2009

Nursing advocacy and the accuracy of intravenous to oral opioid conversion at discharge in the cancer patient

Maria L. Gallo
University of South Florida

Nursing Advocacy and the Accuracy of Intravenous to Oral Opioid Conversion at Discharge in the Cancer Patient

by

Maria L. Gallo, R.N., O.C.N.

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science
College of Nursing
University of South Florida

Major Professor: Susan C. McMillan, Ph.D., A.R.N.P.
Cindy Tofthagen, Ph.D., A.R.N.P.
Janine Overcash, Ph.D., A.R.N.P
Joan Gregory, Ph.D., A.R.N.P.

Date of Approval:
September 24, 2009

Keywords: Pain, Control, Appropriate, Prescribe, Comfort

Dedication

This is dedicated to my wonderful family, who without their support and encouragement, I would have never been able to accomplish my educational goals. To my husband Joe, who many years ago encouraged me to go to nursing school and started me on this journey into a career that changed my life. When I was stressed or discouraged, you told me how much you believed in me. For that, I owe you so very much. To my son Michael, who is now grown, you sacrificed part of your childhood for me. When I wanted to give up because I felt like I was not home enough, you encouraged me to keep going and told me you were proud of me. Thanks for being such a nice kid to raise. To my stepdaughter Angela and her husband Jason, thank you for opening your home to me when I needed to spend all those nights in Tampa and giving me a warm place to sleep, good meal and great company. You made me feel so welcome and took that portion of stress and worry out of my life. For mom and dad, I know you are proud of me. Thank you for keeping my heart warm and filling my memories with love. I love all of you very much.

Acknowledgements

Foremost I would like to acknowledge the extreme patience of Dr. Eric Lubiner. He has been in need of a nurse practitioner for at least 2 years but has waited for me, supported me and encouraged me throughout all this time. I am forever grateful. I would like to express my appreciation to my nursing directors and friends, Lisa Muscente and Tammy Bennett for the many sacrifices they made over the last several of years. Their flexibility with my schedule and their support and encouragement means a lot to me. Even though I am leaving her employ, Lisa has always made the effort to make my education priority one. I will always be grateful for her support. I am also thankful to all of my co-workers who have always waited to make their work schedules until after I had done mine. All of you made it easier to work and go to school. I am very grateful for your understanding. Thanks to my preceptors Beverly Douglas, Laurie Sullivan and Pat Ciampa-Muske, you have all so generously donated your time and knowledge to help me pursue my education. Thank you all for your wealth of knowledge and patience. Thanks to Dr. Susan McMillan, Dr. Cindy Tofthagen, Dr. Janine Overcash and Dr. Joan Gregory for being on my committee and for all of your insight into helping a weak writer build a respectable thesis. Dr. Tofthagen was especially helpful in assisting with fine-tuning this project, and she is an excellent clinical guide. A special thanks to Dr. McMillan for all of your tolerance, encouragement, wisdom, strength and calming tone over these last few years. Without you, I would have thrown in the towel at the beginning with my first frustration. You helped me believe in myself and I am a better nurse because of knowing you. You are truly an amazing educator.

Table of Contents

List of Tables

Nursing Advocacy and the Accuracy of Intravenous to Oral

Opioid Conversion at Discharge in the Cancer Patient

Maria Gallo

ABSTRACT

Pain is a common problem for cancer patients at home and when hospitalized. Pain interferes with all aspects of a patient's life including sleep, appetite, sexual desire, emotion and productivity. The under-prescribing of opioids can lead to uncontrolled pain in cancer patients. This study examined nursing advocacy related to pain management and the accuracy of the intravenous (IV) to oral (PO) opioid conversion at discharge in cancer patients.

Retrospective chart audits were done on 50 cancer patients. The physicians in the charts surveyed who prescribed the discharge medications consisted of a mix of hematologist/oncologists, surgeons and internists/hospitalists in a southwest Florida community. Fifty nurses were also surveyed and asked how comfortable they are in advocating for their patient's pain control and how often they actually advocate for proper pain management. This was done in the same southwest Florida hospital.

The most common cancer diagnoses of the patient subjects were colorectal cancer and esophageal/lung cancer. The results of this study show that an overwhelming majority of cancer patients (47 of 50), received doses that were not accurately converted from intravenous to oral opioids at the time of discharge from the hospital. This

conversion was based on the Johns Hopkins Opioid Conversion Tool. Nurses in general reported that they are comfortable in advocating for their patients' pain control, but more so in more autonomous areas of practice such as intensive care.

The results were overwhelming in the direction of poor control of patient pain. This study leads to the need for further research in the important area of pain control for cancer patients. It also indicates the need for additional education for physicians and nurses about pain control and opioid conversion.

Nursing Advocacy and the Accuracy of Intravenous to Oral Opioid Conversion at Discharge in the Cancer Patient

Chapter One

Introduction

In 2007, there were nearly 12 million new cases of cancer worldwide. Correspondingly, there were 7.6 million cancer related deaths. (American Cancer Society, [ACS] 2008). Cancer is one of the most feared diagnoses in the world, and pain is one of the most feared components of the cancer diagnosis (Wess, 2007). The mechanisms of cancer pain present physically, psychologically, socially, and spiritually, and combined can be labeled a biopsychosocial experience (Maltoni, 2008). Opioids are an important factor in the global treatment approach needed from early stages of the specific disease forward. For thousands of years, opioids have been the mainstay of pain treatment; this is still true today (Goodman & Gillman, 2007). Because pain is a subjective experience, each patient and pain interpretation requires custom tailoring to manage that pain (Maltoni).

The World Health Organization (WHO) developed the widely used three step Analgesic Ladder that presents a strategy for managing cancer related pain (WHO, 2008). While this ladder presents a succinct guide to controlling cancer pain, it does not address titration or conversion of pain medicine in cancer patients. These groups of patients, when hospitalized often are given intravenous opioids to control their pain. Upon release from the hospital setting, pain control medications are most often converted to an oral,

transdermal or rectal route. The foundation of treatment for cancer related pain remains opioid analgesia (Weinstein, Minggago, Buckley & Kwarcinski, 2006).

Problem Statement

While there have been numerous research studies involving conversion of oral opioid analgesics to controlled or immediate release forms (Wallace, Rauck, Moulin, Thipphawong, Khanna & Tudor 2008; Weinstein, Minggao, Buckley & Kwarcinski, 2006), there is little research regarding conversion of intravenous opioids to oral opioids. Some studies exist on the conversion to transdermal patches, but the review of literature revealed a gap in research relative to the conversion of IV opioid to oral form upon discharge from the hospital. The purpose of this study was to determine whether IV pain medicine conversions to oral pain medicine was consistent with Johns Hopkins Conversion Tool protocol, and how comfortable nurses are in advocating for appropriate pain conversion upon the patient's discharge from the hospital, and how frequently they do advocate for their patients.

Research Question

The following research questions guided this study:

1) In what proportion of cancer patients is the oral dose of opioids equivalent to the intravenous opioid dose for the discharged patient as indicated by the Johns Hopkins Conversion Tool instrument?

2) How comfortable are nurses in advocating for patients when they discuss analgesic doses with physicians?

3) How frequently do nurses advocate for patients' pain control with physicians?

Conceptual Definitions

Pain: Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage (McCance & Huether, 2006).

Nursing Advocacy- Integral component of the nurse's efforts to encourage and safeguard the well-being and best interests of his/her patients by doing the utmost to ensure that patients are apprised of their rights and have ease of access of information to make informed decisions (Vaartio, Lwino, Salantera & Suominen, 2006). For the purpose of this study, the focus is on nursing advocacy in relation to a patient's right to achieve appropriate pain control.

Opioid- Broad term that refers to all compounds related to opium, derived from the Greek word, opos, meaning "juice". Derived from the juice of the opium poppy. Drugs included are the natural opiates derived from opium: morphine, codeine and thebaine. There are also numerous semi-synthetic derivatives (Goodman & Gillman). For the purpose of this study, our focus will primarily examine conversions of hydromorphone and morphine sulfate.

Opioid Conversion-For the purpose of this study is a change in opioid drug route of administration with the goal of improving outcomes and establishing an opioid regimen that is as effective as prior therapy.

Significance

With pain being the most feared part of the cancer diagnosis (Wess, 2007), it is an essential part of the cancer treatment plan to address pain control in both the home and

clinical setting. Cancer pain effects 75% of patients with advanced disease and 50% of patients at any given disease stage (Maltoni, 2007). The most common opioid conversion tool is the Johns Hopkins Opioid Conversion Tool (Johns Hopkins, n.d.). When patients do not get relief from a certain medication, physicians often initiate a stronger opioid. The problem that is encountered is that physicians may calculate dosages incorrectly during this conversion, therefore leading to poor pain control (Grossman, 2003). Using a tool such as the Johns Hopkins Opioid Conversion Tool can assist clinicians to calculate dosages for all forms of opioid pain medications.

Another available tool aimed at controlling cancer patients' pain was the American Cancer Society's Pain Management Pocket Tool. This tool was designed to be an easy to use reference card to assist the health care professional on pain management principles; adjuvant analgesic medications, their starting doses, range, and indications; opioid switching and equivalency tables; non-opioid analgesics; and side effect management strategies (ACS, 2008).

Nursing advocacy can play an important role in dealing with pain management of the patient at the time of discharge. Nurses' advocating for their patients' pain control can help assure better patient outcomes. Studies have shown that more than 40 percent of cancer patients have less than adequate pain relief even though therapies and medications, both opioid and non-opioid, exist to control almost all of their pain (ACS, 2008). Nursing can advocate to help assure that the oral opioid dosages patients go home with are equal to the intravenous hospital doses so that pain can remain adequately controlled without any peaks or crises. This study focused on the hospital discharged

cancer patients, who received intravenous opioids during their hospital stay and sheds light on nursing advocacy and its role in accurate opioid conversion.

Chapter Two Review of Literature

This chapter presents the review of literature. First, relevant studies are presented, and this is followed by an integrated summary of the review.

It is well documented that cancer pain is the most feared component of a cancer diagnosis for a patient. Hospitalized cancer patients are often given intravenous opioids to control their pain, but at the time of discharge, there is a need to convert that intravenous opioid to an oral equivalent to continue adequate pain control. There are several tools available to aid in that conversion.

Mercandante, Casuccio, Fulfaro, Groff, Boffi and Villari (2001) evaluated the clinical benefits of switching from morphine to oral methadone in patients who experienced poor analgesia or adverse effects from morphine. This prospective design study also evaluated the clinical benefits of switching from morphine to oral methadone in patients treated with oral morphine who experienced poor analgesia despite progressive increases in morphine doses. This study asked the question, could switching from morphine to methadone improve analgesia and tolerability in cancer patients? The instrument used in this study was oral methadone administered every eight hours using different dose ratios. Intensity of pain and adverse effects were assessed daily, and the symptom distress score was calculated before and after switching.

The study sample consisted of fifty-two consecutive cancer patients receiving oral morphine but with uncontrolled pain and moderate to severe opioid adverse effects. The mean age was sixty. Twenty-eight participants were male and twenty-four female. All

had solid tumors. Inclusion criteria were: Uncontrolled pain not withstanding the titration and progressive increase of morphine doses, moderate to severe opioid adverse effects not controlled by symptomatic therapy and life expectancy longer than one month. Exclusion criteria were brain metastases, cognitive failure, major alterations of biochemistry, liver or renal function. Additional exclusion criteria were anticancer treatment such as radiation and/or chemotherapy or pamidronate infusion in the three weeks prior to the study. Two patients were excluded for poor compliance. This study was performed at La Maddalena Cancer Center in Milan and Palermo, Italy with inpatients from over a period of twenty-two months.

Results of the study revealed changing opioids was considered effective in eighty percent of patients. This was measured daily using the patient's self-reported intensity of pain using an analog scale from zero to ten. Changing opioids was considered effective when the visual analog scale for pain decreased to four or less. In ten patients who were switched from methadone because of uncontrolled pain, a significant reduction in pain intensity and an average of thirty-three percent increase in methadone doses necessary were found after a mean of 3.5 days. Results were achieved in a mean of 3.65 days. In thirty-two patients switched because of uncontrolled pain and morphine related adverse effects, significant improvement was found in pain intensity ($p=.005$), nausea and vomiting ($p<.031$), and lethargy ($p<.018$). It was found that eighty percent of patients with cancer pain who were in the study because of poor pain control and/or adverse effects, switching to oral methadone was a valid therapeutic option, but did require higher doses of methadone to equal calculated dose ratios previously published.

Kornick, Santiago, Khojainova, Primavera, Payne and Manfredi (2003) evaluated and described the safety and effectiveness of a method for converting hospitalized patients with cancer related pain from IV to transdermal fentanyl. This was a prospective design study of fifteen consecutive cancer patients at the Palliative Care Service of a large cancer center in an inpatient setting over a period of twelve weeks. Data was recorded on each participant prior to the application of the transdermal patch. This data was pain diagnosis, demographics, cancer diagnosis, serum creatinine and total bilirubin resulted in the prior seven days, and PCA dosage and lockout time. The primary method of obtaining information was through self-reports. Patients' pain level intensity ratings were measured on a verbal numeric ratings scale (NRS). This scale had eleven points ranging from zero (no pain) to ten (worst pain ever felt). Patients were also asked to answer the question, "Is your level of pain relief acceptable (yes or no)?" Pain intensity was also monitored by observation of no change in PCA rate for more than twelve hours and no change in the dosage of demand boluses available by PCA for more than twelve hours.

No statistically significant change in hourly PCA administration was identified at the six-hour intervals compared with administration immediately prior to patch application ($P<0.05$). Significant decrease in pain intensity was found at twelve-hour post patch application compared with ratings prior to patch application ($P=0.024$). Significant decreases in sedation were identified at six days compared with ratings prior to patch application ($P=0.026$). Twenty-four hours post patch application none of the participants had a pain intensity rating greater than five at rest or greater than six with activity.

According to the statistically significant decrease in resting pain, therapeutic blood levels were reached approximately twelve to sixteen hours after initial application of the patch. Due to this action, the patch was not recommended alone for acute cancer pain. For acute pain, crisis short acting oral opioids should be initiated prior to the initiation of the transdermal fentanyl patch. All fifteen patients in the study were switched successfully from IV to transdermal Fentanyl using a 1:1 conversion ratio. Pain remained well controlled and patients remained hemodynamically stable.

Weinstein, Minggao, Buckley and Kwarcinski (2006) compared the safety and efficacy of once daily-extended release hydromorphone HCL capsules with immediate release hydromorphone HCL tablets administered four times daily in the treatment of persistent moderate to severe cancer and noncancer related pain. There were 343 participants total. Two-hundred seventy-two had cancer pain. The mean age was 57.8. Fifty-one percent were women; forty-nine percent were men. Eighty-seven percent were white. All patients were older than twenty-two years of age. One-hundred twenty-six patients discontinued study participation during titration for a variety of reasons. Patients were transitioned to extended release (ER) hydromorphone HCl from their prestudy opioid analgesics and then underwent titration for four to twenty-one days to an individualized dose. All patients discontinued their prestudy opioids and received open-label ER hydromorphone. Calculation of dose was based on the aggregate dose of previous opioids and rounded to a multiple of the twelve-milligram capsule strength. Investigator's judgment of recent pain intensity was also considered when rounding up or down. After the initial twenty-four hour titration, doses were then titrated on an as

needed basis. Patients kept a diary where they recorded their pain ratings four times a day following the average pain intensity (API) scale. This scale is from zero to ten, with zero being no pain and ten being the worst pain possible. Patients also recorded time and number of ER hydromorphone tablets taken per dose and any concomitant meds and adverse effects they encountered. Content of diary was reviewed each night via telephone by staff.

In this prospective evaluation of conversion and titration, a conversion ratio of 8:1mg of prestudy opioid to oral ER hydromorphone HCl was found to be clinically useful in patients with persistent moderate to severe cancer related or noncancer related pain. At baseline the API score was 5.3, mean API scores were 4.7 after the first forty-eight hours and 3.4 by the end of titration.

Wallace, Rauck, Moulin, Thipphawong, Khanna and Tudor (2008) proposed the question, can conversion from standard opioid therapy to once daily oral extended release hydromorphone produce improved pain ratings in patients with chronic cancer pain? This open-label study involved three phases; stabilization, conversion and titration. The instrument used was the Brief Pain Inventory (BPI) with zero being no pain and ten being the worse pain felt. Pain relief was rated on a scale of zero percent (no relief) to one-hundred percent (complete relief). Interference of activities of daily living (ADL's) was rated on a scale of zero to ten. A five-point scale rated overall effectiveness one, poor; two, fair; three, good; four, very good; and five, excellent. No alpha coefficient was reported.

This study included of 148 patients with chronic cancer pain from six medical centers. Twenty-one patients withdrew prior to receiving study medication. Eighty-five of the patients completed the study. Thirty patients withdrew during titration, twelve during maintenance and four patient deaths were reported, unrelated to the study.

Results of this study found dose stabilization was achieved in 94% of patients who received the study medication. In 77%, stabilization was achieved with no titration steps. Mean BPI pain intensity ratings and interference scores decreased significantly ($p < .05$) after hydromorphone treatment when compared to the pretreatment values. In pretreatment versus endpoint general activity was 4.6 vs 3.8; mood 4.5 vs 3.3; walking ability 4.6 vs 4.0; normal work 5.3 vs 4.2; relations with others 3.7 vs 3.0; sleep 4.1 vs 3.2; and enjoyment of life 4.8 vs 3.8. Vital signs remained stable and adverse events were as expected in patients receiving opioid agonists, but specifics were not disclosed.

Ginsberg, Sinatra, Adler, Crews, Hord and Laurito (2003) assessed the conversion factors utilized by physicians to transfer postoperative patients from intravenous opioids to oral controlled-release oxycodone and the subsequent analgesic effectiveness in a multicenter study. This study asked the question, could conversion to oral controlled-release oxycodone from IV opioid analgesia be effective in the postoperative setting? The open-labeled usual use study asked participants to rate pain intensity using an eleven-point numeric rating scale (0-10). During the study, while hospitalized, patients rated their pain intensity just before conversion to oxycodone CR and then every six hours.

Patients also rated pain intensity during activities such as walking, bathing, changing position and physical therapy. After discharge for up to seven days, patients were contacted by telephone approximately six hours after their morning dose to obtain current pain level ratings of intensity. At completion of the study, they rated their overall acceptance of the medication.

The results of the study found that, given twelve hours following orthopedic, gynecologic and abdominal surgery, an initial daily oral oxycodone CR dose provided adequate pain control during the subsequent twelve-hour dosing interval and for a maximum of seven days. This dose was calculated by multiplying the amount of IV morphine used in the previous twenty-four hours by a conversion factor of 1.2, on average. No paralytic ileus was found on patients tolerating oral medications.

Integrated Summary

The literature review provided a review of the conversion from intravenous opioids to oral opioids at the time of discharge. The commonality among many of these studies was the use of the fentanyl patch for conversion. It was the lack of data available that supports the need for further studies to assure that patients have their pain managed to the best possible level and the inclusion of nursing advocacy in the assistance of this task.

Three studies were open-label studies, one being repeated dose and single treatment. Three were multicenter trials. Two were prospective nonrandomized trials. Study sample sizes ranged from fifteen to three-hundred and forty-two participants. Ages ranged from eighteen to seventy years old. While participants in all studies were split

almost evenly female/male, the primary race in the studies was Caucasian, limiting the generalizability of these studies. Brief Pain Inventory (BPI) or average pain intensity (API) scale was used in all five studies. These are eleven-point scales from zero being no pain to eleven being the worse pain imaginable. Adverse events were monitored and study discontinuations were documented. Although research was found that supported standardized titration of opioids, no studies were found of nursing advocacy related to pain management or opioid conversion.

Chapter Three Methods

This chapter presents the study methods that were used. First, the sample is described. This is followed by the instruments used to gather data. Then, procedures are presented including approvals. Finally, the plan for data analysis is detailed.

Setting and Sample

The sample for this study was drawn from charts of fifty inpatients with cancer and fifty registered nurses. Subjects were obtained from retrospective chart reviews in a community hospital in southwest Florida. Data from the study was collected during the months of October 2008 through May 2009.

Inclusion Criteria

Inclusion criteria for this study were as follows: patient participants had a cancer diagnosis with pain and were admitted with a condition related to their cancer. Patients were eighteen years or older; and were receiving intravenous opioids while in the hospital; and were either male or female.

Nurse participants were full-time hospital registered nurses. All participants read, wrote and spoke English. This data was obtained by survey during the month of June 2009 in the same community hospital in southwest Florida.

Exclusion Criteria

Patient participants admitted for problems unrelated to their cancer diagnosis were excluded. Also excluded were patients' under the age of eighteen; and patients not receiving intravenous opioids.

Instrumentation

Chart Audit for Pain

A chart audit for pain was developed to review the patient records twenty-four hours prior to discharge (Appendix A). The chart audit tool documented what IV opioids the patient was receiving in the twenty-four hours prior to discharge, and then documented the oral opioid dose prescribed for the patient for home use. Demographics were recorded to include sex, age, race, ethnicity, type of cancer, reason for hospitalization and type and location of pain.

Nursing Advocacy

The tool for assessing nursing advocacy in opioid conversion at the time of discharge was a questionnaire consisting of two questions. One question asked nursing staff about their feelings of comfort in addressing with the physician, the pain needs of their patient's at the time of discharge. Another question asked how often they actually do advocate on their patient's behalf. This tool documented their responses and perceptions related to their own advocacy (Appendix B).

Johns Hopkins Opioid Conversion Tool

This tool was designed to facilitate the rational conversion of one opioid regimen to an approximately equianalgesic dose of another. Medical students, house officers, pharmacists, nurses, oncology fellows, and attending physicians in the Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins have used this program for years to accurately calculate opioid conversions.

Institutional Approvals

Approval was obtained from the hospital in which this study was conducted and the Institutional Review Board (IRB) with a waiver for informed consent (Appendix C). There are no identified risks to the proposed subjects of this study given that nursing questionnaires were done anonymously and patient charts were used only to gather data. No patient consent was needed for retrospective chart reviews, and nurses completed questionnaires anonymously; therefore, consent was implied if the completed the forms.

Procedures

Patient participants were identified through oncology physician hospital rosters and medical record review. Cancer diagnosis was confirmed during medical record review. The author conducted chart audits and compared what IV opioid the patient was receiving in the twenty-four hours prior to discharge and what oral opioid that patient was sent home with. This audit information was then used to calculate equivalent doses using the Johns Hopkins Opioid Conversion Tool. This evaluated if appropriate conversion was calculated at the time of discharge. Nurse participants were given questionnaires and given two weeks to complete and return them. Privacy was maintained by submission of anonymous questionnaires via locked drop box. Participants were not compensated in any way for their participation.

Data Analysis

Demographic data were analyzed to describe the patient, physician and nurse subjects. Data were analyzed using frequencies, percentages, means and standard deviations.

Data was analyzed to answer the research questions. Research question 1 asked; in what proportion of cancer patients is the oral dose of opioids equivalent to the intravenous opioid dose for the discharged patient as indicated by the Johns Hopkins Conversion Tool instrument? This question was answered using frequencies, percentages, means and standard deviations. Research question 2 asked; how comfortable are nurses to advocate for patients when they discuss analgesic doses with physicians? This question was answered using frequencies, percentages, means and standard deviations. Research question 3 asked; how frequently do nurses advocate for patients' pain control with physicians? This question was answered using frequencies, percentages, means and standard deviations.

The data gathered in the fifty patient chart audits was used to evaluate whether physicians were prescribing the recommended opioid dose upon discharge from the hospital. This calculation was based on the Johns Hopkins Opioid Conversion Tool. Number and percent of patients receiving appropriate discharge doses of opioids was reported. This information was then converted to percentages of patients whose opioids were prescribed correctly according to the Hopkins Tool.

Chapter Four

Results, Discussion, and Conclusions

This chapter presents the outcomes and findings from the research study conducted at a community hospital in southwest Florida. It also discusses results and implications of the findings and limitations of the study.

Results

Patients Demographic Data

The patient sample consisted of 50 subjects, 23 male and 27 female, ranging in age from 28 to 91 with a mean age of 68.9 (SD=13.6). The majority of patients were Caucasian, with four subjects being African American. All patient subjects had a cancer diagnosis (Table1).

Table 1. Frequency and Percent of Participants' Demographic Characteristics

Demographics	Frequency	Percent
Gender		
Female	27	54.0
Male	23	46.0
Race		
Caucasian	46	92.0
African American	4	8.0

Admitting diagnosis of subjects varied greatly. Forty-eight percent of subjects had an admitting diagnosis related to abdominal and/or pelvic complaints, followed by 12% being admitted related to infection, 12% related to respiratory distress, 10% neurological issues, 8% weakness, and 10% varied general complaints.

Location of pain was primarily in the abdominal area at 54% with musculoskeletal complaints at 22%, followed chest complaints at 8% and various other complaints at 6%. Source of pain was most prevalent from metastatic disease at 24% followed by postoperative sources at 22% and unknown sources at 22% (Table 2).

Table 2. Frequency and Percent of Location and Source of Pain

	Frequency	Percent
Location of Pain		
Abdomen/Groin	27	54.0
Musculoskeletal	11	22.0
Chest/Neck	4	8.0
Other	8	6.0
Source of Pain		
Metastatic Disease	12	24.0
Post Operative	11	22.0
Gastrointestinal	7	14.0
Musculoskeletal	6	12.0
Infection	3	6.0
Other/Unknown	11	22.0

Patient's cancer diagnoses varied with 20% of patients having lung or esophageal cancer, and 20% having colorectal cancer (Table 3).

Table 3: Cancer Diagnosis

Cancer Diagnosis	Frequency	Percent
Colorectal	10	20.0
Esophageal/Lung	10	20.0
Pancreatic/Liver	5	10.0
Kidney/Bladder	4	8.0
Breast	4	8.0
Testicular/Ovarian	4	8.0
Leukemia/Lymphoma	3	6.0
Prostate	3	6.0
Other	7	14.0

Physician Sample

The physician sample of this study included three specialties; hematology/oncology specialists, surgeons, and internal medicine/hospitalists. The groups of hematology/oncology doctors were all from private practice, the surgeons varied, including general surgeons, urologists and neurosurgeons. The hospitalists and internists were general practice physicians (Table 4).

Table 4. Frequency and Percentage of Physicians by Specialty

Physician Specialty	Frequency	Percent
Hospitalist/Internist	20	40.0
Hematology/Oncology	17	34.0
Surgeons	12	24.0

Opioid Conversion

The intravenous opioids prescribed in the hospital setting was either hydromorphone or morphine sulfate. Of the 50 patient subjects that were studied, 47 (94%) subjects were under-prescribed oral opioids at the time of discharge, 2 (4%) were over-prescribed oral opioids at the time of discharge, and one (2%) was discharged on the appropriate oral opioid equivalent (Table 5).

Table 5. Frequency and Percentage of Conversion Results

Validity of Conversion	Frequency	Percent
Under	47	94.0
Over	2	4.0
Correct	1	2.0

Nursing Sample

This study also involved nurses and their comfort level advocating for their patients' pain control. Twenty-two percent of subjects studied were oncology nurses, 24% cardiac/stroke nurses, 18% ICU nurses, 14% medical nurses, 12% surgical nurses, and 10% rehab nurses. Surgical nurses reported feeling most comfortable advocating for their

patients' pain control, on a 0-10 scale, with a mean of 10 (Appendix B). They were followed by ICU nurses with a mean of 9.89 and oncology nurses with a mean of 9.27. Nurses who felt that they advocate for their patients the most are surgical and ICU nurses with a mean of 10, then oncology nurses with a mean of 8.82 and additional disciplines with means below 7. Overall comfort mean was 8.80, and the overall advocacy mean was 7.98 (Table 6).

Table 6. Means and Standard Deviations for Comfort and Advocacy by Nursing Specialty

Nursing Specialty	N	Mean	SD
Comfort			
Oncology	11	9.27	1.009
ICU	9	9.89	.333
Surgical	6	10.00	.000
Cardiac/Stroke	11	8.00	1.549
Medical	7	8.00	2.082
Rehab	5	8.00	2.121
Advocacy			
Oncology	11	8.82	1.401
ICU	9	10.00	.000
Surgical	6	10.00	.000
Cardiac/Stroke	11	6.45	2.115
Medical	7	6.57	1.618
Rehab	5	6.20	1.304

Table 7. Frequency and Percentage of Participant Scores on Comfort and Advocacy

1-10 Scale Score	Frequency	Percent
Comfortable		
10	27	54.0
9	6	12.0
8	7	14.0
7	4	8.0
6	2	4.0
5	4	8.0
Advocacy		
10	21	42.0
9	2	4.0
8	9	18.0
7	5	10.0
6	5	10.0
5	3	6.0
4	4	8.0
3	1	2.0

Discussion

Opioid Conversion

The patient sample largely consisted of middle-class, white, non-Hispanic topic. The sample was limited by the lack of non-white subjects, but was represented well in the equal distribution of male and female subjects.

Forty-seven out of the 50 subjects received inadequate opioid conversion at discharge. All subjects were receiving either intravenous morphine sulfate or hydromorphone as inpatients and when converted to oral opioids at discharge only one patient received an appropriate prescription that was equivalent to the IV dose. This lone subject received a prescription for the correct opioid dose by an oncologist. Interestingly, two subjects were slightly over-prescribed opioids at the time of discharge. Both these subjects had the opioids prescribed by hospitalists. Because of the overwhelming number of subjects who were under prescribed, having a larger sample would not have changed the outcome of this study. The results of the study cannot be compared to other studies, due to the lack of data on this subject. Intravenous opioid conversion to oral form was grossly under-prescribed in this sample of patients.

When a patient was discharged home from the hospital on a sub-therapeutic level of opioid, the patient's unmet pain needs then became an even greater challenge for patients and their families. This uncontrolled pain can lead to patients missing treatment and follow up appointments, patient as well as family fatigue, and poorer outcomes. The quality of the patients' lives and that of their families are adversely affected. This cascade

of unmet pain control needs helps to solidify the societal belief that cancer patients inevitably suffer and die in horrific pain (Wess, 2007).

Nursing Comfort and Advocacy

The survey showed that ICU nurses and surgical nurses not only reported being the most comfortable advocating for their patients' pain control, but they also reported advocating most frequently to the physicians for pain control needs. Oncology nurses were comfortable advocating for their patients, but less than that of ICU and surgical nurses. They also reported advocating less for their patients. It is possible that ICU nurses, perhaps because of their autonomy, tend to be very confident nurses and interact with physicians more frequently. Cardiac and rehabilitation nurses are least comfortable advocating for their patients' pain control and advocate less often than other nurses. This might be expected because of their work experience in dealing with opioids much less frequently.

Limitations

Having a more representative number of non-white subjects would have provided additional data to query if race had any relevance in the amount and type of opioid prescribed. . One limitation identified is that the survey could have expanded on why nurses did or did not feel comfortable advocating for their patients' pain control at discharge and what physician traits make them more likely to advocate for their patients. Other limitations include the study being done in one hospital, therefore limiting the geographical area in which the data for the chart audits and nursing surveys were collected. In addition, all data were collected using investigator-designed tools with

unknown validity and reliability. Also, it should be noted that this was self-report data and could have been biased in some way.

Implications for Nursing

The findings in this two-part study have several implications for nursing practice. Because patient advocacy is the primary role of the nurse it is important for nurses to obtain the skills and confidence needed to advocate for their patients' pain control to all physicians at the time of discharge, as well as during their hospital stay. In order to advocate in this way, nurses must learn equi-analgesic dosing methods themselves. Advocacy also should be a strong part of the nursing curriculum, in basic nursing programs and advanced practice programs. Physicians often prescribe the same opioid dosages to patients without regard to the intravenous opioid dose the patients are receiving in the hospital. It is within the nurses' scope of practice and abilities to approach the physician and bring to their attention the intravenous opioid dose the patient was receiving. By providing this information clearly and succinctly, the physician may be more apt to calculate a more suitable dose of oral opioid for the patient at time of discharge. This will also help to foster a collaborative relationship between the physicians and the nurses. This in turn will improve patient outcomes and increase the overall quality of the patient care delivered. Further nursing research could also investigate what obstacles nurses face when trying to advocate for their patients' pain control. This information could be analyzed to attempt to increase the comfort levels of nurses as advocates and that would lead to an overall improvement in not only oncology patient care, but also patient care in general.

Conclusions

Physicians, oncologists included, grossly under prescribed oral opioids at the time of discharge from the hospital setting. No relationship was found between medical specialty and prescription accuracy. Findings suggest that further research is needed focusing on the provision of tools or new avenues to assist in the conversion of intravenous to oral opioids upon discharge in the cancer patient. This study also indicates the need for addition pain control education in medical and nursing schools, with a focus on opioid conversions.

Nurses, for the most part, felt comfortable in advocating for their patients' pain control and directly advocated for their patients regularly. However, not all nursing specialties had the same comfort level, or advocated as often as others do. Findings suggest that additional support may be required at the hospital level to help increase advocacy in relation to pain control between nurses and physicians.

Recommendations for future research

Further research in these areas should include subjects from different racial backgrounds. Ethnic origin also may provide information that would assist in seeing a trend to over or under prescribe a certain ethnicity or race. An interesting direction in research would be to focus on physicians and their perceptions of obstacles in opioid prescribing and what limits their judgment in prescribing more accurately based on the patients intravenous usage. Future studies should include patient assessments of pain in the hospital and at home to help confirm the efficacy of the opioid dose or lack of it. In addition, nursing advocacy studies of this type should evaluate whether nurses are able to

make accurate opioid conversions. More studies regarding nurses and advocacy are needed to identify what keeps nurses from speaking up on behalf of their patients. With this identified, the overall outcome of patient care would improve greatly in relation to pain control in the oncology patient.

References

American cancer society. *Cancer Facts & Figures 2008,* Atlanta: American Cancer Society, 2008.

American cancer society pain management pocket tool (2008).. Retrieved June 24, 2008, from American Cancer Society Web site http://www.cancer.org/docroot/PRO/content/PRO_1_1_Pain_Management_Pocket_Tool.asp

Ginsberg, B., Sinatra, R., Adler, L., Crews, J., Hord, A., & Laurito, C. (2003). Conversion to oral controlled-release oxycodone from intravenous opioid analgesic in the postoperative setting. *Pain Medicine 4(1)*, 31-38.

Goodman, L, & Gillman, A (2007). *The pharmacological basis of therapeutics*. New York-McGraw-Hill.

Grossman, S (2008). The Sidney Kimmel comprehensive cancer center; Breaking news from our experts. Retrieved June 20, 2008, from Johns Hopkins Medicine Web site: http://www.hopkinskimmelcancercenter.org/publications/article.cfm?pubID=2&issID=7&artID=75

Johns Hopkins Opioid Converter http://www.hopkinsopioidprogram.org

Kornick, C., Santiago-Palma, J., Khojainova, N., Primavera, L., Payne, R., & Manfredi, P. (2003). A safe and effective method for converting cancer patients from intravenous to transdermal fentanyl. *Cancer 97(12)*, 3121-3124.

Maltoni, M (2007).Opioids, pain, and fear. *Annals of oncology*. *19*, 5-7.

McCance, K, & Huether, S (2007). *Pathophysiology the biologic basis for disease in adults and children*. Philadelphia: Mosby Elsevier.

Mercandante, S., Casuccio, A., Fulfaro, F., Groff, L., Boffi, R., & Villari, P. (2001). Switching from morphine to methadone to improve analgesia and tolerability in cancer patients: A prospective study. *Journal of Clinical Oncology*. *19 (11)*, 2898-2904.

NCCN,ACS, (2008). National comprehensive cancer network. Retrieved July 5, 2008, from Pain management tools Web site: http://www.nccn.org/patients/patient_gls/_english/_pain/2_assessment.asp.

Vaartio, H, Leino, H, Suominen, T, & Salantera, S (2006). Nursing advocacy: how is it defined by patients and nurses, what does it involve and how is it experienced?. *Scandinavian Journal of Caring Science*, *20*, 282-292.

Wallace, M., Rauck, R., Moulin, D., Thipphawong, J., Khanna, S., & Tudor, I. (2008). Conversion from standard opioid therapy to once-daily oral extended-release hydromorphone in patients with chronic cancer pain. *The Journal of International Medical Research. 33*, 343-352.

Wess, M (2007).Bringing hope and healing to grieving patients with cancer. *Journal of the American Osteopathic Association*. *107*, 41-47.

Weinstein, S, Minggao, S, Buckley & Kwarcinski, M. (2005). Multicenter, extended release hydromorphone hydrochloride administered every 24 hours to extended release hydromorphone hydrochloride administered every 24 hours to patients with persistent moderate to severe pain. *Clinical Therapeutics, 28,* 86-89.

World Health Organization WHO's (2008). WHO's Pain Relief Ladder. Retrieved (2009, March 22) from http://www.who.int/cancer/palliative/painladder/en/

Appendices

Appendix A: Chart Audit Tool

Chart Audit Tool

Chart Number_____Admission Date_____

Cancer DX_____

Admitting DX_____

Sex_____Age_____Race_____

Type and Source of Pain _____

_____

In-patient opioid RX_____

_____

Discharge opioid RX_____

_____

Ordering Physician Specialty_____

Appendix B: Nursing Survey

Nursing Survey

1. On a 0 to 10 scale (from not at all with **ANY** physician - to - completely comfortable with **ALL** physicians) rank how comfortable you are in advocating for your patients pain control to the physicians you work with.

_____

2. On a 0 to 10 scale (from **never** with any physicians - to **all** the time with all physicians) **HAVE** you advocated for your patients pain control with physicians you deal with.

_____

USF
UNIVERSITY OF
SOUTH FLORIDA

DIVISION OF RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-5618

January 15, 2009

Marie Gallo, RN OCN
Con-Graduate
1405 Razorbill Lane
Punta Gorda, FL 33983

RE: **Exempt Certification** for IRB#: 107511
Title: *The Appropriateness of Intravenous to Oral Opioid Conversion in the Cancer Patient at Discharge*

Dear Ms.Gallo:

On Review/Meeting date: 01/15/2009, the Institutional Review Board (IRB) determined that your research **meets USF requirements and Federal Exemption criteria #4: Existing data, documents, records, pathological specimens, or diagnostic specimens publicly available or recorded without identifiers.** It is your responsibility to ensure that this research is conducted in a manner reported in your application and consistent with the ethical principles outlined in the Belmont Report and with USF IRB policies and procedures.

Please note that changes to this protocol may disqualify it from exempt status. It is your responsibility to notify the IRB prior to implementing any changes.

The Division of Research Integrity and Compliance will hold your exemption application for a period of five years from the date of this letter or for three years after a Final Progress Report is received. If you wish to continue this protocol beyond those periods, you will need to submit an Exemption Certification Request form at least 30 days before this exempt certification ends. If a Final Progress Report has not been received, the IRB will send you a reminder notice prior to end of the five year period; therefore, it is important that you keep your contact information current with the IRB Office. Should you complete this study prior to the end of the five-year period, you must submit a Final IRB Progress Report for review.

Please reference the above IRB protocol number in all correspondence to the IRB c/o the Division of Research Integrity and Compliance. In addition, we have enclosed an Institutional Review Board (IRB) Quick Reference Guide providing guidelines and resources to assist you in meeting your responsibilities when conducting human subjects research. **Please read this guide carefully**.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-9343.

Sincerely,

Barry B. Bercu, M.D., Chairperson
USF Institutional Review Board

Cc: Valentina Lepsky-Perla, USF IRB Professional Staff
Vinita Witanachchi, JD Asst. Director/Privacy Officer