community-dwelling patients with diabetes aged between 20 and 85 in the 2006 and 2007 Medical Expenditure Panel Survey (MEPS) consolidated data files, a nationally representative survey linked to prescribed medicines file. The main outcome measure was the total expenditures including inpatient and ambulatory care, excluding pharmacy costs, in 2006 and 2007, respectively. The variances in the health-care costs between statin users and nonusers were estimated from the interaction terms between time trend and statin use, using a generalized linear model with a log link and gamma distribution, controlling for the difference in the two groups and time trend. The other covariates included were socioeconomic variables, insurance status, and comorbidity conditions. RESULTS: In 2006, the median total expenditures of the statin users and nonusers were $1787 ($IQR $533–$593) and $1117 ($IQR $215–$565), respectively. In the subsequent year, the median total expenditures of the statin users and nonusers were $1452 ($IQR $635–$1134) and $585 ($IQR $1144–$4451), respectively. No statistically significant difference in the total expenditures between the two groups was found (parametric estimate 0.37, 95% CI −0.05, 0.79, P-value 0.086). CONCLUSIONS: No evidence supporting the reduction in health-care resource utilization following statin use was found. While our finding shows that statin use did not lower subsequent health-care resource utilization, further research is needed to investigate the potential effect of the differences among the users and nonusers, and the potential effect of the differential slopes of the two groups on resource utilization overtime.


OBJECTIVES: To compare patients’ expenditure on utilization of high price new statin drugs. METHODS: This is a cross-sectional analysis. The hospital database of our study was the one from 2003 to 2006. We retrieved patients’ names and their costs. The expenditure for statin drugs per patient before and after a new statin was prescribed were compared. RESULTS: Before Fluvastatin 80 mg was included to the hospital formulary in 2003, the expenditure for statin drugs per patient was 22.59 USD or 273%. When other statins, named Fluvastatin 80 mg first prescribed was increased to be was 22.59 USD or 273%, with the market share only 0.4% of all antihyperlipidemic drugs prescribed in the hospital. Before Fluvastatin 80 mg was included to the hospital formulary in 2003, the expenditure for statin drugs per patient was 22.59 USD or 273%, with the market share only 0.4% of all antihyperlipidemic drugs prescribed in the hospital. When other statins were included to a hospital formulary, the expenditure for statin drugs per patient was increased to be 272% of the initial cost of Fluvastatin 80 mg.

RESULTS: The expenditure for statin drugs per patient before and after Fluvastatin 80 mg was included to the hospital fromulary in 2003 was increased to be 272% of the initial cost of Fluvastatin 80 mg.

ANTHI-TROMBOLYTIC AGENT USE AND PATTERNS OF HEALTH-CARE UTILIZATION IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION (AMI) USING KOREA NATIONAL HEALTH INSURANCE CLAIMS DATABASE

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OBJECTIVES: To estimate the health-care utilization patterns and costs related to ST-elevation acute myocardial infarction (STEMI) and understand the patterns of anti- thrombolytic use after stenting with a Korean population based design. METHODS: We extracted the insurance claims records of STEMI patients defined as diagnosed with AMI and admitted by emergency room from Korea National Health Insurance claims database. We examined the health-care service provided to stent naïve patients among STEMI patients defined as having no coronary-stents during one-year washout-period and having stents during two-year period-intake period (January 1, 2006–December 31, 2007). Annual claims records were aggregated for each patient to produce patient-specific information on total utilization, costs and anti-thrombolytic use. We examined the pattern of anti-thrombolytic use to types of the first stenting group: I as using drug-eluting stents (DES), group II as using bare-metal stents (BMS) and types of revascularization method (group A-DES, group B-BMS, group C-ballon, group D-CABG). RESULTS: There were 19,120 subjects identified as STEMI patients. Each STEMI patient had 8.7 outpatient visits, 1.1 admission per year. The total costs for treating STEMI in the nation was estimated as Korean won (KRW)106,666million. The per-capita insurance-covered costs were KRW3,721,390. Those increased until the age of 74 years and reduced after the age of 75 years. The annual number of claims in tertiary hospital was slightly fewer than secondary hospitals (13,303 vs. 13,730), but insurance-covered-costsclaim in tertiary hospital were higher than those in secondary hospitals by KRW1,493,051. The duration using of Cilostazol from the first stenting to revascularization in group I was 79.12 days, while Group C was 73.44 days. In the first stenting, use of Cilostazol was longer in group A (59.8 days) or IC (98.19 days) than group IIA (62.15 days) or group IIC (61.33 days). CONCLUSIONS: In Korea, the burden of illness for AMI is a significant issue. Cilostazol was used longer when DES were used at first stenting compared to BMS. Whether the longer usage of Cilostazol results in better outcome needs further research.

PHYSICIAN-LEVEL CLASS EFFECT ON 90-DAY BLOOD PRESSURE VALUES: A META-ANALYSIS OF MULTILEVEL OBSERVATIONAL STUDIES OF VALSARTAN ANTIHYPERTENSIVE EFFECTIVENESS

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OBJECTIVES: Blood pressure (BP) values in response to antihypertensive treatment are influenced by both physician- and patient-level factors. We quantified summary estimates of variability in BP values attributable to a physician-level class effect across six observational studies. METHODS: We evaluated 90-day BP data on 14,116 patients, in whom prior treatment failure was or was not tolerated, who received valsartan-based therapy for the treatment of hypertension. Data were collected during six consecutive prospective, observational, multi-center, pharmacist-led, outcomes studies conducted in Belgium between 2005 and 2009. Each study was designed to collect data from patients and their treating physicians. We applied a two-level hierarchical linear modeling method, using mixed-effects regression with residual maximum likelihood estimation. From these data, intraclass correlation coefficients were calculated to quantify the variability in 90-day systolic BP (SBP) and diastolic BP (DBP) values attributable to within-physician variability in each study. We then completed a random-effects meta-analysis of ICC point estimates and variance from each study, to account for within- and between-study differences, and derived ICC summary estimates and 95% confidence intervals (CI). RESULTS: Summary estimates of absolute reduction in 90-day SBP and DBP across studies were −18.17 mmHg (95% CI = −16.84 to −19.51 mmHg) and −9.73 mmHg (95% CI = −9.22 to −10.24 mmHg), respectively. ICCs for SBP ranged from 0.210 to 0.277, with a random-effects summary estimate of 0.238 (95% CI = 0.220 to 0.256; P < 0.0001; IC = 0.002; IC = ± 1%). ICCs for DBP ranged from 0.176 to 0.282, with a random-effects summary estimate of 0.253 (95% CI = 0.229 to 0.282; P < 0.0001; IC = 0.022; IC = ± 45.69%). CONCLUSIONS: Considering within- and between-study differences in ICC, the average proportion of variance in 90-day SBP and DBP values attributable to a physician-level class effect was between 22.0% and 25.6%, and 22.9% and 28.2%, respectively. Further research is warranted to identify specific and amenable physician-level factors that contribute to higher BP values in response to antihypertensive treatment.

ROLE OF COMMUNITY PHARMACISTS IN HEALTH-RELATED EDUCATION AND COUNSELLING/VIEWS FROM GENERAL PUBLIC IN THE STATE OF PENANG, MALAYSIA

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OBJECTIVES: To explore general public’s awareness and perceptions toward the role of community pharmacies in the provision of health related education and counsel-

CLINICAL OUTCOMES FROM PHARMACIST-MANAGED ANTICOAGULATION CLINICS (ACC) IN PRIMARY CARE SETTINGS IN SINGAPORE

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OBJECTIVES: Pharmacist-managed anticoagulation clinics (ACC) have been proven to improve outcomes in both hospital and local tertiary settings as part of a health-care team in caring for patients on warfarin therapy. However, currently, there is no published study on the effectiveness of pharmacist-managed ACC in the primary care settings in Singapore. Therefore, the primary objectives of this study were to determine the effectiveness of pharmacist-managed ACC in maintaining INR within the therapeutic range, and their associations with patient demographics. The secondary objective was to examine the incidence of warfarin-related adverse effects. METHODS: This was a retrospective, time-series study conducted in nine outpatient primary care clinics in Singapore from September to December 2009. All patients aged 221 years with at least three visits with the ACC, pharmacists within the first 12 months of physician referral were included in this study. Patient demographics and clinical outcomes, such as INR and incidence of warfarin-related adverse events, were collected at first visit to ACC and at every 4-month interval for a total of 12 months. RESULTS: A total of 269 patients were under the ACC between April 2008 to May 2009, and of which 82 (30%) met the inclusion criteria. INR was maintained at therapeutic range throughout the 12-month period with minimal fluctuations between each visit (P = 0.621). There was no association between INR and patient demographics except for intake of vitamins, supplements and herbal medications (P = 0.093) at the 12th month. Documented warfarin-related adverse events included gingival bleeds (3; 1%), leg cramps (5; 6%), and swells (5; 6%). CONCLUSIONS: Pharmacist-managed ACC in the primary care settings in Singapore were effective in maintaining INR within the therapeutic range. The service also minimized the frequency of adverse events commonly associated with warfarin therapy.
ling. METHODS: A cross-sectional study design using convenience sampling technique was used in this study. A validated self-administered questionnaire using 5 point Likert scale was distributed to 440 respondents in the State of Penang, Malaysia. The Statistical Package of Social Science (SPSS Inc., Chicago, IL) for Windows version 12.0 was used for all the statistical tests and a p-value of ≤0.05 was considered statistically significant. RESULTS: The result revealed that majority of the respondents (69.3%) understand the roles of community pharmacists in patients’ education and counselling. More than half of them (66.3%) are aware of the availability of medical counselling provided by pharmacists. Majority of the study has discussed about the perception of respondents (66.8%) that community pharmacists are well-trained to provide medical education and counselling. On the other hand, less than half of the respondents (46.6%) perceive that pharmacists are the best people to provide medical education and counselling to the public. About 50% of the respondents also had mentioned that the pharmacist will ask them about their medical conditions and allergies before recommending any medications. Respondents also found that: pharmacists are very approachable for giving medical education and counselling (56.4%); community pharmacists help them to explain the misconceptions that they had in health care (59.0%); they have changed for healthier lifestyles after being exposed to medical education and counselling by community pharmacists (58.2%). CONCLUSIONS: The present study also found that the respondents are generally well aware and satisfied toward the medical education and counselling provided by community pharmacists in the state of Penang, Malaysia.

MEDICAL MALPRACTICE AND LITIGATION: WHAT DOES THIS MEAN FOR THE COST-EFFECTIVENESS OF DIAGNOSING CHEST PAIN?

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OBJECTIVES: To determine the effect of including the costs and risks of medical negligence claims on the results of a cost-utility model of diagnostic strategies for patients with chest pain presenting at the Emergency Room. Coronary computed tomography (CT) has been proposed as an initial screening technique for patients at low risk of coronary artery disease, because it may allow earlier discharge and cost savings compared with stress-based tests such as exercise single-photon emitting computed tomography (SPECT) or exercise echocardiography (E x E).

METHODS: A decision-analytic model was designed to calculate the expected costs and health outcomes at 12 months for patients at low risk of coronary artery disease presenting at the Emergency Room with chest pain. Published data was used to predict the accuracy of the diagnostic tests. Costs were calculated from the perspective of the Australian health system, and a rate (30%) and cost of litigation ($160,000) was included for false negative diagnoses that incurred an event within the time frame. RESULTS: E x E was the least costly strategy in the base case analysis. The results are sensitive to changes in the cost and likelihood of litigation, because these costs are high relative to the other costs in the model. At a 30% claim rate, if the expected payout for litigation is <$150,000, CT is the most cost-effective option, with lower costs and higher QALYs. The ICERs are high because the differences in QALYs are small. In contrast, at the expected cost of litigation in the United States ($1,000,000), the strategy with lowest event rate (SPECT) is the least costly strategy. CONCLUSIONS: Litigation costs for medical negligence can change the outcomes of cost-utility analyses. We consider that these should be assessed and included when an analysis is undertaken from the societal perspective.

A SURVEY EXPLORING KNOWLEDGE AND PERCEPTIONS OF GENERAL PRACTITIONERS TOWARD THE USE OF GENERIC MEDICINES IN THE NORTHERN STATE OF MALAYSIA

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OBJECTIVES: To evaluate knowledge and perceptions of Malaysian general medical practitioners (GPs) on issues surrounding the safety, efficacy, and quality of generic medicines. METHODS: A postal cross-sectional survey involving registered GPs (n = 325) in Penang, Malaysia was undertaken. The questionnaire consisted 23-item and validated accordingly before it been sent to the GPs. At the end of the survey period, a total of 87 GPs responded to the survey (Response rate of 26.8%). RESULTS: The majority of the respondents (85.1%) claimed that they actively prescribed generic medicines in their practice. On the other hand, only 4.6% of the respondents correctly identified the Malaysian’s National Pharmaceutical Control Bureau’s bioequivalence standard for generic products. There were misconceptions among the respondents about the concepts of “bioequivalence,” “efficacy,” “safety,” and “manufacturing standards” of generic medicines. GPs in this survey believed that a standard guideline on brand substitution process, collaboration with pharmacists, patient education and information on safety and efficacy of generic medicines were necessary to ensure quality. Furthermore, advertisements and product brochures cited by pharmaceutical companies, patient’s socio-economic factors as well as credibility of the pharmacists, patient education and counselling provided by community pharmacists are major factors influencing the perceptions of the GPs. CONCLUSIONS: The results showed that Malaysia’s general medical practitioners are aware of the concepts of “bioequivalence,” “efficacy,” “safety,” and “manufacturing standards” of generic medicines. However, they still have concerns regarding the reliability and quality of such products. GPs need to be educated and reassured about generic products approval system in Malaysia concerning bioequivalence, quality, and safety.

ASSOCIATION BETWEEN HOSPITAL PROCESS PERFORMANCE AND OUTCOME OF PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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OBJECTIVES: Much literature has proved that process of care in acute myocardial infarction (AMI) patients has significant effect on mortality and prognosis. However, little research has been done about the association between hospital process of care and patients’ outcome. The objective of this study was to investigate the association between hospitals process care and patients’ outcome while controlling for potential confounders, including coexisting conditions, severity of illness and process performance of clinical and non-clinical hospitals in Taiwan. METHODS: The claimed data came from the National Health Insurance Research Database for inpatient treatment for AMI in 2007 to 2008. Totally 109 hospitals and 899 patients were enrolled in this study. Main outcome measures were 6 ACC/AHA class I guideline-recommended treatments and the correlation between hospitals’ individual care processes performance and 30-day mortality rate of patients. We tested the association between the process and outcome for each hospital by using a hierarchical linear model (HLM) for each process measure. RESULTS: Overall, the average eligible rate among six ACC/AHA guideline-recommended treatments was 42.38%. The eligible rate of reperfusion was significantly different between public, nonprofit and private hospitals (P = 0.0004). Factors highly correlated with 30-day mortality rate of patients included using aspirin (OR = 0.97, P < 0.0001), using lipid-lowering agents (OR = 0.99, P = 0.005) and having reperfu- sion (OR = 0.99, P = 0.05) at admission. CONCLUSIONS: Significant associations between hospital care process and patients’ outcomes were found. The results supported the use of guideline-based performance measures which can help improving hospital quality.

ST.VINCENT’S PRIVATE HOSPITAL VENOUS THROMBOEMBOLISM PREVENTION PROJECT: ANALYSIS OF REDUCED COST AND IMPROVED CLINICAL OUTCOMES

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OBJECTIVES: Prophylaxis with a low molecular weight heparin (LMWH) such as enoxaparin or a low-dose unfractionated heparin (LDUH) in high risk medical and surgical patients is consistent with the recommendations made by the American College of Chest Physicians Eighth Conference on Antithrombotic and Thrombolytic Therapy. While these guidelines present strong evidence to support the use of prophylaxis to prevent venous thromboembolism (VTE), they are not always adhered to in clinical practice. The St. Vincent’s Private Hospital VTE Prevention Project aimed to improve compliance with best practice prophylaxis in hospitalized patients. An audit of the rates of prophylaxis was conducted over a 12-month period as part of this project. The aim of this analysis was to determine whether the measures implemented as a result of the St. Vincent’s project translated into cost savings and improved clinical outcomes. METHODS: A decision-analytic model was constructed using audit data from 21,942 medical and surgical patients admitted to St. Vincent’s who received either enoxaparin 40 mg daily, unfractionated heparin (UFH) three times daily (TID) or no prophylaxis. The rate of prophylaxis at baseline was compared with the rate at the end of the audit for each prophylaxis regimen. Clinical trial data was used to estimate the incidence of VTE (defined as deep vein thrombosis [DVT] and pulmonary embolism [PE]), and major bleeding. RESULTS: As a result of the measures introduced to improve adherence to best practice in VTE prophylaxis, we estimated an 11% fewer events and a 44% savings compared with enoxaparin or a low-dose unfractionated heparin (LDUH) in high risk medical and surgical patients. Overall, the average eligible rate among six ACC/AHA guideline-recommended treatments was 42.38%. The eligible rate of reperfusion was significantly different between public, nonprofit and private hospitals (P = 0.0004). Factors highly correlated with 30-day mortality rate of patients included using aspirin (OR = 0.97, P < 0.0001), using lipid-lowering agents (OR = 0.99, P = 0.005) and having reperfu- sion (OR = 0.99, P = 0.05) at admission. CONCLUSIONS: Significant associations between hospital care process and patients’ outcomes were found. The results supported the use of guideline-based performance measures which can help improving hospital quality.

THE EVALUATION OF CARE PATHWAYS AS A COMPLEX INTERVENTION: APPLICATION OF A METHODOLOGICAL FRAMEWORK

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OBJECTIVES: To assess the extent to which the development steps of the evaluation of care pathways (CP) can be represented in the framework for the design and evaluation of complex interventions. METHODS: The framework is composed by five phases: theoretical (pre-clinical), identification of components of the intervention (phase I), definition of trial and intervention design (phase II), main trial execution (phase III), and promoting effective implementation (phase IV). RESULTS: The framework was applied to the evaluation of CP for strokes. Pre-clinical phase was aimed in synthesising the evidences: three reviews were selected and showed that CP are theoretically applicable in stroke care and that mortality should be the main outcome to be assessed. Phase I was done through a descriptive pilot. A total of 253 consecutive patients admitted for strokes in 29 hospitals were analyzed. Overall in-hospital stroke mortality was 19.76%. Stroke teams (OR = 0.25; P = 0.025), antithrombotic therapy (OR = 0.26; P = 0.009) and complications (OR = 6.40; P < 0.001) were independent predictors of in-hospital mortality. Therefore these variables were selected as...