all cephalosporins except Cefoperazone-Sulbactam which had activity in about 57.14% of the samples tested.

329 A prospective study on adverse drug reactions associated with antibiotics usage in a tertiary care teaching hospital

Mr Shakamudi Prashanth[1], Mr Bathula Srujan[1], Mr. Gaddam Narasimha Rao[1], DOCTOR Y Venkata Rao[2], DOCTOR Adepu Ramesh[1], Doctor Adepu Sai Pawan[1], Mr. Bhonigir Bhargav[1]

[1]Vikas College of Pharmaceutical Sciences, Suryapet, India, [2]Kamineni Institute of Medical Sciences, Narketpally, India

Objectives: The study was conducted to assess the incidence of Adverse Drug Reactions associated with antibiotics.

Methods: The study was conducted on patients receiving antibiotics attending both OP and IP department at Kamineni Institute of Medical Sciences, Narketpally. A total of 85 patients were followed receiving antibiotics. Data was collected from Patient case sheets, medication chart, and lab reports and through structured interviews with patients. The collected ADRs were assessed for causality, severity, and preventability.

Results: A total of 14 adverse drug reactions were observed in 85 patients using antibiotics. Among these 85 patients, 54 were males and 31 were females. Most of the ADR's were mild level 1(9) followed by mild level-2 (5). In this study, ADR's were assessed based on Naranjo Causality assessment scale. Most of the reported ADR's were probably (46%) for 7 patients followed by possible-3 (27%) for 4 patients and possible-4 (27%) for 3 patients.

Conclusion: Regular monitoring of ADRs helps in preventing the misuse of antibiotics in patients.

330 Optimizing antibiotic dosing by clinical pharmacist in renal impairment

Dr Rajesh V[1], Ms Surabhi Sreedhara[1], Dr Ravindra Prabhu[2]
[1]*Manipal College of Pharmaceutical Sciences, Manipal, India,* [2]*Kasturba Medical College, Manipal, India*

Objective: To assess the impact of dose appropriateness on clinical outcome and evaluation of direct costs involved in antibiotic therapy in renal impairment.
Methods: A prospective study was conducted on in-patients in the nephrology department, prescribed with antibiotics in a tertiary care hospital. The creatinine clearance (CrCl) was calculated by Cockroft Gault and Jelliffe method. The dose appropriateness was checked by using standard databases and literature from the manufacturer. The direct cost involved in the antibiotic therapy was calculated by accessing IP bills from the finance department.
Results: A total of 163 cases were collected of which 139 was taken for analysis. 80.6% (112) cases were diagnosed with chronic kidney disease (CKD) and 19.4% (27) were diagnosed with acute kidney injury (AKI). The mean age of the population is 54±13 and the mean duration of hospitalization was 6±2 days. Urinary tract infection was the most common infectious complication in the clinical setting. Mono therapy (54.7%) was the most preferred choice, followed by dual therapy (40.3%) and triple therapy (5%). A positive clinical outcome of 79.1% was achieved. Cefoperazone sulbactam was the most widely used antibiotic. A mean difference of 4.55ml/min was obtained when creatinine clearance was calculated by Cockroft Gault and Jelliffe methods in AKI. In CKD, dose appropriateness is a significant factor in achieving a positive clinical outcome. The direct cost involved in the management of CKD was much higher than that of AKI. The management of systemic infections involved maximum costs INR 70,040. 00
Conclusion: There is an overestimation of CrCl measured by conventional methods in AKI. Dose appropriateness is a significant factor in achieving a positive clinical outcome. Medicine cost was found to be maximum in comparison to the other costs involved.

331 Burden of pneumonia in Hong Kong adults

Dr X Li[1], Mr Joseph Blais[1], Dr Anthony Tam[1], Professor Ian Wong[1], Dr Esther Chan[1]
[1]*Centre for Safe Medication Practice and Research, Department of Pharmacology and Pharmacy, Li Ka Shing Faculty of Medicine, The University of Hong Kong, China*

Aim: To describe and characterise the disease and economic burden of all-cause pneumonia in Hong Kong adults and the associated inpatient antimicrobial exposure.
Methods: Between 1 January 2011-30 June 2016, we identified patients ≥ 18 years old in the Hong Kong Clinical Data Analysis and Reporting System database with a diagnosis of all-cause pneumonia (any viral, bacterial or unspecified cause). The overall incidence, mortality and case-fatality rates were estimated for full year data (i.e., 2011-2015). We describe risk distribution, as classified by the risk of developing pneumococcal disease, by age groups. Length of stay, total cost per episode of all-cause pneumonia, overall healthcare expenditure and relative healthcare resource utilisation (antimicrobial usage) were assessed as components of the economic burden estimation.
Results: We identified 327,118 patients (median age 81, interquartile range [IQR]: 71-88; female 44.2%) with all-cause pneumonia. The annual incidence was stable and ranged from 918.35-985.70 per 100,000 persons. Estimated annual mortality was 122.92-155.47 per 100,000 persons with an annual case-fatality rate of 13.5-17.0 per 100 persons. The proportion of patients at high risk for pneumococcal disease was similar between younger (18-64 years) and older (≥ 65 years) groups (28.2% vs. 28.3%) with more moderate risk patients in the older group (41.1% vs. 20.1%). Per episode median length of stay in hospital was 7 days (IQR: 4-15). The total median per episode expenditure was HK$ 43,450 (IQR: 27,200-86,780). The total annual healthcare expenditure was estimated to be HK$ 4,027 million for the management of all-cause pneumonia. Commonly prescribed inpatient antimicrobials for the treatment of all-cause pneumonia included broad-spectrum penicillins (79.6%), antipseudomonal penicillins (24.8%), cephalosporins (24.0%), macrolides (21.6%) and quinolones (17.3%).
Conclusion: All-cause pneumonia represents a considerable disease and economic burden in Hong Kong. Feasible strategies for the prevention of pneumonia should be considered.

332 Patterns of antipsychotic use among patients with Schizophrenia: A Japan Medical Data Center health insurance claims database analysis

Darmendra Ramcharran[1], Hong Qiu[1]
[1]*Janssen Research and Development Global Epidemiology, Titusville, United States*

Aim/Objective: High rates of antipsychotic polypharmacy (APP) have been reported in the Asia Pacific region, with the highest rates in Japan. This study sought to characterize the patterns of antipsychotic (AP) use in Japan among patients with schizophrenia.
Methods: A retrospective cohort study was conducted using the Japan Medical Data Center (JMDC) health insurance claims database, a database covering non-government employed individuals and their families. APP was defined overlapping AP prescriptions for at least 60 days.
Results: Among users of antipsychotics, the overall rate of APP was 26.0%. Among users of long-acting injectable (LAI) APs, in general, and the 1 month injectable formulation of paliperidone palmitate (PP1M), there were high rates of prior psychiatric hospitalizations (14.5% and 14.3%, respectively) compared to patients who continued oral AP monotherapy (less than 1%). In addition, LAI and PP1M patients had worse comorbidity profiles than oral monotherapy users (mean Charlson comorbidity scores: 0.55 and 0.44 versus 0.25, respectively). Oral monotherapy patients had a lower baseline prevalence of several conditions than users of LAIs or PP1M (chronic pulmonary disease: 3.5%, 6.4% and 9.2%, respectively; peptic ulcer disease: 4.7%, 9.6% and 11.2%, respectively; mild liver disease: 6.3%, 10.4%, and 8.2%, respectively). Other cardiovascular diseases components of the comorbidity index (myocardial infarction and congestive heart failure) were similar between AP user groups.
Conclusion: The APP rate was lower than other published estimates for Japan, which may be attributed to differences in the method of data collection and the definitions of APP, and potentially a healthier population of schizophrenia patients reflected in the JMDC database than in the general population. Users of LAI and PP1M had worse comorbidity profiles at baseline compared to oral monotherapy users, a pattern which suggests the potential for channelling to occur among users of injectable formulations of APs.

333 Evaluating the effect of the Veterans' MATES program on the prescribing of antipsychotics in the elderly

Ms Jemisha Apajee[1], Dr Anna Moffat[1], Associate Professor Nicole Pratt[1], Ms Mhairi Kerr[1], Dr Lisa Kalisch[1], Ms Tammy Le Blanc[1], Professor Elizabeth Roughead[1]
[1]*Quality Use of Medicine and Pharmacy Research Centre, University of South Australia, Adelaide, Australia*

Aim/Objective: In August 2015, the Australian Therapeutic Good Administration (TGA) recommended using risperidone for a maximum of 12 weeks to treat behavioural and psychological symptoms (BPSD) for moderate to severe dementia of the Alzheimer type only. In response, the Australian Government Department of Veterans' Affairs Veterans' MATES program implemented an intervention in August 2016 to reduce the use of antipsychotics among veterans. We aimed to evaluate the effect of the intervention on the prescribing of antipsychotics in the veteran population.
Methods: Veterans who were more than 65 years of age and were either treated with antipsychotics, hospitalised for dementia or prescribed a medicine for dementia from February to May 2016 were included in the intervention group. We excluded those who had more than one psychiatrist service in the previous year. Using the same criteria, two historical control groups were created, one in 2014 (historical group 1) and another in 2015 (historical group 2). We compared the utilisation of antipsychotics between groups and used Cox proportional hazards models to compare cessation rates.
Results: The intervention group and historical group 2 had a lower rate of risperidone use compared to historical group 1. There was no change in the use of other antipsychotics (excluding risperidone) between the groups. Compared to historical group 1, veterans in the intervention group and historical group 2 were both more likely to cease risperidone treatment (Hazard Ratio (HR) 1.35; 95% confidence interval (CI) 1.20-1.53 and HR; 1.33 95% CI 1.19-1.49 respectively).
Conclusion: Both the TGA restriction and the MATES intervention were successful in reducing the use of risperidone in the veteran population.

334 Prescribing trend of antipsychotic in Hong Kong: From 2004 to 2014

Mr SHIJIAN LAO[1], Dr Esther W Chan[1], Prof Ian CK Wong[1,2]
[1]Department of Pharmacology and Pharmacy, The University of Hong Kong, Hong Kong, Hong Kong, [2]Research Department of Practice and Policy, UCL School of Pharmacy, London, UK, London, UK

Aim/Objective: To describe the prescribing trend of antipsychotics prescriptions in Hong Kong general population.
Methods: Prescription and dispensing records were retrieved from the Hong Kong Hospital Authority Clinical Data Analysis and Reporting System (CDARS), in the study period from 1st Jan 2004 to 31st Dec 2014. The prevalence of antipsychotic prescriptions were investigated and with the corresponding 95% confidence intervals (CIs) were obtained.
Results: A total of 256,848 patients were prescribed with antipsychotics in the study period. Females represented 57.1% (n=132,869) of patients on antipsychotics. The prevalence of antipsychotic prescribing increased steadily, from 1.050% (95% CI = [1.042%-1.057%]) in 2004 to 1.507% (95% CI = [1.498%-1.516%]) in 2014. The prescribing of conventional antipsychotics dropped from 643,996 to 381,639, a 40.7% reduction from 2004 to 2014, while atypical antipsychotics increased from 186,660 to 656,664 prescriptions, representing an increase in volume by 2.5 times in the same period. The number of depot injections decreased from 85,248 (9.9%) in 2005 to 76,725 (7.4%) in 2014. Haloperidol is the most frequently prescribed antipsychotic, however proportion of patients on which decreased from 41.7% (n=29,356) to 27.0% (n=29,427). The most popular atypical antipsychotic was quetiapine in 2014, proportion of patients on which was 23.5% (n=25,657).
Conclusion: The prevalence of antipsychotic medication prescribing in Hong Kong is increasing in the study period. Atypical antipsychotics are becoming more widely used in place of conventional antipsychotics. Due to the increasing usage, further research is required to assess the safety and effectiveness associated with antipsychotics.

335 The association between prescribed atypical antipsychotic drugs and hyperglycemic diabetic complications

Ms. Nisrine Haddad[1], Dr Daniel Krewski[1]
[1]School of Epidemiology and Public Health, Faculty of Medicine, University of Ottawa, Ottawa, Canada

Antipsychotic drugs are prescribed to treat serious psychotic disorders. Atypical antipsychotics (AAPs), second-generation drugs, are dopamine antagonists acting on dopamine receptors. They offer many advantages over their predecessors: they enhance cognitive function in patients who adhere to the prescribed treatment; they also result in fewer extrapyramidal symptoms, rendering them more desirable from a clinical point of view. Evidence from case studies supports a possible association between the use of prescribed atypical antipsychotic drugs and hyperglycemic diabetic complications, namely Diabetic ketoacidosis (DKA) and hyperglycaemic hyperosmolar state (HSS). DKA and HSS are serious diabetic complications that occur mainly in patients living with type 1 diabetes mellitus and type 2 diabetes mellitus, respectively. Both conditions are associated with a high level of morbidity and mortality, as well as high health care costs. This research project will focus on the patterns of use, and the safety and efficacy profiles of prescribed AAP drugs to treat psychotic disorders, which may result in adverse hyperglycemic diabetic complications. The Cerner HealthFactsTM Datawarehouse is a United States-based database that contains electronic health records from 500 United States medical facilities since the year 2000 for 50 million patients. HealthFacts is a time-stamped EHR, which provides access to patient demographics, characteristics of the treating center, prescribed and dispensed medications, and medical diagnosis and procedures.A quantitative analysis of trends in the use of prescribed AAP drugs in patients with psychotic disorders will provide information on the hyperglycaemic risks associated with their uses in certain populations. A nested case-control study will be used for that purpose. The prescribed use of atypical antipsychotic drugs to treat psychotic disorders could potentially lead to the development of DKA and HSS, and even mortality. Existing co-morbidities and risk factors may contribute to this association.

336 Incidence of clozapine induced myocarditis among people treated in a state-wide mental health service: A multicentre study protocol

Ms Jessica Dawson[1], Assoc Prof Simon Bell[1,2], Dr Janet Sluggett[1], Prof Nicholas Procter[3], Dr Scott Clark[4]
[1]Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville, Australia, [2]School of Pharmacy and Medical Sciences, University of South Australia, Adelaide, Australia, [3]School of Nursing and Midwifery, University of South Australia, Adelaide, Australia, [4]University of Adelaide, Department of Psychiatry, Adelaide, Australia

Aim: Published studies estimating the risk of clozapine induced myocarditis are derived from spontaneous adverse drug reporting systems, which may underestimate incidence, or single centre studies, which may not be generalisable to all settings. The aim of this multicentre study is to determine the incidence of, and factors associated with, clozapine induced myocarditis.
Methods: This protocol is for a retrospective observational study of individuals commenced on clozapine for treatment resistant schizophrenia between January 2009 and December 2016. Participants will be identified based on dispensing data from five tertiary hospitals. Patients case notes, and electronic clinic and pathology records will be reviewed for 4 weeks after clozapine initiation. Information relating to myocarditis diagnosis will be collected including heart rate, temperature, flu-like illness, and markers such as troponin and CRP. Previously defined criteria for case identification (e.g. clinical features and a troponin rise greater than two times the upper limit of normal or objective evidence of cardiac dysfunction) will be applied. The estimated sample size is 300 clozapine initiations during the study period. Descriptive statistics will be used to report the incidence of clozapine induced myocarditis and explore trends. Secondary outcomes including demographic, clinical and provider-related factors associated with clozapine induced myocarditis will be determined using multivariate regression modelling.
Results: Data collection will commence in August 2017. Results will be disseminated through conference presentations and published in a peer review journal.
Conclusion: Myocarditis is a potentially life-threatening complication of clozapine treatment and awareness is important for early identification and management. Differences in international monitoring strategies may contribute to the large variation in reported incidence of clozapine induced myocarditis, which ranges from 0.01% to 3%. The results of this multi-centre study will contribute to determination of the incidence of myocarditis, and assist with the identification of risk factors for developing this complication.

337 The effect of pomegranate on oxidative stress and systemic inflammation in patients with hemodialysis: A systematic review and meta-analysis

Dr. Piyameth Dilokthornsakul[1], Ms. Watjanee Sawasdphong[1], Ms. Thanya Niamsawan[1]
[1]Center of Pharmaceutical Outcomes Research, Department of Pharmacy Practice, Faculty of Pharmaceutical Sciences, Naresuan University, Muang, Thailand

Background: Oxidative stress and systemic inflammation are associated with cardiovascular disease in patients with hemodialysis (HD). Several studies showed the effect of pomegranate on oxidative stress, and systemic inflammation in patients with HD. However, some studies showed no effect. The effect of pomegranate in such patients are still controversial. This study aimed to perform a systematic review and meta-analysis to determine the effect of pomegranate on oxidative stress and systemic inflammation in patients with HD.
Method: PubMed, Scopus, EMBASE, Cochrane library, Thai thesis database, Thai index medicus, Thai medical index and Thai library integrated system were systematically searched from inception through October 2016. Randomized controlled trials which were conducted to determine the effects of pomegranate on oxidative stress or systemic inflammation in patients with HD were included. Meta-analysis were performed using random-effects model.
Result: Of the 893 articles retrieved, five studies were met our inclusion criteria but only four studies could be included for meta-analysis. From the included studies, several measures used to assess the effect of pomegranate on oxidative stress including polymorphonuclear leukocyte, PMNL; myeloperoxidase, MPO; advanced oxidation protein products, AOPP, while interleukin-6, (IL-6) and C-reactive protein (CRP) were used to assess the effect of pomegranate on systemic inflammation. For oxidative stress, our meta-analyses showed that pomegranate were associated with a reduction of MPO [mean difference (MD): -87.2 ng/dl: 95% CI; -132.2 to -42.2, I2 = 0.0%] but were not associated with PMNL, AOPP compared to placebo. For systemic inflammation, pomegranate were associated with an increase in CRP (MD 3.90: 95%CI; 1.19 to 6.61) but were not associated with IL-6.
Conclusion: The effect of pomegranate on oxidative stress and systemic inflammation in patients with HD were still limited and inconclusive. Further large clinical trials could be conducted to determine such effect.

338 The clinical efficacy of Sacha Inchi on lipid profile: A systematic review

Piyameth Dilokthornsakul[1], Ms. Thanya Niamsawan[1], Watjanee Sawasdphong
[1]*Center of Pharmaceutical Outcomes Research, Department of Pharmacy Practice, Faculty of Pharmaceutical Sciences, Naresuan University, Muang, Thailand*

Introduction: Sacha inchi (Plukenetia volubilis L.) is a plant belonging to the Euphorbiaceae family. Its seeds are rich of polyunsaturated fatty acids with approximately 34% of linoleic acid and 51% of linolenic acid. Sacha inchi oil is increasingly used as a lipid lowering dietary supplement. However, clinical evidence of its efficacy is still limited and inconclusive. We aimed to systematically review the current clinical evidence of Sacha inchi on lipid porfile.
Methods: We searched PubMed, EMBASE, Scopus, Cochrane, Thai index medicus, Thai medical index, Thai library integrated system, Thai thesis database, www.opengrey.eu, www.greylit.org, and www.clinicaltrails.gov from their inception through October 2016. Clinical studies conducted to determine the effects of Sacha inchi on lipid profile were included. Because of the variation of evidence collected, meta-analysis could not be performed. Thus, qualitative summary was performed.
Results: Of 955 studies identified, only 3 studies were included. Of those, 2 randomized controlled trials reported the effect of Sacha Inchi on total cholesterol (TC), low-density lipoprotein (LDL), and high-density lipoprotein (HDL), and triglyceride (TG) within 4 months of follow-up, while another one quasi-experimental study reported such effect on TG at 6 hours after taking Sacha inchi. Such evidence indicated that Sacha inchi could significantly reduce TC and LDL levels but could not reduce TG levels at 4 month compared to baseline. In addition, Sacha inchi could also significantly increase HDL level compared to baseline. No serious adverse events were reported.
Conclusion: No strong evidence indicated the efficacy of Sacha inchi on lipid profile but there is a trend that Sachi inchi oil might improve lipid profile. Further high-quality large-scale clinical trials are needed.

340 Evaluation of underlying dose-effect as a source of heterogeneity in meta-analyses: A simulation study of Bayesian hierarchical network meta-analysis models

Jun Yang[1], Shanshan Wu[2], Le Gao[1], Yang Xu[1], Ting Cai[1], Siyan Zhan[1], Feng Sun[1]
[1]*Peking University(PKU), Beijing, China,* [2]*National Clinical Research Center of Digestive Diseases, Beijing Friendship Hospital, Beijing, China*

Background: Network Meta-Analysis (NMAs) is increasingly used to evaluate drugs and make decisions. But drugs at different doses as a common source of heterogeneity has not attracted enough attention yet and often is manifested as unexplained heterogeneity in standard NMA models which might influence the analysis conclusion.
Objective: To evaluate the impact of underlying dose-effect and different approaches on the analysis and model fit of NMAs.
Method: A simulation study of Bayesian hierarchical NMA models is performed to explore the impact of dose-effect and how different approaches can affect the results. Three NMA models with different dose-effect assumptions are separately applied to the simulation data: lumping model (node is drug and the relationship between doses of the same drug is ignored), splitting model (node is drug at dose level and the same drug at different dose will be independent nodes in this model) and dose-effect model (node is drug at dose level but the relationship of different nodes for same drug is modelled). Model fit (residual deviance and DIC) and precision difference in Odds Ratios (ORs) between estimated and standard value are used to evaluate these NMA models.
Results: In half of the total 12 situations, estimated ORs of dose-effect model shows a significant closer distance to true ORs compared to other two models which indicates its improved precision. Three models produce similar results in 2 situations. Splitting model has a better performance in the other 4 situations. There is no significant improvement on model fit for the dose-effect model compared with lumping and splitting model.
Conclusion: Dose-effect NMA model can be used to increase precision of analysis outcome and therefore reduce the uncertainty of decisions. This flexible model will produce better estimates of drugs in situations where there is substantial data.

341 Prescription data topic model using latent dirichlet allocation

Lin Zhuo[1], Daokun Jiang[1], Junfeng Zhao[1], Siyan Zhan[1]
[1]*Peking University, Beijing, China*

Objectives: To automatically cluster and extract disease-medication patterns from massive clinical data with machine learning techniques.
Methods: We used the unsupervised topic modeling approach to analyze prescriptions from the Chinese Monitoring System for Rational Drug Use Database. Latent dirichlet allocation (LDA) algorithm was chosen to generate the topic models using variables including diagnoses (ICD-10), medications (generic name) and medication prices. After capturing comorbidity structures and linking them with the distribution of medications, topics could be extracted and interpreted as the latent health status of a patient. Each topic consisted of a set of diagnoses and medications and their corresponding percentages. These diagnoses and medications were highly related to each topic. The percentage for each diagnosis (or medication) was the conditional probability of observing this diagnosis (or medication) in this latent health status. The conditional probabilities of diagnoses (or medication) in one topic summed up to one.
Results: A total of 5.5 million prescriptions from 349 hospitals in mainland China were used to generate topics. Most topics consisted of chronic diseases (diabetes, coronary heart disease, oculopathy, etc.) and corresponding medications. The topic with highest probability was about ocular inflammation. In this topic, there was an 42.91% probability of keratoconjunctivitis sicca, and 33.98% probability of conjunctivitis, while probability of corresponding medications such as sodium hyaluronate, polyvinyl alcohol, Levofloxacin and pranoprofen were 24.60%, 8.82%, 7.48% and 7.01%, respectively.
Conclusions: We successfully applied the LDA topic modeling method to automatically extract the features of prescriptions and get a deeper understanding of pairing relationships between diagnoses and medications in real world clinical practice. This model also could be used for dimension reduction of patient records. We will apply this advantage for our further irrational prescription detecting research which is based on anomaly detection technique.

342 Validity of electronic hospital discharge prescriptions as a source of medication data for pharmacoepidemiological research

Ms Laura Fanning[1,2,3], Ms Lilian Vo[4], Dr Jenni Ilomaki[4,5], Associate Professor Simon Bell[4,5,6], Dr Rohan Elliott[4,7], Professor Peteris Darzins[1,2]
[1]*Eastern Health Clinical School, Faculty Medicine, Nursing and Health Sciences, Monash University, Melbourne, Australia,* [2]*Geriatric Medicine, Eastern Health, Melbourne, Australia,* [3]*Pharmacy Department, Eastern Health, Melbourne, Australia,* [4]*Centre for Medicine Use and Safety, Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Melbourne , Australia,* [5]*School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia,* [6]*Sansom Institute, University of South Australia, Adelaide, Australia,* [7]*Pharmacy Department, Austin Health, Melbourne, Australia*

Objective: The advent of hospital electronic medical records (EMRs) with electronic prescribing (e-prescribing) provides considerable opportunity for pharmacoepidemiological research. However, the validity of electronic prescribing data is not well established. The objective of this study was to evaluate the validity of electronic hospital discharge prescription records as a source of medication data for use in pharmacoepidemiological research.
Methods: A random sample of patients with a diagnosis of atrial fibrillation (AF) and prescribed ≥ 5 medications were selected. EMR discharge prescribing data from years 2012-2015 was compared to hospital medical records and pharmacy dispensing records (reference standards). Medication name, dose, directions and route of administration were compared. Discrepancies between data sources were categorised as an omission, addition, discrepancy in dose, medication form or route of administration or discrepancies in reordering. Sensitivities and 95% confidence intervals for medication exposure were estimated for therapeutic classes.
Results: 5724 prescription orders for 479 patients for whom reference standards were available were included in the study. In total, there were 163 discrepancies (2.8%) between EMR data and the reference standards. Additions were the most common type of data discrepancy accounting (n=65; ~1.1% of total prescriptions evaluated), followed by discrepancies in reordering (n=34; 0.59%). The sensitivities for patient exposure to a medication were estimated to be between 97 and 100% for all fourteen first levels of Anatomical Therapeutic Chemical (ATC) classification system. The genitourinary system and sex hormone (G) level of the ATC system demonstrated lowest sensitivity, 0.973 (95% CI 0.920-1.026) and the cardiovascular system (C) level demonstrated highest sensitivity 0.999 (95% CI 0.997-1.000).
Conclusion: Discharge prescribing data from the EMR is a valid source of discharge medication data. The data accurately predict a patient's exposure to a medication at the time of discharge from hospital.

343 International pharmaceutical informatics initiative to assess treatment use and outcomes across countries: Report of progress

Dr Gang Fang[1], Dr Simon Bell[2], Dr Jenni Ilomäki[2], Dr Li Wei[3], Dr Ian Wong[3]
[1]UNC at Chapel Hill, Chapel Hill, United States, [2]Monash University, Melbourne, Australia, [3]UCL School of Pharmacy, London, UK

Objective: 1) to create an inventory of pharmaceutical utilization and outcomes data across PharmAlliance partner institutes in the US, UK and Australia. 2) Implement the common data protocol at each institute to support collaborative big data studies. 3) Conduct a pilot study examining hypoglycemia events resulting in hospitalization using the PharmAlliance big data platform.
Methods: For objective 1, an inventory of data available at all three partner institutions will be created by assessing, comparing the data dictionaries of the available data. For objective 2, we will implement a Common Data Model (CDM) through the Observational Medical Outcomes Partnership (OMOP). The CDM will comprise three initial data sets including Truven's MarketScan Commercial Claims and Encounters (CCAE) data in the US, the Australian NPS dataset, and the UK's Clinical Practice Research Datalink (CPRD) dataset. For objective 3, we plan to conduct a population based longitudinal study using the CPRD, CCAE and Eastern Health hospital database from January 2004 or the inception of these databases to December 2015. The study will exam the prevalence of antidiabetic medication use and hospitalization due to hypoglycemic events over time using multivariate regression analysis.
Results: The PharmAlliance international big data platform will enable researchers across all three institutions to conduct pharmacoepidemiological studies across the three countries with a consistent study protocol and measures. Using the pilot data from the PharmAlliance big data platform, prescribing pattern of antidiabetic medications, incidence/prevalence and burden of hypoglycemia in the three countries over the past decade will be assessed as well as association of different medications and hypoglycemia.
Conclusion: The PharmAlliance big data platform may help facilitate international collaborations in pharmacoepidemiological studies to improve medication use and outcomes.

344 Comparison of various severity assessment scoring systems in patients with Sepsis

Keertana Badrinath[1], Monika Shekhar[1], Sree Lakshmi Moturu[1], Vijayanarayana Kunhikatta[1], Karthik Rao Nileshwar[2], Girish Thunga[1]
[1]Dept. of Pharmacy Practice, Manipal College of Pharmaceutical Sciences, Manipal University, Manipal, India, [2]Dept. of Medicine, Kasturba Medical College, Manipal, Manipal Univeristy, Manipal, India

Aim/Objective: To evaluate the predictive ability of six severity assessment scoring systems, namely, Acute Physiology and Chronic Health Evaluation (APACHE II), Rapid Emergency Medicine Score (REMS), Sequential Organ Failure Assessment (SOFA), Multiple Organ Dysfunction Score (MODS), Predisposition, Infection, Response and Organ Dysfunction (PIRO) and Mortality in Emergency Department Sepsis (MEDS) scores, in patients with sepsis.
Methods: A prospective cohort study, carried out in a south Indian tertiary care teaching hospital. Institutional ethics committee approval was obtained prior to the study. All patients diagnosed with sepsis according to guidelines the third International Consensus Definitions for Sepsis and Septic shock (Sepsis 3), who meets the inclusion and exclusion criteria were enrolled into the study. Patients were followed from the day of admission to till the day of discharge or death. Patient demographics, clinical characteristics, laboratory test data and comorbidities were recorded on the day of sepsis diagnosis. These parameters were used to calculate the severity scores and predicted mortality for each patient. ROC curve analysis was used to analyse the discriminative power (ability to differentiate between survivors and non-survivors) of various severity scores.
Results: A total of 193 patients were included in the study. The mean age was 57.2±15.3 (mean±SD) years. Majority of the patients were male, 125 (64.76%). Overall mortality was 108 (55.9%). The calculated AUCs were 0.86 (95% CI: 0.80-0.90) for APACHE II, 0.81 (95% CI: 0.75-0.87) for REMS, 0.80 (95% CI: 0.74-0.86) for SOFA, 0.74 (95% CI: 0.67-0.80) for MODS, 0.78 (95% CI: 0.71-0.84) for PIRO and 0.77 (95% CI: 0.71-0.83) for MEDS. Sensitivity and specificity for APACHE II was 81.5 and 75.3 respectively.
Conclusion: In our study, APACHE II score proved to be the most superior of all the scores, as it considers not only the laboratory data but also chronic comorbidities and surgical status of the patient.

345 G-estimation of structural nested mean models for competing risks data using pseudo-observations

Shiro Tanaka[1]
[1]*Department of Clinical Biostatistics, Graduate School of Medicine Kyoto University, Kyoto, Japan*

Aim: Competing risks frequently arise in pharmacoepidemiology. For confounding adjustment in the presence of competing risks, Fine and Gray (1999) developed regression models of the subdistribution hazard under a proportional hazards assumption, while Fine (1999) directly modeled the effects of covariates on the cumulative incidence function. It is also possible to directly apply a generalized linear model or instrumental variable estimation to the cumulative incidence function using pseudo-observations (Klain and Andersen 2005, Andersen, Klein, and Rosthøj 2003). However, statistical methods for adjustment for time-dependent confounders have not been established in the presence of competing risks.
Methods: We propose a formulation of structural nested mean models (SNMMs) of causal effects on the cumulative incidence functions of potential outcomes (Rubin 1978) and develop novel estimators of SNMMs based on pseudo-observations. Performance of the proposed estimators was assessed through simulation.
Results: Causal risk differences and risk ratios for a fixed exposure were formulated as linear and log-linear models and this framework was extended to proportional hazards models which represent causal subdistribution hazard ratios over the entire time span. It was theoretically shown that the proposed estimators based on pseudo-observations are asymptotically unbiased and doubly robust. In simulated datasets, the proposed estimators were doubly robust even in small (n=200) and moderate (n=1000) size datasets and the standard errors under partially incorrect specification were slightly larger than those under correct exposure and outcome models. The proposed confidence interval based on robust variance provided coverage probabilities close to their nominal level of 95%.
Conclusion: SNMMs and the proposed estimators have preferable properties even in small sample size and are particularly useful for adjustment for time-dependent confounders in the presence of competing risks.

346 Drug utilization studies and the use of defined daily dose classification system in the WHO-SEARO region: A systematic review

Dr Manthan Mehta[1], Dr Rajan Nerurkar[2]
[1]*Topiwala National Medical College &BYL Nair Hospital, Mumbai, India,* [2]*Topiwala National Medical College & BYL Nair Hospital, Mumbai, India*

Aim/Objective: This systematic review was conducted to analyse drug utilization studies conducted in the SEARO region of WHO for study objectives, types of studies, methodology, drugs and healthcare settings, results and recommendations and to identify the need for improving drug utilization research and the use of ATC/DDD system. It was also aimed to provide future suggestions, if any, for Drug Utilization Research in the WHO-SEARO region.
Methods: A literature search for drug utilization studies was carried out in biomedical databases (PubMed, Scopus and Google Scholar) up to May 2017. Publications were selected if they were in English language, describing drug utilization studies or prescription practices, providing information about drug use or prescription practices or drug consumption or describing interventions to improve drug prescription practices, thereby improving rational drug use and conducted in the WHO-SEARO countries. The search also focussed on the use of WHO-ATC/DDD classification system.
Results: A total of 623 publications were included in the review from the 2914 publications screened till May 2017. Of these, 69 % were from India and 16 % were from Thailand and 15 % from others. Majority of the publications were hospital based; only 19 % were community based. The ATC/DDD system was used in only 24 % of the publications, of which 72 % publications used DDD indicators. Several publications focused on antibiotics (38%). Publications that recommended the need for a policy or intervention to improve prescription practices or rational drug use amounted to 39 per cent.
Conclusion: Drug utilization studies using ATC/DDD system need to be promoted and carried out on an ongoing basis. In SEARO countries, ATC /DDD code needs to be allocated to National lists for which resources and capacity building is needed. DUR is important for rational use of drugs.

347 Identifying barriers and priority areas for building workforce capacity in pharmacoepidemiology research in Australia

Dr Derrick Lopez[1,2], Dr Frank Sanfilippo[2], Mr Benjamin Daniels[3], Professor Sallie Pearson[3], Dr Angelita Martini[1], Professor David Preen[1]

[1]Centre for Health Services Research, School of Population and Global Health, The University of Western Australia, Crawley, Australia, [2]Cardiovascular Research Group, School of Population and Global Health, The University of Western Australia, Crawley, Australia, [3]Medicines Policy Research Unit, Centre for Big Data Research in Health, University of New South Wales, Sydney, Australia

Aims: The field of pharmacoepidemiology research has grown significantly in recent decades in Australia and internationally. Despite recent investments in infrastructure and the development of policy frameworks to support research using routinely-collected data, there has been little matching investment in expanding Australia's human capacity to do this research. Available literature suggests a need to broaden the skills base of the existing research workforce and to form larger, interdisciplinary teams incorporating capabilities ranging from computer science, research translation to research management. However, these needs are not based on empirical evidence or prioritised based on stakeholder needs. Therefore, research is needed to understand the state of the current Australian pharmacoepidemiology workforce and to prioritise its capacity building needs. This is important now in light of Australia's growing infrastructure of routinely-collected datasets, including Pharmaceutical Benefits Scheme data. Therefore, we aim to: (1) enumerate the number of pharmacoepidemiology researchers available and estimate the number required in the Australian setting; (2) profile the current pharmacoepidemiology research workforce (e.g. skills, qualifications); and (3) explore views and perspectives of senior stakeholders and researchers on issues relevant to building capacity in the pharmacoepidemiology research workforce and research environment within the country. This paper presents our proposed study and research approach to a key target audience.

Methods: Interviews with senior stakeholders (face-to-face or Skype) and surveys of pharmacoepidemiology researchers (using SurveyMonkey) will be undertaken in Australia to identify issues pertinent to building capacity in the pharmacoepidemiology research workforce. Mixed-methods approach will be used to analyse responses.

Results and conclusion: This project addresses one of the aims of a major Australian Centre of Research Excellence: to build national workforce capacity and processes in pharmacoepidemiology research and policy translation. Findings from this study will allow the development of a National program to build workforce capacity in pharmacoepidemiology research.

348 Research on the availability and affordability of Anti-HIV drug in China

Jing Chen[1,2], Guoxu Wei[1,2], Lunwen Shi[1,2]

[1]Peking University School of Pharmaceutical Sciences, Beijing, China, [2]International Research Center of Medicinal Administration, Peking University, Beijing, China

Objective: This study focuses on the availability and affordability of anti-HIV drug in China based on both international and domestic researches related to accessibility framework construction and development. For the purpose of providing China with insights in future anti-HIV policymaking and novel methods for antiviral therapy after comparing with developed or other developing countries, such as BRICS and countries with high accessibility rates.

Methods: Literature analysis, descriptive statistics, and field research were used in this study. The accessibility was investigated through the data collection of anti AIDS drugs, through the search of UNAIDS, WHO, MSF, FDA and CDC local government official websites. The affordability was investigated through the cross-sectional and longitudinal analysis of the 1st line therapeutic regimen and yearly treatment costs of several most important anti-HIV drugs, combining with the consideration for statistical analysis of the funding sources for the free treatment of AIDS in China.

Results: Even though 22 drugs approved for listing include all six large classes of anti AIDS drugs, only 8 drugs (47%) could get free of charge, compared to that 100% of the listed drugs were freely available in Brazil and USA. China's financial funding for HIV special funds was growing, but in view of the situation that key drugs relied on imports (55%) and were not covered by free program, affordability was still heavier than other BRIC countries.

Conclusions: Availability for anti-HIV drug in China was very low, which made the country a difficult place to gain access to anti-HIV therapies. International cooperation modalities and the means by which developing countries use the flexibility of the TRIPS Agreement to improve accessibility is worth learning from. As well as, China could enhance the effect of price negotiations to reduce the treatment cost and improve the affordability of anti-HIV drug.

349 Pharmacist role in managing pharmacy unit related to Indonesian Standard of Minimum Services in public Hospital in Bandung

Mr Angga Kautsar[1]
[1]*Faculty Of Pharmacy, Padjadjaran University, Bandung, Indonesia*

Aim/Objective: the study aim is to explore pharmacist role in managing pharmacy unit based on indicators from Ministry of Health Indonesia no 129/2008 about Standard of Minimum Services in Hospital.
Methods: observational field and cross-sectional design method were used to obtain data based on four indicators by distributing questionnaire to outpatient for patients' satisfaction, collected and analyzed prescriptions that risk to patients, measured patient waiting time in pharmacy unit, and observed the compliant between prescribed medicine and hospital formulary. Data for hypothesis tests was analyzed Structural Equation Modelling (SEM) PLS and some data was analyzed using R-Studio for descriptive.
Results: the data obtained related to four indicators showed only one that is patient satisfaction on pharmaceutical services that fulfill the standard value (greater than or equal to 80%). However, from the path modelling can be seen that only one indicator that is prescriptions waiting time that has no positive and not significance with other indicators.
Conclusion: the path model taken from Indonesian standard of minimum services, but the result did not fit when it tested. This is because the waiting time indicator is not normal distribution and too long for the service.

350 Influence of government regulation and deregulation on the price of Anticancer drugs in China

Mingchun Yang[1], Wujie Zou[1], Xiaodong Guan[1], Lu Wen Shi[1,2]
[1]*Department of Pharmacy Administration and Clinical Pharmacy, School of Pharmaceutical Sciences, Peking University; Intern, China,* [2]*International Research Center of Medicinal Administration, Peking University, China*

Objective: Chinese government strengthened the regulation on the price of anticancer drugs in October 2012. However, in June 2015, the price control was deregulated. This study is to examine the influence of regulation and deregulation on the price of anticancer drugs in China.
Methods: Two interrupted time series design (ITS) with control groups were conducted to examine price changes of monthly Laspeyres index (Lp) of anticancer drugs. Price data of 115 anticancer drugs, based on the Anatomical Therapeutic Chemical (ATC) classification system, were collected from 699 hospitals. The first ITS, consisting of the intervention group1 (IG1) and the control group1 (CG1), was set from January 2011 to June 2015, and the change point was October 2012. The second ITS, consisting of the intervention group2 (IG2) and the control group2 (CG2), was set from June 2014 to June 2016, and the change point was June 2015.
Results: In general, Lp of 115 drugs demonstrated a downward trend. The regulation policy implementation resulted in a statistically significant decrease in IG1 (Level change: -0.0767, $P<0.001$), but no change was observed in CG1($P>0.1$). Although a declining trend was seen in both IG2 and CG2 groups, their tendency became flat (Trend change: IG1+0.000463, $P<0.001$; CG1+0.000409, $P<0.001$) in post-period. There was no statistically significant change between pre-period and post-period of the deregulation intervention in IG2 and CG2($P>0.1$).
Conclusion: The regulation policy reduced the price of anticancer drugs immediately, yet no long-term influence was seen, while the deregulation policy had no effect on the price of anticancer drugs in China.

351 Will the generic entry reduce the price of brand-name drugs? — A case study in China

Ye Tian[1], Wujie Zou[1], Luwen Shi[1,2], Xiaodong Guan[1,2]
[1]Department of Pharmacy Administration and Clinical Pharmacy, School of Pharmaceutical Sciences, Peking University; Intern, China, [2]International Research Center of Medicinal Administration, Peking University, China

Objective: Rapid growth of pharmaceutical costs is a major health care issue all over the world, of which the high price is an important part raising concern of stakeholders. Generic drugs seem to be a major price-reducing opportunity for their lower price and similar quality. The aim of this research was to analyze the impact of generic entry on the price and utilization of the antineoplastic in China.
Methods: An interrupted time-series design examined monthly sales of three antineoplastic drugs (Capecitabine, Decitabine, Imatinib) from 699 public hospitals during January 2011 – June 2016. The first generic entry time (Dec. 2013, Dec. 2012, Aug. 2013, respectively) was regarded as the intervention time point for the regression analysis to leave one-month transition. We estimate changes in price (DDDc) and monthly per capita volume (DDDs) following the generic entry.
Results: The downward trend of the brand-name drug prices decelerated remarkably after the generic Capecitabine and Decitabine entry (trend change for Capecitabine: +0.577 [P<0.001], trend change for Decitabine: +2.620 [p=0.035]). The entry of Imatinib generics resulted in significant decrease of brand-name drug price in trend and level (trend change: -1.755 [p=0.098], level change: -37.26606[p=0.063]). There was a decline in utilization of Capecitabine after the generic entry. (trend change: -2431.712 [p=0.098]) and significant decrease in the upward trend of brand-name Decitabine and Imatinib utilization could be observed (level change: +64.07 [p=0.082], trend change: -8.008 [p<0.001]; level change: +8245.79 [p=0.006], trend change: -710.1 [p<0.001] respectively).
Conclusion: This study showed the generic competition paradox may occur in Chinese antineoplastic markets, and the generic entry could reduce the utilization of brand-name drugs.

352 A study on approval lag of innovative new drug in China

Jing Chen[1], Luwen Shi[2]
[1]Department of Pharmacy Administration and Clinical Pharmacy, School of Pharmaceutical Sciences, Peking University, Beijing, China, [2]Department of Pharmacy Administration and Clinical Pharmacy, School of Pharmaceutical Sciences, Peking University, Beijing, China

Objectives: This study investigates the approval lag of innovative new drug and examine the factors influencing drug innovation lag in China.
Method: This is a retrospective study covering a total of 339 new chemical/biological entities that were approved by the US Food and Drug Administration (FDA) from 2004 to 2015. This study analyzes the lag of new drugs in China and makes a comparison with major countries like USA, Japan and EU. The data were collected from six databases including the official websites of the US FDA, EMA, PMDA, CFDA, Pharmprojects and YAOZH. Generalized linear Models were adopted to estimate factors associated with drug lag.
Results: Of the 339 NME approvals in the United States, 86(25%) were approved in China, 268(80%) were approved in EU, 184(54%) were approved in Japan. Analysis by therapeutic category, the largest number of approved drugs in China are antineoplastic drugs and anti-infective agents. The average lag was 51months in China and exceeded corresponding figures of USA (10.2months), EU (10.5months), and Japan (38.2months). We found the country of origin, therapeutic category, chemical/biological type are significant impacts of new drug lag in China.
Conclusion: These results indicate that China continues to lag behind the USA, Japan, and Europe in the new drug introductions. We suggest Chinese government to make the drug review and approval process more transparent, predictable and efficient, and speed the approval of new drugs, to ensure that patients benefit from newly approved drug as earlier as possible.