products where more brands were available. The larger the brand premium, then the lower the market share of the premium brand. More multiple switchers were aged under 50 years (31%) than 70–79 years (20%). **CONCLUSIONS:** Multiple switches between SSRI brands occur in around one in four Australian Concessional patients and this has the potential to confuse some patients if not adequately monitored by prescribers and pharmacists. Switching rates increased where more brands are available on the PBS as well as in younger patients.

PMH21

PHYSICIAN PRESCRIBING PATTERNS IN INNOVATIVE ANTIDEPRESSANTS IN THE UNITED STATES: THE CASE OF PATIENTS WITH MAJOR DEPRESSIVE DISORDER

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OBJECTIVES: The use of innovative antidepressants has been growing as many were introduced since 1990s. However, physician prescribing patterns in innovative antidepressants is unclear. This study disentangled the impacts of sociological factors, such as physician, patient, and health-care system factors, on the patterns and dynamics of adopting innovative antidepressants for major depressive disorder (MDD) in the US. **METHODS:** A retrospective 15-year cross-sectional study was conducted using the 1993–2007 National Ambulatory Medical Care Survey representing 125,605,444 MDD patients. The Heckman two-step model was used to capture physician's two-stage prescribing decision and to correct sample selection bias. First, logistic regression was applied to examine the impact of sociological factors on whether an antidepressant is prescribed. Second, multinomial logistic regression was used to capture physician choices of innovative versus older antidepressants. **RESULTS:** A total of 71.22% MDD patients were prescribed an antidepressant. Physicians who were primary care physicians, non-owner of health-care settings, practiced in Western and non-metropolitan areas, and had not seen patients before were more likely to prescribe innovative antidepressants (all $P < 0.001$.) Patients who were younger, non-Hispanic, belong to HMOs, and took patient education were more likely to receive innovative antidepressants (all $P < 0.001$.) Trend analyses revealed that physicians who were owners of non-solo practice, practiced in Midwestern, Northeastern and metropolitan areas were decreasing likelihood of prescribing innovative antidepressants over time. Patients who were non-white, non-black and non-Hispanic, and enrolled in Medicaid had increasing likelihood of receiving innovative antidepressants over time. **CONCLUSIONS:** The patterns of physician prescribing innovative antidepressants for MDD patients in the United States varied with sociological factors. Patient characteristics, physicians characteristics, and health-care system factors had impacts on physician's decision on choosing innovative antidepressants. Prescribing patterns also varied over time.

PMH22

HEALTH SCIENCE STUDENTS ATTITUDES TOWARD RESEARCH AND IT'S IMPLICATIONS TO TEACHING

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OBJECTIVES: To assess the attitudes toward research of health science students and discuss its implications to teaching. Attitudes about research are important because they may influence the quality of research. In particular, attitudes and beliefs about research can affect the extent to which they will develop useful critical thinking skills. Health science students usually tend to view research methods courses negatively. However, an understanding of these attitudes is necessary to help instructors facilitate the learning of research methodology, by enabling them to create more positive attitudes toward such courses. **METHODS:** The attitudes toward research of students of health sciences (n = 79), Manipal University, were measured using the instrument: the Attitudes toward research scale –ATR (Papanasiou, 2005). The sample of the study consisted of students enrolled for a course on "Biostatistics, Research Methodology and Epidemiology." The ATR consist of 32 items constituting five subscales: research usefulness, research anxiety, positive attitudes, relevance to life, difficulty of research. Data was summarized by computing descriptive statistics. **RESULTS:** Students of health sciences scored more than 70% of the maximum score on the subscales -research usefulness, positive attitudes and relevance to life. They scored less than 50% of the maximum score on subscales -research anxiety and difficulty of research. Students expressed that estimating sample size, data analysis and interpretation are the most difficult aspects in research. **CONCLUSIONS:** To reduce the research anxiety and feeling of difficulty, topics relating to statistics are to be taught in a simpler way. They should be provided practical experience through project work. Usefulness of the topics is to be emphasised through actual data analysis and interpretation relating to their field.

MUSCULAR-SKELETAL DISORDERS – Clinical Outcomes Studies

PMS1

THE LONG-TERM UTILIZATION AND SAFETY OF BIOLOGICAL AGENTS IN TREATING RHEUMATOID ARTHRITIS PATIENTS—A POPULATION-BASED CASE STUDY IN SOUTHERN TAIWAN

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OBJECTIVES: This case study aims to evaluate the long-term utilization and safety of two biological agents- etanercept and adalimumab in treating Taiwanese rheuma-toid arthritis (RA) patients. **METHODS:** This cohort study used a population-based claim-data from the Kaopin Division of Taiwanese National Health Insurance during March 2006 to June 2009. Adult RA outpatients were identified by diagnosis code, and followed from the first prescription date (index date) of biological agents up to two months after discontinuation (prescription stop for more than 30 days) or the end of study. Prescription continuation rate between two drugs was evaluated using Kaplane-Meier survival curves and compared by the log-rank test. The frequencies of infectious events for new users of biological agents were also collected and the odds ratios of infectious events comparing etanercept against adalimumab were evaluated by logistic regression. **RESULTS:** Of all, 190 new users (mean age 53.43 ± 11.61 years; 83.68% female) were assessed. Most patients (70.53%) were prescribed biological agents in medical centers and 63.16% of them used etanercept. Total cumulative exposure time is 184.32 patient-years (145.86 patient-years in etanercept group, 38.46 patient-years in adalimumab group). Overall continuation rate for biological agents is 78.06% after 1 year, 55.04% after 2 years. The median continuation time is 836 days (95% CI 541, 972). Twenty-nine infectious events were detected; the most frequent events are pneumonia (seven events) and tuberculosis (six events). Patients who treated by etanercept had more infectious events than patients treated with adalimumab (OR: 5.99; 95% CI 1.55, 40.00). **CONCLUSIONS:** This study demonstrated that only half RA patients sustained their original biological therapy for more than 2 years. Furthermore, RA patients who treatd with etanercept acquired higher risk of infectious events. However, it is still necessary to further find out reasons for discontinuation and to explore the causality between biological agents and infectious events.

PMS2

GASTROINTESTINAL AND CARDIOVASCULAR RISK OF NONSELECTIVE NSAIDS AND COX-2 INHIBITORS IN ELDERLY PATIENTS WITH KNEE OSTEOARTHRITIS

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OBJECTIVES: To evaluate the risk for gastrointestinal (GI) events and cardiovascular(CV) events in patients >60 years with knee osteoarthritis using tNSAIDs or coxibs users. **METHODS:** A hospital-based retrospective cohort study was applied. Data on prescription drug (NSAIDs, celecoxib, etoricoxib) was obtained from June 2004 to June 2007 were included if they were aged >60 years. Patients with a history of gastrointestinal disease or heart disease were excluded. **RESULTS:** A total 12,591 prescriptions from 1030 patients, an average of four prescriptions/patient/year, were screened—3982 (31.6%) prescriptions were for NSAIDs, 4426 (35.2%) were for celecoxib, and 4183 (33.2%) were for etoricoxib. The most common traditional NSAID prescribed was meloxicam (24%). The mean age of cohort was 69.6 years, with the majority being female (74%). Comparing celecoxib with NSAID use in logistic regression analysis, patients who received celecoxib were significantly less likely to suffer GI events than those who received NSAIDs; OR = 0.36 (95% CI 0.21–0.63, $P = 0.00$). Similarly, etoricoxib was less likely to cause GI events than NSAIDs; OR = 0.52 (95% CI 0.28–0.98, $P = 0.04$). Comparing to patients aged under 60 years, patients aged >70 years had a significantly higher chance of developing GI events, OR = 1.79 (95% CI 1.13–2.4) for patients aged 70–80 years and 3.36 (95% CI 1.78–5.81) for those aged >80 years. Drug exposure time, significantly increased the GI risks. For CV event, there were only three significantly associated with CV events-female (OR = 0.29, 95% CI 0.16–0.59, $P = 0.00$), age > 80 years (OR = 2.98, 95% CI 1.57–4.23, $P = 0.00$), and drug exposure time (OR = 1.05, 95% CI 1.02–1.54, $P = 0.00$). **CONCLUSIONS:** Incidence of GI and CV events was lower for coxibs than for NSAIDs and celecoxib had a lower incidence than etoricoxib. Patients with advanced age and higher drug exposure time had a significantly.

PMS3

THE RISK OF REFRACTURE ASSOCIATED WITH THE COMPLIANCE AND THE PERSISTENCE WITH BISPHOSPHONATE THERAPY IN TAIWAN

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OBJECTIVES: To elucidate the relationship of the risk of refractures to compliance and persistence with bisphosphonate therapy in Taiwan. **METHODS:** We conducted a retrospective cohort study based on claims database of Taiwan's National Health Insurance (NHI) between 2003–2006. The study subjects included all new users of bisphosphonates. Compliance was estimated using a medication possession ratio (MPR), calculated as the total days of supply divided by the number of days between the first and last dispensing plus the days of supply of the last dispensing. Persistence with bisphosphonate therapy was defined as continuous use, allowing for a refill gap of 30 days. **RESULTS:** The refracture rates of the osteoporosis patients increased with time. The refracture rate was 5.15%, 7.36%, and 8.49% at the first, second, and third years, respectively. The refracture rate of patients with over 80% compliance was significantly lower than those with a compliance below 80% ($P < 0.05$). The study found that nearly half of the patients were noncompliant with therapy (MPR < 80%) at as early as 3 months, and only around 30% of the patients were adherent at 1 year. The results also showed that the risk of refracture increased for patients with MPR < 80%, non-persistence, older patients and patients with comorbidities such as rheumatoid arthritis, diabetes mellitus or dementia. Patients with concomitant statin medication tended to have significantly lower refracture risks than those without. **CONCLUSIONS:** From the study, the compliance and persistence of Taiwanese