COST-EFFECTIVENESS ANALYSIS OF THE FIXED COMBINED ORAL TREATMENT WITH TRAMADOL/ACETAMINOPHEN (TRAMACET®) FOR THE MANAGEMENT OF LOWER BACK PAIN AT THE IMSS (MEXICAN INSTITUTE OF SOCIAL SECURITY)

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OBJECTIVES: To assess the cost-effectiveness of a fixed combination of Tramadol and Acetaminophen (Tramacet®) for the management of Lower Back Pain (LBP) in Mexico. The economic evaluation was performed from a Mexican Institute of Social Security (IMSS), health service hospital perspective.

METHODS: A cost-effectiveness analysis was developed with a decision model. The cost-effectiveness ratio for the therapeutic use of the fixed combination of Tramadol and Acetaminophen (Tramacet®) compared to treatment with Piroxicam, Celecoxib and Diclofenac was estimated. One thousand of patients hospitalized in 2004 at the IMSS with LBP crises were retrospectively included. This sample was used as a pattern for analyzing each alternative. A decision tree was developed based on the treatment of the disorder within the national health care system, and the cost for each node was determined. The costs of drug therapy, family medicine ambulatory consultations, clinical specialty consultations, rehabilitation, emergency care and hospitalization were included. Labor productivity and disability rates were also considered. Costs sources were obtained from the official and published financial and costs reports of IMSS.

RESULTS: Tramacet leads to an increase in the number of patients with positive response to the treatment. Therapy with Tramacet had an annual cost of $28,640 pesos (2603.63 USD), and had the lowest hospitalization cost of all the alternatives. Also, Tramacet leads to savings for $2769 pesos (251.72 USD), compared to conventional treatment, and $648 pesos ($58.90 USD) compared to Piroxicam; additionally, for every percentage point of increased improvement in the quality of life, Tramacet leads to savings of $374 pesos (34 USD).

CONCLUSION: This study demonstrated that Tramacet is a cost-efficient and dominant alternative for the management of patients with chronic to acute LBP.

A COST MINIMIZATION ANALYSIS OF IV BOLUS VERSUS IV INFUSION DICLOFENAC IN POST-OPERATIVE PAIN

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OBJECTIVES: There are two forms of injectable IV diclofenac available (bolus and infusion). We conducted a cost minimization analysis to determine the total cost of each treatment strategy. METHODS: A decision-analytic model was developed to estimate total treatment costs of IV bolus versus IV infusion diclofenac. The modeled population was patients who postoperatively would require injectable NSAIDs to control their pain. The model timeframe was for the duration that a patient required post-operative pain management with injectable medication. The model inputs included the cost of medicines (NSAIDs), staff time and consumables, and the cost of treating adverse events (staff time, medicines and consumables). The unit costs and resources are based on UK data. The results are expressed as Pounds Sterling and as average cost per patient. One-way sensitivity analyses were also conducted on key parameters. RESULTS: The total cost of treating post-operative pain was less with IV bolus diclofenac than with IV infusion diclofenac. Diclofenac IV bolus cost a mean GPB26.72 per patient overall versus diclofenac IV infusion mean cost of GPB77.18 per patient. The difference in overall cost is attributable to the cost of NSAIDs (IV bolus GPB11.43 versus GPB1.69 IV Infusion), the cost of administering the NSAIDs (IV bolus GPB9.00 versus GPB48.28 IV Infusion) and the cost of consumables (IV bolus GPB1.38 versus GPB16.70 IV Infusion). The difference in the costs of rescue medication (IV bolus GPB2.80 versus GPB6.14 IV infusion) and of treating adverse events (IV bolus GPB2.11 versus GPB4.37 IV infusion) was less. One-way sensitivity analyses show the results are sensitive to the cost of staff time and consumables. CONCLUSION: Diclofenac IV bolus is cost saving relative to diclofenac IV infusion in the treatment of post-operative pain.

THE SPECTRUM OF HEALTH CARE COSTS ASSOCIATED WITH HERPES ZOSTER: ACUTE PAIN VS. POSTERHERPETIC NEURALgia

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OBJECTIVES: To estimate the burden of illness (BOI) of herpes zoster (HZ) pain and postherpetic neuralgia (PHN) in a commercially insured, Medicare, and Medicaid populations.

METHODS: Health care expenditures attributable to HZ acute pain and postherpetic neuralgia (PHN) were calculated using Thomson-Medstat's databases for inpatient, outpatient, and outpatient prescription claims. Patient cohorts were defined as those with a diagnosis of PHN, those with a diagnosis of HZ and less than 30 days of analgesic use, and those with a diagnosis of HZ and more than 30 days of analgesic use. For each of these cohorts, a random sample of patients without HZ or PHN was selected and propensity score matched based on patient demographics and overall comorbidities. Expenditures between PHN/HZ cohorts and matched control cohorts were compared to derive the BOI attributable to each condition. This was done separately for commercially insured, Medicaid, and Medicare patients.

RESULTS: Patients without a diagnosis of PHN were much more common in the sample than were patients diagnosed with PHN. The average cost per patient in the year following a diagnosis of HZ and less than 30 days of analgesic use ranged from $757 to $1313, depending on type of insurance. The average cost associated with a diagnosis of PHN or with a diagnosis of HZ followed by greater than 30 days of analgesic use but no diagnosis of PHN were similar and ranged from $2159 to $5742. CONCLUSION: Health care costs associated with PHN were substantially greater than those associated with HZ pain that resolved within 30 days. Because patients with a diagnosis of HZ and persisting analgesic use (but no diagnosis of PHN) accounted for the majority of the total expenditures, future research must consider the impact of under-diagnosis on estimates of the health costs associated with both HZ and PHN.
system, which can lead to disparities in treatment. **METHODS:** Using nationally representative data from the Medicare Current Beneficiary Survey, 1992–2003 and the Medical Expenditure Panel Survey, 1999–2003, we estimated the out-of-pocket prices for common opioid analgesics among community-dwelling adults in the United States. Standardized gamma mixture models were estimated to predict out-of-pocket prices for individuals with and without drug coverage controlling for setting characteristics, such as year, as well as prescription specific attributes such as number of tablets and controlled release form. **RESULTS:** Typical prescription for opioid analgesics costs a patient between $6.20 and $64.17, if they have drug coverage, and between $16.22 and 134.60 without coverage. **CONCLUSION:** A better understanding of the endogeneity of out-of-pocket prices not only improves our ability to identify the demand for health care, these models better characterize the financial burden of pain management.

**PPN9**

**COSTS AND COMORBIDITIES IN LOWER BACK PAIN PATIENTS USING NARCOTIC MEDICATIONS**

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**OBJECTIVES:** To identify lower back pain (LBP) patients who use narcotic medications and examine their medication behaviors, medical and pharmacy claim costs and associated comorbidities. **METHODS:** This study used medical and pharmacy claims data from 165,569 employees’ ages 18 to 64 years from three employer groups from September 2002 to December 2003. LBP patients were identified using ICD-9 diagnosis codes from medical claims data. Differences in costs and comorbidities were examined between LBP patients who use narcotic medications and LBP patients who do not use narcotic medications. **RESULTS:** Among eligible members, 13,760 (8.3%) were identified as LBP patients. Nearly 60% were female with an average age of 46.8 years. Approximately half of the LBP patients (44.8%) used narcotic medications; however, they consumed 71% of total health care costs (medical plus pharmacy costs) among LBP patients. The average monthly total health care cost for a narcotic-using LBP patient was $1,040 versus $347 for a LBP patient without narcotics. Narcotic-using LBP patients had significantly (p < 0.001) higher rates of comorbid conditions than LBP patients without narcotic use: hypertension (22.9% vs. 13.3%), arthritis (14.1% vs. 4.3%), diabetes (10.4% vs. 5.6%), asthma (7.4% vs. 4.0%), coronary artery disease (5.0% vs. 2.5%), depression (10.3% vs. 5.4%) and anxiety (6.3% vs. 2.8%). Also, LBP patients with comorbid anxiety or depression on average used more narcotic medications than patients with other comorbidities. LBP patients who use narcotic medications are also more likely to visit the emergency room, use physical therapy or chiropractic services, utilize one or more epidurals and/or MRIs, or have a surgery (p < 0.001). **CONCLUSION:** Lower back pain patients who use narcotic medications are more likely to have additional health conditions and higher health care costs than non-narcotic using LBP patients. Further, patients with comorbid anxiety or depression take more narcotics than those with other comorbidities.

**PPN10**

**COSTS ATTRIBUTABLE TO INTRAVENOUS PATIENT CONTROLLED ANALGESIA: FOCUS ON DEVICE-RELATED EVENTS**

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**OBJECTIVES:** To estimate the costs of device-related events associated with intravenous patient-controlled analgesia (IV PCA) from the perspective of a hospital or integrated health-system. **METHODS:** To estimate the costs attributable to both harmful and non-harmful IV PCA device-related events, a quasi-cost accounting methodology is utilized. Data were obtained from the Manufacturer and User facility Device Experience (MAUDE) database, published literature, and expert opinions. The MAUDE dataset is publicly available, and contains mandatory FDA reports of medical device-related events. IV PCA event reports were identified from the MAUDE database (January 1, 2002-December 31, 2003) and the descriptive text was qualitatively reviewed to collect data on event consequences. The level of care rendered for the event consequences was estimated by applying clinical assumptions validated by an expert advisory panel. Both variable and opportunity costs (2006 values) were considered, including medication, laboratory, lost revenue, and labor. Whenever an event consequence was indicated in a report, the corresponding costs were applied to derive the estimated mean cost for each event type. The event types were previously defined and published (Device Safety Events, Operator Errors, Adverse Reactions to Opioids, Patient-related Events, and Indeterminate Events). **RESULTS:** The most costly event type was Adverse Reactions to Opioids, followed by Operator Errors (mean costs of $13,803 and $2,935 respectively). When stratified, events reported to be harmful to patients were associated with higher costs than non-harmful events: $3483 vs. $0 for Device Safety Events, $5756 vs. $361 for Operator Errors, $199 vs. $11 for Patient-related Events, and $6120 vs. $142 for Indeterminate Events; by definition, Adverse Reactions to Opioids were all harmful events. **CONCLUSION:** IV PCA device-related events are costly to hospitals due to their association with patient care consequence. This study provides an innovative approach to estimating the cost of device-related events. Additional research is necessary to validate these findings.

**PPN11**

**COSTS OF ERRORS ATTRIBUTABLE TO INTRAVENOUS PATIENT CONTROLLED ANALGESIA—FOCUS ON MEDICATION-RELATED ERRORS**

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**OBJECTIVES:** The objective of this study was to estimate the frequency and cost of medication errors associated with intravenous patient-controlled analgesia (IV PCA) from the perspective of a hospital or integrated health-system. **METHODS:** This study utilized a quasi-cost accounting methodology to estimate the costs attributable to both harmful and non-harmful IV PCA errors. Data for the study were obtained from the MEDMARX® dataset, published literature, and expert opinions. MEDMARX is an anonymous error-reporting database maintained by the United States Pharmacopeia. The database accepts multiple inputs of error causes and error consequences per event (i.e., error cause and consequence categories not mutually exclusive). The level of care rendered was estimated by applying clinical assumptions (validated by an expert advisory panel) to each