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.

**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 MRFs, 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.

**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) dataset, 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.

**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