Introduction: PCA by proxy has been described in pediatric and adult populations (1,2), but may be associated with the risk of over sedation and hypoventilation (3). In pediatric surgical and non-surgical patients receiving PCA by proxy the incidence of naloxone use for apnea, oxygen desaturation and sedation has been reported to be 1.7% (4). We present the experience in our institution of using PCA by proxy for pediatric cancer pain.

Method: The study was undertaken at a tertiary institution with a primary aim of caring for and furthering research in pediatric cancer and related hematological and infectious diseases. The Pain Management Service Quality Assurance data between January 1999 and December 2003 was examined with respect to the utilization and safety of standard PCA, and PCA by proxy. Approximately twice a week, patient records of all in-patients receiving PCA were audited for the preceding 24 hour time period to identify adverse neurological and respiratory events. A change in respiratory status was defined as any clinically significant decrease in respiratory rate and amplitude, or pulse oximetry readings. Neurological change was defined as a patient being confused, difficult to rouse, exhibiting major personality changes, hallucinations or seizures. During the evaluation period the recommended starting boost doses were: morphine 0.02 mg/kg, hydromorphone 0.004 mg/kg and fentanyl 0.5 mcg/kg, with a lock-out interval of 15 minutes. If necessary, a background infusion was used with a recommended starting dose equal to the boost dose. Upward titration of these doses occurred as dictated by the clinical situation, without a defined dose limit. Any physician was able to commence a patient on PCA by proxy, with the proxy being a nurse, a parent or both.

Results: Over a period of almost five years we evaluated the use of PCA in 1,011 children with cancer with 4,890 24-hour-period observations. Of the 4,890 24-hour periods, 624 (12.8%) consisted of PCA by proxy, and 4,266 (87.2%) standard PCA. Amongst the 4,890 observations there were 70 (1.43%) major events: 33 (0.67%) respiratory and 42 (0.86%) neurological (5 had both respiratory and neurological events). All of the respiratory events occurred in the patients using standard PCA, and all but one neurological event occurred in the standard PCA group. The rate of neurological and respiratory events for PCA by proxy was therefore 1 in 624 observations (0.16%). Reversal of PCA-related respiratory and neurological events with naloxone was necessary in four instances (0.08%), all in the standard PCA group.

Discussion: In our experience the use of PCA by proxy is a safe practice. Recommendations to ensure continuing safety include careful patient selection, education of proxy users, appropriate documentation and institutional guidelines. After reviewing our experience and that of others (1), we have found that patients suitable for PCA by proxy fall into four categories. The first groups of patients are those who by virtue of their age and/or cognitive ability are not able to operate a PCA. Such patients are frequently less than 5 years of age. The second suitable group of patients are those who have neuromuscular impairment that prevents them operating PCA. Examples include patients with Guillain-Barre syndrome, patients with post bone marrow transplant neuropathy and patients sedated for ventilatory management in the intensive care unit. The third group comprises patients with procedural related pain such as patients having dressing changes and painful diaper changes. Lastly, patients who are receiving terminal care may be suitable for PCA by proxy because of physical weakness, intermittent confusion and sedation from other drugs. We do not suggest generalizing our results to the wider pediatric population as our patients have a number of characteristics that render them more suitable for PCA by proxy than standard post-operative pediatric patients. The patients are almost never opioid naive and their parents are usually familiar with intravenous equipment, opioids and assessing the level of pain for their children.

References: