PHM4

COST-EFFECTIVENESS OF TRANSFUSING BLOOD PLATELETS PREPARED WITH PATHOGEN INACTIVATION TREATMENT IN CHINA

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OBJECTIVE: Viral transmission of current (e.g., HIV) infectious blood-borne pathogens via platelet transfusion is high in China, and emerging pathogens (e.g., SARS) continue to threaten the blood supply despite recent advances in blood-banking procedures and security. The INTERCEPT Blood System (IBS) for platelets has been developed to further reduce pathogen transmission risks during platelet transfusions. The objective of this study was to assess the cost-effectiveness of using random-donor platelets (RDP) processed with IBS in China. **METHODS:** A literature-based decision analysis model was used to assess the cost-effectiveness of the IBS in four patient populations that account for most of the platelet usage in China: 1) a ten-year old male with acute lymphocytic leukaemia (ALL); 2) a 50-year old male with non-Hodgkin's lymphoma (NHL); 3) a 60-year old male undergoing heart bypass surgery (CABG); and 4) a 70-year old female undergoing a hip arthroplasty. Pathogen exposure included HIV, HCV, HBV and bacterial contamination. The model compared projected quality-adjusted life-year saved (QALY) and costs for patients receiving untreated vs. treated platelets. **RESULTS:** The incremental cost per QALY gained by using RDP + IBS vs. RDP ranged in the most conservative scenario from Yuan321,000–Yuan4,665,000. Sensitivity analysis including transmission rates reported from epidemic regions improved the cost-effectiveness dramatically ranging from Yuan38,000–Yuan565,000. The model was most sensitive to the rate of HIV transmission and the mortality from bacterial infection. **CONCLUSION:** IBS for platelets would be a cost-effective measure to improve blood safety in China. Given the relatively high risk of HIV and other viral agents in China as compared to developed countries, and the recent history of emerging and migrating viruses, pathogen inactivation with IBS may be considered as a desirable strategy to significantly improve the safety of platelet transfusions.

PHM5

RECOMBINANT HUMAN FACTOR VII USE: AN EVALUATION OF PATIENT CHARACTERISTICS AND OUTCOMES FROM AN ELECTRONIC DATABASE OF ACADEMIC HEALTH CENTERS

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OBJECTIVES: To describe patient characteristics and selected outcomes related to the inpatient use of recombinant human factor VII (RHF7) in US academic health centers (AHC). **METHODS:** All discharges from the fourth quarter 2001 to third quarter 2004 were captured from AHCs participating in the University HealthSystem Consortium's Clinical Database-Pharmacy. Descriptive statistics were used to evaluate patient demographics and coded diagnoses. Other outcomes of interest included in-hospital mortality, total hospital costs and charges, and length of stay. **RESULTS:** A total of 37 AHCs were included in the analysis, representing 1889 discharges. The mean patient age was 43 years (SD 23, median 47). Sixty-six percent were male and 51% were white. Ten DRGs accounted for approximately 50% of the cases, with the top 3 most frequently cited being those for tracheostomy (11%), coagulation disorders (9%), and liver transplant (8%). Of the total 645 unique primary diagnoses, 13% were related to chronic liver diseases or seque-

lae followed by coagulation factor deficiency and defects as the next most frequently cited reasons for admission (9%). The mean length of stay was 23 days (SD 30, median 13). The mean total hospital cost per case was $121,240 (SD $151,047, median $72,351). The mean total hospital charges per case were $281,548 (SD $382,151, median $156,048). The in-hospital mortality rate was 39%. **CONCLUSION:** RHF7F carries FDA-approval for marketing (in 1999) in bleeding patients with hemophilia A or B who have developed antibody inhibitors to factor VIII or IX. Given the wide range of DRGs and primary diagnoses recorded, substantial off-label use appears to be common medical practice.

PHM6

A HIDDEN EPIDEMIC AMONG ACUTE CARE INPATIENTS: ECONOMIC AND CLINICAL IMPACTS OF ANEMIA IN SELECTED CHRONIC DISEASES

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OBJECTIVES: 1) To understand the prevalence of anemia among hospital inpatients with selected chronic diseases; and 2) to evaluate current anemia treatment strategy in acute care hospitals. **METHODS:** Using Premier's PerspectiveTM Comparative database, the largest US hospital database, all inpatients discharged between January, 2003 and December, 2003 with a primary diagnosis of chronic kidney disease, congestive heart failure, diabetes, cancer, AIDS, and rheumatoid arthritis were retrieved. Anemia was identified using ICD codes (280–285). Patient demographics, insurance type, institution characteristics, severity, and anemic treatment patterns were examined. Outcomes variables included length of stay, total cost, and in-hospital mortality. **RESULTS:** Of 300,494 subjects, close to a quarter (23.5%) were diagnosed with anemia. Prevalence rates varied by disease from 46.1% (chronic renal insufficiency) to 20.2% (diabetes). Only 20.4% anemics received epoetin alfa and 13.7% received iron supplement. Anemic patients were associated with longer length of stay (4.9 vs. 7.6 days, P < 0.01), higher total hospitalization cost ($8014 vs. $11,752, P < 0.01) and elevated in-hospital mortality (4.3% vs. 6.1%). **CONCLUSIONS:** Anemia is associated with many chronic diseases among acute care inpatient populations. It is often under-treated with less than one third of the anemic patients receiving readily available drugs. When left untreated anemia can be associated with suboptimal clinical and economic outcomes.

HEALTH POLICY

PHP1

COST EFFECTIVENESS OF INTERVENTIONS TO IMPROVE ADHERENCE: WHAT IS THE QUALITY OF THE EVIDENCE?

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OBJECTIVE: To determine whether cost effectiveness evidence on adherence-enhancing interventions (AEIs) was of sufficient quality to inform policy decision-making. **METHODS:** A computerised search of Embase, Medline, Cinahl, Econlit, NHSEED, Psychlit, ePIC and Cochrane databases from January, 1980 to April, 2004 was performed. English-language human subject articles were identified using an inclusive search strategy. Studies that appeared to assess the cost effectiveness of medication adherence-enhancing interventions were included. Methodologic rigor was assessed using 15 clinical, economic and adherence-

specific quality criteria developed by the authors. **RESULTS:** We found 45 comparative studies in 43 publications. Asthma (14 studies) and psychiatric illness (12 studies) were most commonly investigated. In 33 studies, interventions were educational, 20 had multiple components and 23 did not appear to be linked to proven reasons for non-adherence. No studies assessed management of unintentional non-adherence. No study met all quality criteria. Study quality has not improved with time, as some better studies are over ten years old. Many studies used inadequate or unidentifiable adherence measures. Critically, many were too small or not randomised. All studies assumed that patients were prescribed appropriate therapy for their condition, and no assessment of treatment quality was made by any study. Reporting of adherence and outcome results was often unclear. Cost data were poorer quality than outcome data, using average or estimated costs and omitting some cost elements. Nine studies carried out incremental economic analysis. **CONCLUSIONS:** We were not able to make definitive conclusions about the cost-effectiveness of medication adherence enhancing interventions due to the heterogeneity of the studies found and incomplete reporting of results. Important policy decisions need to be made about non-adherence, however, they are currently being made in a vacuum of adequate information. Medication adherence-enhancing interventions must be based on reasons for non-adherence and be evaluated using accepted clinical and economic quality criteria.

THE MEDINET-PROJECT—A FEASIBILITY STUDY ON MEDICATION COMPLIANCE UNDER REAL LIFE CONDITIONS

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OBJECTIVES: To study medication compliance patterns regarding dosing, timing and adherence under real life conditions. Using a new electronic blister pack system. **METHODS:** A total of 37 volunteers from three study centers were each furnished with an electronic blister holder ("monitor") and three blister packs containing 14 placebo capsules each (trial duration: six-weeks). The monitor measured the disruption of conductive lines printed on aluminum carrier foil under each capsule and stored this information (date and time) for evaluation at the end of the study. Patients had to take out one capsule daily in the morning over the entire study period. Also patients received a CRF and a radio-controlled clock such that date and time of the event could be manually recorded by the patient as well. Data were considered accurate if the information stored in the monitor and the corresponding CRF entries were within a time window of ±15 min. **RESULTS:** All recordings of the electronically stored information matched the data documented on the CRFs. This indicates the accurate documentation of the volunteers, as well as the correct functioning of the monitors. Evaluation of the data, however, showed a wide intra—as well as interindividual variation in the time patterns of the volunteers. Three clusters of time preference were detected—mornings, noon and late night. Further, periods of non-compliance ("drug holidays") as well as lack of adherence (discontinuation of medication before the end of the study period of six-weeks) could be documented. **CONCLUSIONS:** The use of the new electronic blister system improves compliance measurement under real life conditions. Combining compliance information with other outcome parameters will help in better quantifying and optimizing the impact of patient compliance on clinical and economic outcomes under real life conditions.

IMPACT OF INCREASED COPAYMENTS ON THE SWITCHING AND DISCONTINUATION RATES FOR NON FORMULARY MEDICATIONS

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OBJECTIVE: Chronic disease sufferers are particularly affected by prescription copayment increases as they are faced with decisions to switch to formulary alternatives or pay more to stay on their current medication. The objective of this study was to evaluate the impact of increased prescription copayments as a result of a change in formulary status on continuation rates of non formulary medications in multi-tiered pharmacy benefit plans. **METHODS:** Retrospective cohort study of chronic disease patients from a health plan in the Western U.S. Individuals were selected who were taking a medication that was being removed from the health plan's formulary and thus experienced increases in their copayments for non formulary medications (n = 1244). Two time periods were studied: the "pre" period before and the "post" period after the increase in copayments. Adjusting for demographics, chronic co-morbidities, medication use, Medicare + Choice status and percentage increase in copayment for non formulary medications, Cox regressions were used to assess continuation rates for these medications. **RESULTS:** A clear relationship between increasing copayment differentials and continuation rates for non formulary medications in the post period could not be established. In general those who experienced higher copayment differentials (between 50–100%, 100–200% and greater than 200%) were more likely to continue their non formulary medication than those who experienced copayment increases of 25–50% and less than 25%. **CONCLUSIONS:** Individuals confronted with increased copayments often switched their medications to formulary alternatives. However, a clear relationship could not be established between increasing copayments and continuation behavior. Further research is needed to determine if these switching behaviors results in inappropriate medication behaviors such as complete discontinuation of drug therapy due to the increased costs.

IMPACT OF COST ON MEDICATION COMPLIANCE IN PATIENTS WITH DIFFERENT LEVELS OF PERCEIVED BENEFITS

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OBJECTIVES: The economics theory of consumer behavior suggests that the impact of cost on product purchasing decisions depends on the perceived benefits associated with that product. However, this relationship has been neither demonstrated nor quantified for patients taking chronic medications. The objective of this study was thus to analyze the impact of cost on medication compliance (refills) among groups of individuals with different levels of perceived benefits. **METHODS:** Patients new to statin therapy were identified from the prescription database of a national retail chain. The perceived benefit of the statin medication was measured on a scale of one (low) to seven (high) by surveying randomly selected new patients. Compliance with the medication regimen during the first 12 months of statin therapy was measured in terms of the Medication Possession Ratio (MPR). Information on cost and (MPR) on randomly selected patients was obtained from the retail chain prescription data-