OBJECTIVES: To develop best practices, tools, capacity and capability for an effective formulary management system for five public health care institutions in Singapore. A web-based survey was conducted among formulary committee members of the participating institutions as part of gap analysis. A cross-institution task force comprising decision makers, clinicians, pharmacists and health technology assessment (HTA) researchers from participating institutions was formed to recommend best practices for formulary submission, evidence review and synthesis, pharmacoeconomic evaluation and criteria for decision making. Endorsement from participating institutions’ stakeholders was obtained before the implementation of this programme. RESULTS: The gap analysis highlighted three key areas: 1) methodologies for evidence review and synthesis and pharmacoeconomic evaluation; 2) criteria for formulary decision making; and 3) capacity and capability building especially in pharmacoeconomics. A set of tools that facilitate evidence review and synthesis including guidelines for pharmacoeconomic evaluation was published literately and translated into international guidelines. Clinical need, safety, efficacy, cost-effectiveness, budget impact and opinion from subject matter experts were deemed as important decision-making criteria. A decision-making form incorporating these criteria was created to facilitate the consistency and transparency of the decision making process. Workshops focused on HTA were conducted to equip pharmacists supporting formulary management for participating institutions the knowledge and skills to appraise clinical and economic evidence. In addition, a team comprising personnel trained in pharmacoeconomics was set up to provide support to institutions pharmacists on the application of HTA via joint review on selected new drug applications. CONCLUSIONS: Support from participating institutions formulary committees and senior management are keys for the successful implementation of this programme. Moving forward, the challenge is to integrate the proposed changes into current practice.

HEALTH CARE USE & POLICY STUDIES - Prescribing Behavior & Treatment Guidelines

PHP104 HYPERTENSION CONTROL AND DOCTORS' KNOWLEDGE, ATTITUDE AND PRACTICES ON MALAYSIAN CLINICAL PRACTICE GUIDELINES ON MANAGEMENT OF HYPERTENSION (CPG 2008) AT A TERTIARY HOSPITAL

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OBJECTIVES: To evaluate doctors' knowledge, attitude and practices on Malaysian CPG 2008 along with factors predicting guidelines adherence and hypertension control. METHODS: This was a co-relational study conducted at Hospital Pulau Pinang, Malaysia. A total of 26 doctors were enrolled. Doctors’ knowledge and attitude on CPG (2008) were evaluated through a valid and reliable questionnaire. In order to evaluate doctors’ actual prescribing practices, prescriptions written by 26 enrolled doctors to 650 established hypertensive outpatients (25 prescriptions per doctor) were noted on visit one. The noted prescriptions were classified either as compliant or noncompliant to CPG (2008). Five hundred and twenty enrolled patients (20 patients per doctor) were followed for one more visit. Blood pressure noted on visit one was used to predict the prescription written on visit one and 16 was used for data analysis. RESULTS: Nineteen doctors (73.07%) had adequate knowledge of CPG (2008). Doctors were highly positive towards CPG (2008) with mean attitude score of 23.15 ± 1.34 points on a 30 point scale. Statistically significant correlation (r = 0.635, p-value = 0.008) was observed between doctors’ knowledge and practice scores. The majority (67.1%) patients received guidelines compliant therapy. In multivariate analysis hypertension clinic (OR = 0.398, p-value = 0.008) was the strong predictor of poor adherence with guidelines. On visit Two 51% patients were at goal BP. In multivariate analysis, Angiotensin converting enzyme inhibitors (OR = 2.100, p-value = 0.001) and guidelines adherence (OR = 1.745, p-value = 0.022) were the strong predictors of hypertension control, while renal disease (OR = 0.283, p-value = 0.001), diabetes mellitus (OR = 0.598, p-value = 0.025) and diabetic clinic (OR = 0.384, p-value = 0.024) were the strong predictors of poor control of hypertension. CONCLUSIONS: An overall fair level of doctors’ knowledge, adherence with guidelines and control of hypertension was observed. The gaps between what guidelines recommended and clinical practice was especially seen in the pharmacotherapy of uncomplicated hypertension and hypertension with diabetes, renal and renal failure.

PHP105 GUIDELINE IMPLEMENTATION IN LONG TERM ASTHMA MANAGEMENT: AN AUDIT USING A MEDICATION ASSESSMENT TOOL IN SELAYANG HOSPITAL

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OBJECTIVES: To assess the current practice for the management of long term asthma in Malaysia and the prescribing pattern among asthmatic patients by using medication assessment tool (MAT). The MAT was developed according to guideline used by the physicians in Selayang Hospital. METHODS: The development and validation of asthma MAT had undergone a process that involved selection of guideline on long term asthma management in adults. The recommendations were focused on pharmacologic management. Updated version of GINA guidelines was used as GINA guidelines is known to be used in the management of long term asthmatic patients in Selayang Hospital. The MAT tool was then discussed and validated together with practising pharmacist. Pilot sampling was done and data was then collected from patient medical record in Selayang Hospital. These data were then assessed using SPSS 16 and presented as mean ± standard deviation. RESULTS: The result showed that level of adherence towards guidelines used was 86.3% for 73 asthmatic patients that were selected. If magnification was made, however, the reduction of current medication dose had not been made after the symptoms of asthma were only 39% had their dose according to the guideline. CONCLUSIONS: The adherence of guidelines seem to be high, however, improvement needs to be made in reducing the dose once patients' asthmatic symptoms have reduced.

PHP106 DIFFUSION OF NON-GUIDELINE EXPERIENCE-BASED CHEMOTHERAPY CARE FOR NON-HODGKIN'S LYMPHOMA PATIENTS: A COMPARISON ANALYSIS AMONG DIFFERENT REGIONS IN THE USA

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Clinical guidelines recommend patients with Diffuse Large B-Cell Lymphoma (DLBCL) to receive anthracycline-based chemotherapy. During the 1990s, however, about one-third of elderly DLBCL patients did not receive chemotherapy, potentially due to intolerance of toxicities associated with ABC. With the addition of rituximab in the late 1990s, it appears that physicians choose to use non-guideline rituximab plus non-ABC chemotherapy for patients with low toxicity intolerance. OBJECTIVES: This study assesses the diffusion of the use of non-guideline chemotherapy treatment for elderly DLBCL patients and examines the regional variation in diffusion. METHODS: A retrospective cohort consisting of 5839 Medicare beneficiaries diagnosed in 2000–2006 with primary DLBCL at age 66 or older without chemotherapy with any chemotherapy was selected from the 2007 Surveillance, Epidemiology and End Results (SEER) Medicare-linked database. Patients were excluded if physician information was not available (N = 55). Patient on chemotherapy was categorized using Medicare claims within five months of diagnosis. Physicians (N = 3820) were described if they prescribed any chemotherapy during the initial treatment period. Descriptive analyses were used to characterize variation in chemotherapy treatment across the SEER registry regions. RESULTS: Physicians prescribed ABC chemotherapy to on average 81.2% of received chemotherapy patients. A total of 19.8% of physicians, however, prescribed rituximab plus non-ABC chemotherapy to at least one patient. The percentage of physicians whom used rituximab plus non-ABC chemotherapy increased from 1.4% in 2000 to 16.1% in 2006. Louisanna, Connecticut, and Seattle were the top three SEER regions where over 23% of the physicians prescribed this alternative chemotherapy. In Hawaii, New Mexico, and Iowa SEER regions less that 14% of physician used this alternative chemotherapy. CONCLUSIONS: The percentage of physicians having adopted rituximab plus non-ABC chemotherapy as the alternative treatment increased over the years. Physicians’ adoption of non-guideline treatment varies across regions.

PHP107 OBSERVATIONS OF HEPATOCellular CARCINOMA (HCC) MANAGEMENT PATTERNS FROM THE GLOBAL HCC BRIDGE STUDY: AN INTERIM ANALYSIS OF HCC BURDEN OF ILLNESS IN THE ASIA-PACIFIC (AP) COHORT

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The global HCC BRIDGE study is the first global, large-scale, observational study to document real-world treatment pattern and outcomes of HCC patients from diagnosis to death. METHODS: This longitudinal cohort study includes HCC patients newly diagnosed between January 2005 and June 2011 and treated at major medical centers, with data collected retrospectively and prospectively as recorded in patient charts. RESULTS: In the first interim analysis (July 2011), 8909 patients (mean age, 54 years; 83% male) were enrolled in AP (China, n = 6295; Taiwan, n = 1183; Korea, n = 1136; Japan, n = 295). The predominant risk factor was HBV in China (80%), Taiwan (67%), and Korea (77%), and HCV in Japan (69%). The predominant BCLC stage at diagnosis was stage C in China (56%) and Korea (51%) and stage A in Taiwan (55%) and Japan (47%). Variations were noted between China, Taiwan, Korea, and Japan in first treated recordation with resection/transplant (31%, 51%, 23%, 14%), TACE (33%, 27%, 25%, 24%), other locoregional therapy (9%, 18%, 8%, 52%), and systemic therapy (2%, 3%, 11%, 13%). There also were variations in treatment ever used with resection/transplant (34%, 53%, 29%, 16%), TACE (61%, 37%, 65%, 28%), other locoregional therapy (17%, 30%, 17%, 64%), and systemic therapy (5%, 8%, 30%, 19%). Recorded treatment by line of therapy, BCLC and mUICC stage, and country will be presented from the second interim analysis, which will include ~17,000 patients. Actual practice and expected practice according to guidelines will be evaluated, including how access issues may affect treatment availability. CONCLUSIONS: The global HCC BRIDGE study, which is the first European study of this kind (in approximately 19,000 patients), provides valuable insights into global HCC disease characteristics and patient management. Although AP has the highest HCC burden, practice approaches differ across the region.

PHP108 PATTERN OF ANTIMICROBIAL USAGE IN MALAYSIAN HAJJ PILGRIM

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OBJECTIVES: During hajj season, more than 2 million hajj pilgrims would be occupying the holy land Makkah with area of 164,000 km<sup>2</sup>. On the observation many of
them had upper respiratory infection due to congested and dusty environment. On previous observation may of hajj pilgrims were given antibiotic for their URIs.

**METHODS:** This cross sectional study was conducted from December 2007 to January 2008. Validated self administered questionnaire forms were distributed to about 3,000 Malaysian Hajj Pilgrims in Makkah of Saudi Arabia. The severity of URIs was based on the patient's perception and the number of symptoms.

**RESULTS:** Majority, 87.1% of 2,194 pilgrims reported had URIs, 12.4%, (41.6%) and (46.0%) of pilgrims were categorised severe, moderate, and mild respectively. Antibiotics were prescribed to 58.8% pilgrims, the pattern of antibiotic used was associated with severity (p = 0.001) and the number of symptoms (p = 0.001) and 55.1% of them had fever. Many of them (68.8%) took one course of antibiotic, while 28.5% and 8.0% received two and three courses. The mean duration of mechanical ventilation was 4.6 days and 2.2 days among patients with propofol. This longer duration of length of stays was possibly related to the usage of midazolam and the prescribable habits of physicians.

**CONCLUSIONS:** We found the physician preference by using physical restriction as first line and sedatives as second line did not benefit the critically ill patients. We will implement a sedation guideline to tailor the needs of our facility for optimal the patient care.

**PHP111**

**DEVELOPMENT OF NATIONAL MEDICINE BRAND SUBSTITUTION GUIDELINES AND PILOT ASSESSMENT OF ITS ADOPTABILITY AMONG COMMUNITY PHARMACIST AND GENERAL PRACTITIONERS IN THE STATE OF PENANG, MALAYSIA**

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**OBJECTIVE:** To develop national medicine brand substitution guidelines and assess their adoptability among community pharmacists and general practitioners in Malaysia. **METHODS:** A cross sectional postal survey was conducted with a sample of 100 community pharmacists and 100 general practitioners selected systematically in the state of Penang, Malaysia. A pre validated questionnaire was used for data collection. Frequencies and percentages were used to elaborate the data. **RESULTS:** From a total of 200 questionnaires mailed, the response rate was 16% (n=16) for general practitioners and 36% (n=36) for community pharmacist. Majority of the respondents (n=53, 85.4%) disagreed that generic medicines lead to more side effect as compared to innovator brands. However, 59.6% (n=37) reported that Innovator brands are more effective than generic medicines. Moreover, (n=33, 52.3%) agreed that generics medicine are not bioequivalent to the innovator brands. **CONCLUSION:** Most of respondents (n=40, 64.5%) stated that generic medicines should be available in same dosage form and strength as innovator brand medicines. Almost all respondents (n=52, 83.8%) demanded that dispensed medicines should be labelled with the generic (NNN) name of the medicine with or without the brand name. When comparing with general pharmacists (n=13, 81.3%), community pharmacists (n=59, 91.7%) were in favor that a written national generic brand substitution guideline is needed in Malaysia. In addition, all the respondents strongly opposed to the statement that thorough counselling should be provided to the patients if their medicine is changed from innovator brand to generic in order to avoid confusion.

**PHP112**

**USAGE OF SELF-MONITORING OF BLOOD GLUCOSE (SMBG) BY DIABETES THERAPY TYPE IN LARGER CITIES IN CHINA**

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**OBJECTIVES:** SMBG is one of the core components of diabetes therapy. It supports a safe and effective drug therapy and provides additional feedback on how diet and lifestyle impact blood glucose levels. In 2011 a Chinese guideline on SMBG was published. SMBG, in contrast to most diabetes drugs, is not reimbursed. This study aims to assess the level of SMBG usage in patients on different diabetes therapies.

**METHODS:** A 1st half year 2011 data (10,418 cases) from the CDS PDS Diabetes survey were used for this explorative analysis. PDS Diabetes is a syndicated research with a fixed representative panel of endocrinologists and cardiologists from 13 large Chinese cities. Patient cases were documented in a standardized format. SMBG usage was analyzed by therapy-subgroups: oral diabetes therapy only (OAD 54%), basal suppressor therapy (BTO 14.5%), intensive insulin therapy (IIT 6%) and OFFS (2% - not reported). SMBG, in contrast to most diabetes drugs, is not reimbursed. This study aims to assess the level of SMBG usage in patients on different diabetes therapies.

**RESULTS:** In IIT patients differences in HbA1 were largest between testers and IIT test-frequencies remained clearly below the Chinese guideline recommended frequency. In OAD therapies differences in HbA1 were largest between testers and the patients with type 2 diabetes. A total of 5288 patients (50.8%) had a meter for home-testing. Shares of testers by therapies (OAD / BOD / CT / IIT) were 34%, 33.4%, 38.4% and 48% respectively.

**CONCLUSIONS:** High share of patients don’t have a meter to perform SMBG at home. For testers with BOD and IIT test-frequencies remained clearly below the Chinese guideline recommending 10, 10 and 21 test per week respectively. For OAD (SMBG is needed to support insulin dose adjustments) only 1% tested at the guideline-recommende frequency. In IIT patients differences in HbA1 were largest between testers and non-testers. Further research is needed to clarify if e. g. education or reimburse- ment could potentially resolve these shortfalls.

**PHP113**

**UTILIZATION OF FPG, HbA1C AND SELF-MONITORING OF BLOOD GLUCOSE (SMBG) IN COMMUNITY HEALTH CENTERS IN THE SHANGHAI AREA**

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**OBJECTIVE:** To evaluate the utilization of fasting plasma glucose (FPG), HbA1C and SMBG are conducted in community health centers. SMBG, in contrast to most diabetes drugs, is not reimbursed. This study aims to address the level of SMBG usage in patients on different diabetes therapies.

**METHODS:** A cross sectional postal survey was conducted with a sample of 100 community pharmacists and 100 general practitioners selected systematically in the state of Penang, Malaysia. A pre validated questionnaire was used for data collection. Frequencies and percentages were used to elaborate the data.

**RESULTS:** From a total of 200 questionnaires mailed, the response rate was 16% (n=16) for general practitioners and 36% (n=36) for community pharmacist. Majority of the respondents (n=53, 85.4%) disagreed that generic medicines lead to more side effect as compared to innovator brands. However, 59.6% (n=37) reported that Innovator brands are more effective than generic medicines. Moreover, (n=33, 52.3%) agreed that generics medicine are not bioequivalent to the innovator brands. Majority (n=40, 64.5%) stated that generic medicines should be available in same dosage form and strength as innovator brand medicines. Almost all respondents (n=52, 83.8%) demanded that dispensed medicines should be labelled with the generic (NNN) name of the medicine with or without the brand name. When comparing with general pharmacists (n=13, 81.3%), community pharmacists (n=59, 91.7%) were in favor that a written national generic brand substitution guideline is needed in Malaysia. In addition, all the respondents strongly opposed to the statement that thorough counselling should be provided to the patients if their medicine is changed from innovator brand to generic in order to avoid confusion.

**CONCLUSIONS:** Majority of general practitio- ners in Penang agreed to the utilization of the draft national medicine brand substitution guideline. This is a good indicator that the contents can actually be the foundation of an actual national medicine brand substitution guideline.