Pediatric Pain Management 2006 - An Interim Analysis of a National Survey of Pediatric Anesthesiologists

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Introduction: The management of pediatric pain is a high priority in the medical and surgical management of children. The purpose of this study is to assess current practice in the United States.

Methods: After IRB and Society for Pediatric Anesthesia (SPA) approval, an on-line pediatric pain management cross-sectional, descriptive survey was distributed to SPA members. The survey consisted of 58 questions and included respondent and institutional demographics, modalities of pain treatment, use of computerized order systems, where in the hospital patients receiving IV opioids are cared for, and how they are monitored. The use of Patient Controlled Analgesia (PCA), Parent/Nurse Controlled Analgesia (PNCA or PCA by proxy) and complications of their use are reported elsewhere.

Results: Two hundred eighteen SPA members responded, providing data from 52% (207/400) of hospitals polled, representing 41 states and the District of Columbia. Over 70% (111/216) of respondents practice anesthesia at academic institutions, with 51% (111/216) practicing at free-standing children's hospitals. Over 90% of respondents surveyed are able to provide continuous or intermittent IV opioid infusions to pediatric patients, while only 2% are limited to oral or intramuscular opioids. Ninety-five percent of respondents (197/208) are able to provide IV PCA, while 40% can provide PNCA. PCA is predominantly administered IV (100%); epidural is available for 55% (114/208) of respondents, while subcutaneous and transdermal routes are rare. Computerized Provider Order Entry (CPOE) is available at 55% (117/212) of institutions; specific pain service orders are computerized in 37% (67/179) with 53% (94/179) of institutions utilizing hand written orders. Orders are primarily written by the dedicated pediatric pain service, with the majority of the remaining orders being written by the primary service of the patient. Over 35% of respondents did not know the brand of PCA pumps used in their institution. Of those who did know, 45% (56/124) most commonly used the Baxter APII PCA pump. The most commonly available opioid for both IV PCA and non IV PCA infusions is morphine (99%), followed by hydromorphone (87%), fentanyl (72%) and meperidine (29%). Approximately 30% of institutions routinely use a continuous infusion when administering IV PCA, while 50% use it on a case-by-case basis. Patients treated with continuous non-IVPCA opioid infusions are most commonly admitted to any hospital bed (32%), but 29% of those surveyed report that high surveillance beds such as an ICU bed or step-down bed are required for such infusions. Patients treated with continuous IVPCA as well as IVPCA by proxy are most often admitted to any floor bed. Although monitoring of these patients with pulse oximetry is common on average for 80% of respondents, capnography is rare, being used on average by less than 2%. Monitoring is maintained for the duration of therapy in 75% of patients receiving continuous infusions. Of those institutions for which we have data, many (>90%) have preprinted protocols to deal with opioid-associated side effects including respiratory depression, nausea and vomiting, and pruritis. Parental education regarding pain and its management occurs in only 30% of institutions. Finally, patients being treated with PCA or PNCA are frequently allowed to receive concomitant anxiolytics.

Discussion: Pediatric pain management varies across institutions and differs significantly from pain management provided to adult patients. In children it is frequently supervised by dedicated personnel using computerized order entry systems and protocolized pain orders. Furthermore, in children, most

institutions utilize protocols to deal with opioid-related side effects and use aggressive cardiopulmonary monitoring to maximize patient safety. In this study, we neither know the total number of patients treated (denominator) nor actual complication rates (numerator). How to optimally manage children in pain will be best answered by designing and implementing multi-institutional collaborative studies utilizing a national registry and database. We believe that this will enhance both the safety and effectiveness of pediatric pain management.