Original Article

Barriers to Pediatric Pain Management: A Nursing Perspective

Michelle L. Czarnecki, MSN, RN-BC, CPNP,[*,†] *Katherine Simon, MS,*[†] *Jamie J. Thompson, BSN, RN,*[†] *Cheryl L. Armus, BSN, RN,*[†] *Tom C. Hanson, RPh,*[†] *Kristin A. Berg, CCLS,*[†] *Jodie L. Petrie, BSN, RN, CLNC,*[†] *Qun Xiang, MS,*[‡] *and Shelly Malin, PhD, RN*[†]

Abstract:

This study describes strategies used by the Joint Clinical Practice Council of Children's Hospital of Wisconsin to identify barriers perceived as interfering with nurses' (RNs) ability to provide optimal pain management. A survey was used to ascertain how nurses described optimal pain management and how much nurses perceived potential barriers as interfering with their ability to provide that level of care. The survey, "Barriers to Optimal Pain management" (adapted from Van Hulle Vincent & Denyes, 2004), was distributed to all RNs working in all patient care settings. Two hundred seventy-two surveys were returned. The five most significant barriers identified were insufficient physician (MD) orders, insufficient MD orders before procedures, insufficient time to premedicate patients before procedures, the perception of a low priority given to pain management by medical staff, and parents' reluctance to have patients receive pain medication. Additional barriers were identified through narrative comments. Information regarding the impact of the Acute Pain Service on patient care, RNs' ability to overcome barriers, and RNs' perception of current pain management practices is included, as are several specific interventions aimed at improving or ultimately eliminating identified barriers.

© 2011 by the American Society for Pain Management Nursing

Health care technology and resources abound, yet studies continue to report suboptimal pain management practices resulting in unrelieved pain for children (Jacob & Mueller, 2008; Jacob & Puntillo, 1999; Kotzer, 2000; Polkki, Pietila, Vehvilaninen-Julkunen, Laukkala, & Ryhanen, 2002; Probst, Lyons, Leonard, & Esposito, 2005). In a pediatric hospital, barriers to providing optimal pain management may be found at the direct care level of patients/parents, health care professionals (HCPs), or within the health care system (Furstenberg, et. al, 1998; Van Niekerk, Hons & Martin, 2003). Because nurses (RNs) are the cornerstone of pediatric pain management, understanding their definition of optimal pain management (i.e., what do they expect from a pain management regimen and how do they know when optimal pain management has been

*From the *Jane B. Pettit Pain and Palliative Care Center; †Children's Hospital of Wisconsin and ‡Division of Biostatistics, Department of Population Health, Medical College of Wisconsin, Milwaukee, Wisconsin.*

Address correspondence to Michelle L. Czarnecki, MSN, RN-BC, CPNP, Jane B. Pettit Pain and Palliative Care Center, Children's Hospital of Wisconsin, P.O. Box 1997, MS 792, Milwaukee, Wisconsin 53201. E-mail: mczarnecki@chw.org

Received February 22, 2010; Revised July 5, 2010; Accepted July 7, 2010.

1524-9042/$36.00
© 2011 by the American Society for Pain Management Nursing
doi:10.1016/j.pmn.2010.07.001

achieved?) as well as the barriers they encounter is imperative to implementing worthwhile interventions aimed at improving pain management for children. Earlier studies have offered insight into potential barriers, but validating the barriers experienced in a particular organization may be beneficial in directing meaningful improvement initiatives.

The present study provides insight into how RNs described optimal pain management as well as what barriers they perceived as interfering with their ability to provide that level of care for their patients. Results were used by the Joint Clinical Practice Council (JCPC) and the Acute Pain Service (APS) to identify potential solutions to the barriers identified.

LITERATURE REVIEW

Although barriers to pediatric pain management were found embedded in the narrative sections of studies addressing other topics, such as content for nursing education (Twycross, 2001) or factors influencing emergency medicine (Rupp & Delaney, 2004), relatively few studies were found that purposefully addressed barriers to pain management from pediatric nurses' perspectives, and even fewer were found identifying plans to improve or ultimately eliminate the identified barriers.

Ely (2001) reported the results of data obtained from discussion groups involving 16 RNs from the 12-bed pediatric inpatient unit of a community hospital in northern New England. The purpose of that study was to identify barriers and potential solutions to practice change involving pediatric pain management, the only study found that included potential solutions to identified barriers. Nurses identified such things as lack of consistency in practice, insufficient pain medication orders by MDs, parental fear regarding opioids, time constraints (e.g., lack of time to prepare a child for a procedure), and working with children in general (e.g., "toddlers can't understand that the pain medication will make them feel better") as interfering with their ability to provide pain management for their patients. These barriers offer insight; however, the data were derived from a small sample size in a community hospital and may or may not generalize to a larger pediatric setting.

Using matched interviews in a study exploring the perceptions of 20 RNs and parents regarding the management of pediatric postoperative pain on a surgical unit in a large urban children's hospital in England, Simons and Roberson (2002) found "RNs' poor communication with parents and RNs' knowledge deficits" to be major obstacles in the provision of pediatric pain management. That study also had a small sample size but provided the benefit of parental insight in addition to nursing insight. The obstacles found differed somewhat from those reported by Ely (2001) by focusing more heavily on the nurses' knowledge levels and communication patterns.

Using an investigator-developed 13-item instrument, Van Hulle Vincent (2005) surveyed 67 RNs from seven patient care units in a Midwestern pediatric hospital to examine, among other things, RNs' abilities to overcome barriers to optimal pain management. Results showed inadequate or insufficient MD medication orders, children's reluctance to report pain, parents' reluctance to have children receive medications, children's reluctance to take pain medications, and respondents' concerns about side effects of medications (other than addiction) to be the top five barriers identified by nurses. That study provided a somewhat larger sample size from a pediatric hospital in the United States, offered barriers one would expect to encounter in a pediatric setting (some of which were reported by Ely, 2001), and was used as the basis for the present study design.

Finally, 21 RNs working in a pediatric unit in a moderately sized hospital in Sweden were interviewed regarding factors that influence their pain management practices with children (Gimbler-Berglund, Ljusegren, & Enskar, 2008). Nurses reported a lack of cooperation with parents and physicians as negatively affecting pain management. Inability of RNs to interpret children's pain behavior, RNs' attitudes, and a lack of medication orders, time, routine, and knowledge about pain management were also highlighted as potential barriers. Although the sample size was small, that study highlighted barriers from the patient/parent, HCP, and systems levels, and it supported many of the barriers reported in other studies (Ely, 2001; Simons & Roberson, 2002; Van Hulle Vincent, 2005).

PURPOSE

Understanding the barriers pediatric RNs perceive as impeding their ability to provide optimal pain management in an organization is crucial to making worthwhile improvements. Members of the JCPC at Children's Hospital of Wisconsin (CHW) queried RNs to learn how they describe optimal pain management and what obstacles they encounter on a day-to-day basis that interfere with their ability to provide that level of care.

The JCPC is an interdisciplinary patient care council consisting of ~35-40 members, including nursing representation from the patient care units as well as advanced practice nursing, ambulatory services, child

life, educational services, informational services, nursing leadership, pharmacy, physical therapy, physician services, psychology, respiratory therapy, speech therapy, surgical services, and, at the time of the study, the APS. The JCPC is responsible for reviewing and approving patient care policies and procedures, providing insight into patient care initiatives, disseminating information and practice changes from the council to their respective departments, and bringing forward any practice concerns. HCPs apply for membership and once appointed serve a 2- or 3-year term, although many elect to extend their membership term.

Because the study by Van Hulle Vincent (2005) involved a similar setting, it was decided to use the same tool, "Barriers to Optimal Pain Management," to compare results in a meaningful way. The original tool comprised 13 questions. For the present study, the investigators added supplementary questions to glean insight into additional factors potentially affecting pain management practices in our organization. The JCPC used the results of the survey to develop a list of potential improvement strategies.

The following questions guided this study:

1. How do RNs describe optimal pain management?
2. How do RNs rate the level of pain management in our organization?
3. What barriers do RNs identify as being most and least significant?
4. How well do nurses feel they are able to overcome barriers?
5. How do RNs see the Acute Pain Service (APS) as impacting patient care?

METHODS

Study Design

This study was a cross-sectional design assessing the perceived barriers to optimal pain management in a 236-bed pediatric hospital. After approval by the Human Rights and Review Board, the surveys were distributed to RNs in each patient care area (all acute and critical care inpatient units, the emergency department–trauma center [EDTC] and outpatient clinics) by the manager, Advanced Practice Nurse (APN), or designee assigned to each area. Completion was voluntary, anonymous, and implied informed consent. Members of the JCPC, the APN for the APS, and the patient care leadership teams provided verbal reminders to RNs of their eligibility and the potential benefits (improvement of the identified barriers) of participating. RNs were asked to return the surveys to a member of their leadership team, the designee, or the pain center within 3-4 weeks. Nurses were able to return surveys in any manner most comfortable to them (i.e., openly, concealed in a sealed envelope, or anonymously via interdepartmental mail). Surveys were not coded in any way to indicate to which unit they were distributed. Nurses were able to complete the survey at work during working hours or at home and did not receive any incentive to participate other than the assurance that the JCPC would use the results to improve the identified barriers. This study was incorporated into the investigators' regular working hours and did not receive any specific funding.

Setting

Children's Hospital of Wisconsin is a pediatric teaching hospital in southeastern Wisconsin. CHW offers a full range of services, including inpatient acute and critical care, medical, surgical, and ambulatory services, a level 1 EDTC, and level 3C neonatal intensive care unit. Patients are followed by an attending-level physician, and a combination of APNs, fellows, residents, and/or senior medical students. The APS, consisting of an attending anesthesiologist and an APN with in-house anesthesia resident coverage at night (with attending-level backup), has been in place since the early 1990's and is available for consultation at the primary team's request.

Participants

A total of 970 surveys were distributed to nursing units/departments. Nurses working in any nursing role (staff nurse, manager, APN, clinic nurse, etc.) were included. Nursing assistants, nurse interns, and nursing students were excluded. No personal identifying information was collected, and all data were kept in a locked file drawer behind a locked door in the principle investigator's office; once computerized, all data were password protected.

Measures

Nurses were asked to complete a 35-question "Barriers to Optimal Pain Management" survey, adapted with permission from Van Hulle Vincent and Denyes (2004). The original measure is a 13-question tool based on an 11-point Likert scale used to rank listed barriers on a scale from 0 (not at all a barrier) to 10 (a major barrier) based on Agency for Health Care Policy and Research guidelines (AHCPR, 1992). Van Hulle Vincent and Denyes performed a pilot test and reached an internal consistency of 0.86.

In the present study, respondents were asked to rate how much each potential barrier currently interferes with their overall ability to provide optimal pain management, after being asked to narratively describe optimal pain management. The tool was modified to include a total of 18 potential barriers to be ranked on

the 11- point Likert scale. Questions were added to incorporate additional potential barriers gleaned from the literature review as well as anecdotal comments regarding such things as procedural pain management and the current documentation systems. Nurses were asked to rate the impact of the APS from 0 (negative impact on patient care) to 10 (positive impact on patient care) and the quality of pain management in our organization from "very poor" to "optimal." Nurses were asked to list any barriers not specifically identified and were allowed space for comments. Questions regarding demographic nursing information (i.e., educational level, role, unit, and years of experience), how RNs rate their personal pain management practices in terms of conservativeness (with 1 indicating very conservative practices and 5 indicating not at all conservative), and how many times per week they work with children in pain (0 indicating almost never, 5 indicating almost always) were included. One question regarding how RNs learned about pain management and one question regarding sources they use in decision making (results not reported here) were also included. The modified tool consisting of 35 questions reached an internal consistency of 0.85 and is available upon request.

Data Analysis

Descriptive statistics, including frequencies, frequency distributions, and means, were conducted. Description of optimal pain management, additional barriers, and comments identified in the narrative sections of the survey were categorized by the investigators and then checked by an independent coder (another one of the investigators working independently) to ensure interrater reliability.

RESULTS

Demographics

Table 1 presents the demographic information for the 272 respondents (representing a 28% response rate). The majority of surveys returned were from female RNs (83.1%) working on inpatient care units (79.1%) in a staff nurse role (84.2%). Fifty-nine percent of responding RNs had <10 years' experience, and 75% had baccalaureate degrees. The majority of RNs (73.9%) rated themselves as 4 or 5 out of 5 (5 = not at all conservative) in terms of their level of conservativeness regarding personal pain management practices, with 4.1% reporting a 1 or 2 out of 5 (1 = very conservative). The majority (74.7%) of RNs reported working with patients in pain "frequently" in their practice. Current pain management practices were rated as "very good" or "excellent" by 64% of RNs, and the APS was rated as having a positive impact on patient care (mean 8.05 ± 1.86; 0 indicating a "very negative impact" and 10 indicating a "very positive impact").

TABLE 1.
Demographic Information of Respondents

Variable	n	(%)
Gender*		
Female	226	(83.1)
Male	6	(2.6)
Race†		
Caucasian	249	(91.5)
African American	1	(0.4)
Hispanic	1	(0.4)
E. Indian	1	(0.4)
Asian	1	(0.4)
Other	5	(1.8)
Education‡		
Associate Degree	28	(10.3)
Diploma	16	(5.9)
Baccalaureate	205	(75.4)
Master of Science	16	(5.9)
Role‡		
Staff RN	229	(84.2)
Supervisor	15	(5.5)
APN	8	(2.9)
Other	13	(4.9)
Experience (yrs)‡		
<2	54	(19.9)
2-<5	53	(19.5)
5-<10	53	(19.5)
10-<15	27	(9.9)
15-<20	24	(8.8)

*n = 232.
†n = 253.
‡n = 265.

Optimal Pain Management

Before they were asked to identify barriers, the RNs were asked to describe optimal pain management. The most common description of optimal pain management (61%) was in terms of patients' level of functioning (i.e., "able to do activities of daily living," "able to heal, sleep, and cope," "normal functioning"). Comfort was described in terms of a pain intensity scoring (i.e., "pain score <4/10," "no complaints of pain," "pain at baseline") by 56% of RNs. Of those comments involving pain intensity scoring, 21% described pain specifically in terms of the patients' pain score or "comfort goal" (the pain rating number at which the patient feels he/she could be comfortable with activity, sleeping, ambulating, etc.). The use of physiologic data supporting comfort (e.g., vital signs) was reported by 14% of RNs, with 66% of those responses coming from the

TABLE 2.
Means and SD of Barriers to Pain Management (PM)

Barriers	Mean	(SD)
1. Inadequate or insufficient MD medication orders*	4.98	(2.67)
2. Insufficient premedication orders before procedures	4.92	(2.81)
3. Insufficient time allowed to premedicate before procedures	4.57	(2.62)
4. Low priority given to PM by medical staff*	4.17	(2.59)
5. Parents' reluctance to have children receive medication*	3.49	(2.36)
6. Competing demands on my time*	3.19	(2.61)
7. Patients' reluctance to report/rate pain*	3.00	(2.56)
8. Current documentation format	2.98	(2.63)
9. My concern about side effects of medications (other than addiction)*	2.90	(2.06)
10. Insufficient resources to provide guidance	2.75	(2.35)
11. Patients' reluctance to take pain medications*	2.72	(2.52)
12. My concern about children becoming tolerant to analgesics*	2.12	(1.98)
13. Low priority given to PM by nursing staff*	1.95	(1.80)
14. Limitations in my knowledge of PM*	1.83	(1.79)
15. Low priority given to PM by nursing management*	1.55	(1.82)
16. Limitations in my ability to assess pain*	1.34	(1.51)
17. My concern about children becoming addicted*	1.13	(1.75)
18. Low priority given to PM by me	0.53	(0.96)

Potential barriers are from the "Modified Barriers to Optimal Pain Management" tool used for the present study.
*Question on the original "Barriers to Optimal Pain Management" tool used by Van Hulle Vincent & Denyes (2004).

intensive care settings. Optimal pain management was described in terms of "access to safe, effective, timely pain relief" by 13% of RNs. Other miscellaneous descriptions included appropriate weaning of opioids, procedural pain management (e.g., use of appropriate distraction techniques and medications), documentation, and a multidisciplinary approach.

Barriers to Optimal Pain Management

Nurses were asked to rate each of 18 potential barriers from 0 to 10 with 0 indicating "not at all a barrier" and 10 indicating "a major barrier" (Table 2). The five most significant barriers to pain management as indicated by the highest means were: 1) inadequate or insufficient MD orders; 2) insufficient premedication orders before procedures; 3) insufficient time allowed to premedicate before procedures; 4) low priority given to pain management by medical staff; and 5) parents' reluctance to have children receive medication. The least significant barriers as indicated by the lowest means were: 1) low priority given to pain management by the respondent; 2) respondents' personal concern about children becoming addicted; 3) limitations in the respondents' personal ability to assess pain; 4) low priority given to pain management by nursing management; and 5) low priority given to pain management by nursing staff.

Additional barriers identified through narrative comments included: delays in obtaining pain medications (52 comments, 19% of respondents); issues with pain service coverage (34 comments, 12% of respondents); issues with MDs not ordering pain service consultations when needed (24 comments, 8% of respondents); and issues with pain assessment tools for certain patient populations, such as children with chronic pain or developmental delay (19 comments, 6% of respondents).

Despite the identified barriers, most RNs felt that they were able to overcome the barriers they identified and ultimately provide quality pain management for their patients (mean 7.23 $\pm$ 2.06; 0 indicating "not at all able" and 10 indicating "very able" to overcome barriers). No correlation was found between years of experience or educational level and the ability to overcome barriers. Nurses also reported being optimistic that improving identified barriers would positively impact their ability to provide quality pain management (mean 8.08 $\pm$ 2.31).

DISCUSSION

Children's Hospital of Wisconsin has a strong commitment to pain management, and resources are available to support this commitment. The goal of this study was to identify what (if anything) RNs perceive as interfering with their ability to consistently provide what they consider to be optimal pain management. These

results were used by the JCPC to design interventions to improve or abolish those barriers, an essential "next step" needed to improve pain management for children.

Describing Optimal Pain Management

More than 55% of the RNs responding described optimal pain management in terms of pain intensity scores and "comfort goals." These results are encouraging and suggest that RNs are using and value pain intensity rating scales. The frequency of this response demonstrates a slight improvement from earlier studies reporting 0-45% of RNs used pain intensity rating as the most influential factor in their assessment when working with patients (pediatric or adult not specified by authors) with oncology or medical surgical conditions (Ferrell, Eberts, McCaffery, & Grant, 1991) or with children (Jacob & Puntillo, 1999; Twycross, 2002). Findings of the present study are more consistent with Van Hulle Vincent's study (2007) reporting up to 65% of RNs identifying self-report of pain intensity as being important to pediatric pain management.

The inclusion of "comfort goals" as a means of describing optimal pain management demonstrates the acceptance of a newer pain management standard in our organization. Having the patients who are able dictate what pain score is acceptable or unacceptable is a great improvement over parents, RNs, or MDs arbitrarily deciding the acceptable level, because earlier studies have shown HCPs and parents often underestimate the amount of pain a patient is experiencing (Horbury, Henderson, & Bromley, 2005; Singer, Gulla, & Thode, 2002). Of note, RNs are instructed to establish patients' comfort goals in terms of functioning, not merely in terms of the patients' desirable pain score. Nurses are instructed to ask patients at what number they are comfortable performing activities such as coughing and deep breathing exercises, sleeping, turning from side to side or ambulating, not simply "what number do you want to be".

Although more than one-half of the RNs described optimal pain management in terms of pain scores and comfort goals, slightly more described comfort in terms of patients' ability to function. This result may be a consequence of the method used when establishing comfort goals for our patients. Although studies have demonstrated correlations between the identified level of pain and the level of physical activity in pediatric patients with chronic pain, (Schanberg, Anthony, Gil, & Maurin, 2003; Schanberg, Keefe, Lefebvre, Kredich, & Gil, 1996), no studies were found addressing the level of functioning as a measure of pain or comfort in pediatric patients with acute pain.

Most and Least Significant Barriers

The majority of RNs in our organization believe the level of pain management is "very good" or "excellent," results similar to but somewhat lower than those reported by Visina, Chen, Gerhoffer, Biggs, & Ting (2003). In that study, 45 physicians and 142 RNs responded to a survey conducted by an interdisciplinary team investigating pain management in a 148-bed community hospital. Results showed 89% of physicians and 83% of nurses to be satisfied with the level of pain management outcomes in that organization. Survey results in that study also showed a need for more pain management education, a result that differs from the current study.

The majority of RNs in the present study also feel they are able to overcome barriers and ultimately provide quality pain management, which may have contributed to the low means reported for even the most significant barriers. No correlation was found between years of experience or educational level and the ability to overcome barriers. This is in contrast to results of Van Hulle Vincent and Denyes (2004), who identified a positive correlation between years of practice and the ability to overcome barriers. Had we identified a positive correlation, it may have helped to direct certain interventions toward certain groups of RNs. Nurses in the present study are confident that implementing improvement strategies aimed at eliminating identified barriers will help to improve patient care. This optimism may positively affect their willingness and ability to incorporate improvement strategies regarding pain management practices (Ely, 2001).

All but one of the most significant barriers pertained to MD orders and the perception of a low priority given to pain management by medical staff. Without sufficient orders in place, RNs are forced to work with what they have or to spend valuable time contacting the MD to obtain appropriate orders. These results are supported by several earlier studies (Ely, 2001; Probst, Lyons, Leonard, & Esposito, 2005; Schafheutle, Cantrill, & Noyce, 2001; Twycross, 2002; Van Hulle Vincent, 2005; Van Hulle Vincent & Denyes, 2004) and may illustrate the need for better MD education and support. However, more information is needed from our MD colleagues before developing a meaningful improvement strategy for this perceived barrier. Ellis et al. (2007) suggested that collaboration between RNs and MDs may help facilitate better pain management, particularly when inadequate MD orders are a barrier. Many teams, including the APS, have RNs and families join bedside rounds with the goal of addressing all patient care needs with an efficient, family-centered and interdisciplinary approach. Because the consistency of this practice for the APS was variable, in

response to the survey results the APS has started paging RNs to notify them of their arrival on each unit to expedite prioritizing and addressing patient care needs. Compliance and consistency with this practice is an ongoing challenge.

Nurses reported two barriers specific to procedures: having medication orders available before procedures and having enough time to administer those medications with enough time for them to take effect before the procedure begins. Barriers regarding procedural pain management were also reported by Ely (2001) when studying a pediatric setting in a community hospital. Unfortunately, hospitalized infants and children are subjected to numerous painful procedures on a routine basis. All HCPs have the responsibility to ensure pain is managed as well as possible, and anticipation and preparation are key (AAP/APS, 2001). In response to these results and anecdotal comments by staff, one-on-one feedback is being provided to practitioners as needed, and a new policy and procedure establishing standards of care for before, during, and after procedures has been developed. Targeted education regarding these standards and a method for demonstrating improvement are being developed. Opportunities for using the electronic medical record for documentation of patient-specific procedural guidelines (i.e., what does and does not work well) have been explored and will be implemented in the future. Several patient care areas have begun evidence-based practice projects to improve procedural pain management, and a program is being developed to increase the use of topical analgesics before intravenous starts and lab draws for both inpatient and outpatient settings.

Parents' reluctance to have children receive pain medication was the only significant patient/parent barrier reported in the present study and is consistent with earlier studies (Ely, 2001; Simons & Roberson, 2002; Van Hulle Vincent, 2005). This barrier may be rooted in parents' lack of knowledge regarding the consequences of pain, benefits and safety of analgesics, or other concerns regarding medications and warrants further investigation. Ensuring that RNs and MDs appropriately educate parents on the benefits and risks of pain medication is essential and is one of the standards set forth by the Joint Commission (Simons & Roberson, 2002; Joint Commission, 2010). Simons and Roberson (2002) found that RNs and parents have difficulty communicating effectively and encouraged evaluation and reinforcement of all education to ensure adequate understanding. Internal quality improvement data support this as a possible deficit, and measures are underway to improve documentation of family education including an evaluation of their level of understanding. These efforts may in turn have a positive effect on this barrier. Fahey et al. (2008) found the use of coaching by RNs to be effective in exploring barriers to effective pain management in oncology patients. Coaching was also found to reduce ineffective pain management behaviors and improve pain management in that population. Such an intervention may be effective with parents of children in pain.

Several comments were added by RNs regarding delays in pain medications being available from the pharmacy department. Strategies such as having RNs page pharmacy to alert them of the need for a medication before the next scheduled delivery time and having MDs alert pharmacy in the medication order itself when a first dose should be "now" have been encouraged. A team is also investigating the option of having certain analgesics (acetaminophen or ibuprofen) ordered on an "as-needed basis" during the admission process rather than waiting for a need to arise.

More than 80% of RNs rated their concerns regarding addiction as one of the lowest barriers they encounter, which supports the results of Van Hulle Vincent and Denyes (2004), in which 54% of pediatric RNs provided such ratings. Although one might expect a lower level of concern in RNs working with children, the results of Makintosh and Bowles (2003) show an improvement in RNs' concerns regarding the potential of addiction in adult patients as well. These combined results may indicate the beginning of a trend toward increased knowledge regarding addiction on behalf of RNs caring for patients in both settings.

Nurses also reported little concern about their ability to assess pain, which is important because assessment is the cornerstone of pain management (APS, 2003); however, a few RNs did include comments regarding difficulties in assessing a few specific populations. Because pain assessment tools had been evaluated shortly before conducting this study, no changes were implemented in response to this concern.

Finally, RNs reporting little to no concern about pain management being seen as a priority by nursing staff and nursing management was reassuring and should have a positive impact as improvement strategies are implemented. Interestingly, the majority of the barriers identified as being most significant are things outside nursing's control (e.g., inadequate analgesic orders, insufficient time allowed to premedicate before a procedure begins), whereas those things seen as being least significant were more within nursing's control (e.g., ability to assess, priority given to pain management by nurses at all levels).

Impact of APS

Nurses reported the APS as having a positive outcome on patient care. Several studies have demonstrated the

implementation of an APS to be instrumental in improving patient care (Kitowski & McNeil, 2002; Mackintosh & Bowles, 1999; Mackintosh & Bowles, 2003; Miaskowski, Crews, Ready, Paul, & Ginsberg, 1999; Shapiro, Zohar, Kantor, Memrod, & Fredman, 2004; Stadler, Schlander, Braeckman, Nguygen, & Boogaerts, 2004). Through narrative comments, concerns such as difficulties reaching the resident on call, the "on call" resident not always knowing what to do, and some MDs being reluctant to consult the APS were identified and indicate another dimension of institutional commitment/systems barriers. Several comments support the importance of the APN for the APS in providing patient care as well as being an educational resource. In response to this result as well as anecdotal feedback, a proposal was submitted to increase APN coverage for patient care, educational offerings and assistance with improvement initiatives. A second full-time APN joined the APS in 2008. Proposed strategies aimed at improving the identified barriers are summarized in Table 3.

Table 3.
Proposed Improvement Strategies

1. APS to page RNs when starting rounds to expedite prioritizing patient care needs
2. Targeted education and feedback being offered regarding procedural pain management
3. Development of a new policy and procedure identifying standards of care for patient preparation and assessment during procedures
4. Investigation of opportunities to utilize the electronic health record to communicate specific patient information regarding procedures (what does and does not work well)
5. Development of a program to use topical analgesics before intravenous starts and lab draws
6. Efforts to increase documentation of family education regarding pain management
7. Communication with prescribers and nurses to page pharmacy when a medication is needed sooner than the next scheduled delivery time
8. Addition of an "as-needed" acetaminophen dose to admission order sets to expedite its availability during the admission process
9. Increase APN availability/coverage for the APS

APS = Acute Pain Service; APN = Advanced Practice Nurse.

Limitations

Although this study represents one of the largest sample sizes to date, the response rate of 28% may not be representative of the general population of RNs in our organization. Because CHW has recently reorganized the patient care units, no data are available regarding the overall demographics of our organization at the time of the study. In addition, the distribution of paper surveys and lack of continual reminders may have contributed to the low response rate. Electronic surveys and e-mail reminders may bolster the response rate for future surveys, thus leading to a more representative sample.

Future Research

The identification of barriers to pain management in any organization is only the first step. Studies reporting interventions that have succeeded in improving barriers encountered by RNs are necessary. Education can not be the "end-all be-all" for improving pain management practices. Several interventions have been proposed, many of which have been implemented and will be evaluated with future surveys. In addition, the investigators are currently conducting a multisite exploration of pain management barriers with two other pediatric hospitals. All three sites used a modified version of the "Barriers to Optimal Pain Management" survey (Van Hulle Vincent & Denyes, 2004) to include additional quantitative, as well as qualitative data. Because MD practice was highlighted so strongly in the present study, an investigation into the barriers MDs perceive as impeding the provision of optimal pediatric pain management would be worthwhile. Finally, an investigation into the barriers perceived by parents and patients would be illuminating as well.

CONCLUSIONS

With the current level of knowledge, skill, and technology available in today's health care environment, pain assessment and management should be at a consistently high level, yet it is not. Although RNs are in an ideal position to assess and manage pain, they can not do so in isolation; support from parents/patients, physicians, and the organization are necessary. Results of the present study support earlier studies identifying a lack of MD orders and support as well as issues with procedural pain management as the most significant barriers. Several interventions have been implemented since the survey, and evaluation of these interventions is ongoing. Although these barriers are not unique to this one organization, the investigators as well as the nurses surveyed are optimistic that the resulting interventions will improve RNs' ability to provide optimal pain management to their patients.

Acknowledgments

The authors thank the Jane B. Pettit Pain and Palliative Care Center, the nurses at CHW who participated in this study, and Catherine Van Hulle Vincent for the use of her survey and continual support.

REFERENCES

Agency for Health Care Policy and Research (AHCPR) (1992). *Acute pain management in infants, children, and adolescents: Operative and medical procedures*. Rockford, MD: U.S. Department of Health and Human Services.

American Pain Society (APS) (2008). *Principles of analgesic use in the treatment of acute pain and cancer pain*, (6th ed.) Glenview, IL: American Pain Society.

American Academy of Pediatrics & American Pain Society (AAP/APS) (2001). The assessment and management of acute pain in infants, children, and adolescents. *Pediatrics, 108*(3), 793–797.

Ellis, J. A., McCleary, L., Blouin, R., Dube, K., Rowley, B., MacNeil, M., & Cook, C. (2007). Implementing best practice pain management in a pediatric hospital. *Journal for Specialists in Pediatric Nursing, 12*(4), 264–277.

Ely, B. (2001). Pediatric nurses' pain management practice: Barriers to change. *Pediatric Nursing, 27*(5), 473–480.

Fahey, K. F., Rao, S. M., Douglas, M. K., Thomas, M. L., Elliott, J. E., & Miaskowski, C. (2008). Nurse coaching to explore and modify patient attitudinal barriers interfering with effective cancer pain management. *Oncology Nursing Forum, 35*(2), 233–240.

Ferrell, B. R., Eberts, M. T., McCaffery, M., & Grant, M. (1991). Clinical decision making and pain. *Cancer Nursing, 14*(6), 289–297.

Furstenberg, C. T., Ahles, T. A., Whedon, M. B., Pierce, K. L., Dolan, M., Roberts, L., & Silberfarb, P. M. (1998). Knowledge and attitudes of health care providers toward cancer pain management: A comparison of physicians, nurses, and pharmacists in the state of New Hampshire. *Journal of Pain Symptom Management, 15*(6), 335–349.

Gimbler- Berglund, I., Ljusegren, G., & Enskar, K. (2008). Factors influencing pain management in children. *Paediatric Nursing, 20*(10), 21–24.

Horbury, C., Henderson, A., & Bromley, B. (2005). Influences of patient behavior on clinical nurses' pain assessment: Implications for continuing education. *Journal of Continuing Education in Nursing, 36*(1), 18–24.

Jacob, E., & Mueller, B. U. (2008). Pain experience of children with sickle cell disease who had prolonged hospitalizations for acute painful episodes. *Pain Medicine, 9*(1), 13–21.

Jacob, E., & Puntillo, K. A. (1999). A survey of nursing practice in the assessment and management of pain in children. *Pediatric Nursing, 25*(3), 278–286.

Joint Commission (2010). Provision of care, treatment, and services. In the Joint Commission Comprehensive Accreditation Manual for Hospitals E-dition v2.4.0.0. Retrieved July 1, 2010 from http://edition.jcrinc.com/search/Frame.aspx.

Kitowski, T., & McNeil, H. (2002). Evaluation of an acute pain service. *Journal of Perianesthsia Nursing, 17*(1), 21–29.

Kotzer, A. M. (2000). Factors predicting postoperative pain in children and adolescents following spine fusion. *Issues in Comprehensive Pediatric Nursing, 23*(2), 83–102.

Mackintosh, C., & Bowles, S. (1999). Evaluation of a nurse-led acute pain service. Can clinical nurse specialists make a difference? *Journal of Advanced Nursing, 25*(1), 30–37.

Mackintosh, C., & Bowles, S. (2003). The effect of an acute pain service on nurses' knowledge and beliefs about postoperative pain. *Journal of Clinical Nursing, 9*(1), 119–126.

Miaskowski, C., Crews, J., Ready, L. B., Paul, S. M., & Ginsberg, B. (1999). Anesthesia-based pain services improve the quality of postoperative pain management. *Pain, 80*(1), 23–29.

Polkki, T., Pietila, A. M., Vehvilainen-Julkunen, K., Laukkala, H., & Ryhanen, P. (2002). Parental views on participation in their child's pain relief measures and recommendations to health care providers. *Journal of Pediatric Nursing, 17*(4), 270–278.

Probst, B. D., Lyons, E., Leonard, D., & Esposito, T. J. (2005). Factors affecting emergency department assessment and management of pain in children. *Pediatric Emergency Care, 21*(5), 298–305.

Rupp, T., & Delaney, K. A. (2004). Inadequate analgesia in emergency medicine. *Annals of Emergency Medicine, 43*(4), 494–503.

Schafheutle, E. I., Cantrill, J. A., & Noyce, P. R. (2001). Why is pain management suboptimal on surgical wards? *Journal of Advanced Nursing, 33*(6), 728–737.

Schanberg, L. E., Anthony, K. K., Gil, K. M., & Maurin, E. C. (2003). Daily pain and symptoms in children with polyarticular arthritis. *Arthritis and Rheumatology, 48*(5), 1390–1397.

Schanberg, L. E., Keefe, F. J., Lefebvre, J. C., Kredich, D. W., & Gil, K. M. (1996). Pain coping strategies in children with juvenile primary fibromyalgia syndrome: Correlation with pain, physical function, and psychological distress. *Arthritis Care and Research, 9*(2), 89–96.

Shapiro, A., Zohar, E., Kantor, M., Memrod, J., & Fredman, B. (2004). Establishing a nurse-based anesthesiologist-supervised inpatient acute pain service: Experience of 4,617 patients. *Journal of Clinical Anesthesia, 16*(6), 415–420.

Simons, J., & Roberson, E. (2002). Poor communication and knowledge deficits: Obstacles to effective management of children's postoperative pain. *Journal of Advanced Nursing, 40*(9), 78–86.

Singer, A. J., Gulla, J., & Thode, H. C. (2002). Parents and practitioners are poor judges of young children's pain severity. *Academic Emergency Medicine, 9*(6), 609–612.

Stadler, M., Schlander, M., Braeckman, M., Nguyen, T., & Boogaerts, J. G. (2004). A cost-utility and cost-effectiveness analysis of an acute pain service. *Journal of Clinical Anesthesia, 16*(3), 159–167.

Twycross, A. (2001). Achieving consensus about pain content for child branch curricula. *Journal of Advanced Nursing, 34*(1), 51–60.

Twycross, A. (2002). Educating nurses about pain management: The way forward. *Journal of Clinical Nursing, 11*(6), 705–714.

Van Hulle Vincent, C. (2005). Nurses' knowledge, attitudes, and practices: Regarding children's pain. *American Journal of Maternal/Child Nursing, 30*(3), 177–183.

Van Hulle Vincent, C. (2007). Nurses' perceptions of children's pain: A pilot study of cognitive representations. *Journal of Pain and Symptom Management, 33*(3), 290–301.

Van Hulle Vincent, C., & Denyes, M. J. (2004). Relieving children's pain: Nurses' abilities and analgesic administration practices. *Journal of Pediatric Nursing, 19*(1), 40–50.

Van Niekerk, L. M., Hons, B. A., & Martin, F. (2003). The impact of the nurse-physician relationship on barriers encountered by nurses during pain management. *Pain Management Nursing, 4*(1), 3–10.

Visina, C. E., Chen, J., Gerhoffer, T. D., Biggs, R., & Ting, D. (2003). Community hospital physician and nurse attitudes about pain management. *Journal of Pain and Palliative Care Pharmacotherapy, 17*(2), 51–62.