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Comics for Pediatric Oncology Patients and Families: Education and Empowerment

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COMICS FOR PEDIATRIC RADIATION ONCOLOGY
PATIENTS AND FAMILIES: EDUCATION
AND EMPOWERMENT

by

Natalie Johns

Honors Thesis submitted in partial fulfillment
for the designation of Research and Creative Honors

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Abstract

The major objective is to develop the first book of a boxed set series of comic vignettes that will serve as a clinical educational tool for pediatric patients with a recent cancer diagnosis and their caregivers. These comics are hypothesized to improve family and caregiver understanding of the disease, its treatment, and outcomes in an engaging and aesthetically pleasing way while creating an opportunity for experiential learning through its highly visual content. The overall goal of this project is to reduce patient and family anxiety and increase their health literacy while assisting the oncology team in providing optimal medical care and improving the quality of the treatment experience by providing pediatric oncology patients with an educational tool that teaches about the disease, its treatment and side effects. Comics aimed at other chronic illnesses, such as asthma and diabetes, were found to be effective forms of health communication. The combination of story-telling images paired with simplified text makes them amicable and easily understood by readers who may face barriers to understanding complex health information. Comics aimed at educating caregivers and pediatric cancer patients prior to treatment are not presently available in the United States. Best practices in comics and children's graphic novels were studied prior to creating this work. Common treatment protocols for pediatric cancers including chemotherapy, radiation therapy, and surgery were reviewed for accurate representation in this comic series. The first comic vignette in the series titled *Cancer Comics* was storyboarded, graphically rendered, and approved by a multidisciplinary team comprising of a radiation oncologist and specialists in the areas of health sciences, children's literature, and graphic medicine. The series is intended to be an in-clinic educational tool to engage pediatric patients more directly in their treatment.

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Introduction

Prior to developing this comic book series, common treatment plans for pediatric oncology patients were reviewed. These treatments became the basis for organization of the comic series, *Cancer Comics*, whose first book is titled “Luke Lionheart Gets Sick.” In book 1, the reader learns about cancer in general and common symptoms reported by patients, is introduced to members of their treatment team, and is exposed to common psychological impacts of a cancer diagnosis such as anxiety surrounding treatment. In books 2, 3, and 4, Luke journeys through treatments including chemotherapy, radiation therapy, and surgery to teach the reader about what to expect in their treatment plan. Book 5 addresses Luke’s return to school and the post-treatment life of remission.

According to the American Cancer Society, in 2019 pediatric leukemia encompassed 28% of all childhood cancers in ages fourteen and younger. This is the largest percentage of cancer diagnoses, followed by brain and other central nervous system tumors at 26%, neuroblastoma at 6%, and nephroblastoma, or Wilms tumor at 5%. Common treatment protocols of these varying pediatric cancers included a combination of chemotherapy, radiation therapy, and surgery.

A cancer diagnosis in a child conjures tremendous anxiety for parents and patients, especially in diseases such as high-risk pediatric acute lymphoblastic leukemia that are historically associated with a poor prognosis (Kumar et al., 1995). By providing another avenue for patient and caregiver education through this comic book series, we hope to reduce patient and caregiver anxiety prior to treatment without necessitating changes to the flow of optimal care. In recent years, researchers (Dupuis et al., 2016; Fern et al., 2013; Kameny & Bearison, 2002; Klosky et al., 2007; Wangmo et al., 2017)

have noted positive impacts of improved physician-patient communication and education for those being treated for illness, especially cancer. A major challenge any physician must overcome is bridging the knowledge gap for patients to understand their disease and appropriate medical intervention. Communication is often pinpointed as one of the most important aspects of interpersonal relationships. When things go awry, it is often due to miscommunication, especially relating to compliance with the treatment regimen.

Conversely, clear and concise communication generally yields expected results with minimal confusion. With the expectation that a physician is also an educator, mentor, and caregiver, communication is an integral part of successful treatment and prevention of disease. This comic book series will aid oncologists and other caregivers in enhancing communication to pediatric patients and their parents relating to diagnosis, treatment and follow-up care.

Better patient outcomes, including medication and treatment compliance and disease comprehension have been associated with improving communication between a physician and their patient (Charon, 2006; Green & Meyers, 2010; Klosky et al., 2007; Mickel et al., 2017). Narrative medicine, as defined by Charon, is “medicine practiced with the narrative skills of recognizing, absorbing, interpreting, and being moved by the stories of illness” (p. 4). By balancing techniques to better connect to patients while remaining effective with their time and providing patients with more opportunities to learn in clinic, a symbiotic benefit can be reached for all parties (Charon, 2006. Frank, 2013; Green & Meyers, 2010). Narrative medicine helps patients feel more listened to and understood, while physicians in turn receive improved compliance and connection.

While typical medical training involves the honing of scientific and critical thinking skills, Charon notes physicians often lack the ability to listen effectively and communicate emphatically. The divide between patients and providers is owing to a variety of reasons, such as the patient's limited understanding of mortality, the context of illness, beliefs about disease causality, and emotions of blame, shame and fear (Charon, 2006, p. 22). Likewise, the parents/guardians of pediatric patients lack the requisite knowledge to ask appropriate questions to prepare them for caregiving. This is where educational tools can be very effective. Without adding excessive expectations for physicians to change the pace necessary to provide optimal treatment, educational tools, such as comics, prior to treatment allow the patient and their parents or guardians to obtain information at their level of understanding, process it, and ask educated questions.

Comics as an art form is a marriage between imagery and written word to deliver a unique, sequential message that would otherwise be non-existent if one were to use the two mediums separately. Iconographic images, which are symbols or pictures that represent thoughts, feelings, and ideas, juxtaposed with text create an easily relatable experience where the reader feels with the work, reads and looks to understand it, and becomes engulfed in it (McCloud, 1993). *Cancer Comics* utilizes iconography so certain traits or feelings are emphasized within a panel, portraying non-verbal messages that may not be as apparent in traditional realism or western writing alone (McCloud, 1993, p. 30-41). Healthcare professionals and patients alike can benefit from this combination of art forms. Unique representations of illness in comics can thus shape societal conceptions of healthcare and illness (Williams, I., 2015). Williams (2015) argues, "graphic pathographies [(comics about healthcare/illness in autobiographical form)] are rich in

metaphor and visual depictions of illness and so are inherently engaged with the issues of healthcare,” which opens the door for discussion about health conditions.

The comic form was chosen as the medium for this patient education project specifically because of its highly visual nature. Comics that employ iconographic (or less detailed) depictions of characters allow a more diverse audience to identify with the narrative (McCloud, 1993). A comic’s reliance on plot makes for a more entertaining and engaging read when compared to a pamphlet that outlines treatment progression. Visual components also allow readers to interpret feelings, underlying themes, and relevant information without long, descriptive prose passages that may lose younger readers, or confuse those for whom English is a second language. In the case of pediatric patients, information that may have been inaccessible due to form, now has potential to be understood. Patients who understand their treatments and know more information about their illness tend to have reduced anxiety in the clinic, report less nausea or pain, and reduce the need for anesthesia during radiation therapy (Dupuis et al., 2016; Fern et al., 2013; Wamgmo et al., 2017).

An educational tool in comic book form used prior to treatment for pediatric oncology patients is hypothesized to reduce anxiety surrounding this new diagnosis and prevent associated feelings of dread stemming lack of treatment understanding or disease prognosis. Ångström-Brännström et al. (2015) states that parents are less anxious when they are educated about radiation therapy treatments and feel like they are involved in their child’s care. The comic form creates an opportunity for caregivers to directly engage patients in learning about treatment. Children can understand structure, language choice, and plot. It is intended to create a didactic learning experience between the patient and

their caregiver, who can read the comic with them. Younger patients will be engaged with visual components of the story, while caregivers now have a tool to teach about the patient's disease, its treatment, and side effects in non-medical terminology. Caregivers will indirectly learn about the disease itself and be able to formulate specific, productive questions for the treatment team that may have otherwise been lost in the vast amount of information covered in each appointment. Overall, feelings of empowerment and understanding with respect to their disease and treatment are hypothesized to yield positive outcomes for both parties' psychological well-being and treatment success.

Rationale

Graphic medicine selections in pediatrics is more limited than the selection for young adults and older readers. Comics with a focus of educating a patient prior to treatment, especially for pediatric oncology patients, has proven difficult to find. An educational comic series aimed at educating a patient and their caregivers prior to treatment will help improve the treatment experience for physicians, patients, and their caregivers.

Literature Review

Pediatric Cancer Education Tools

Today there are multiple modes of patient communication for pediatric cancers; however, literature searches did not yield an educational comic available for use today. YouTube videos and games to educate patients about cancer were found on the internet and appeared to be easily accessible. These are useful tools for patients and caregivers, and are a complement rather than a substitute for the comic book series which fills the niche of providing in-clinic education. The comic series provides a universalized opportunity for patient education that is controlled by the treatment team.

Risk of viewing non-relevant material online could significantly increase anxiety felt by patients and their parents. For example, “One of A Kind! A guide to radiotherapy” is a YouTube video that outlines what it is like for a patient to go in for radiotherapy treatment. It teaches the importance of patients remaining still during treatment, explains various equipment and tools that will be utilized in a young child-friendly format, and reminds the viewer to not be scared. Due to the algorithms present on the YouTube platform, additional videos that may not be relevant for the patient and their family can be prompted to play next. Overall, videos are useful tools for patient and parent education, but do have the added risk of gleaning information that goes beyond the necessary scope of the specific patient’s treatment. The comic series provides a format that only includes relevant information obtained directly from the provider, allowing the family to be confident in the information received.

Online pediatric education tools from Nemours KidsHealth.org and the American Cancer Society are available and encourage overall health literacy improvement. There is a page titled “Cancer Center” on kidshealth.org with various links to educational content. Essays regarding dealing with feelings about cancer and fear, common medical tests and procedure videos, and chemotherapy basics are also available. Additionally, the National Cancer Institute (2019) has patient and health professional versions of “Childhood Acute Lymphoblastic Leukemia Treatment (PDQ®): ...,” that outlines treatment and symptoms of the disease. Resources such as these created a baseline for judging content in the comic series. Since every resource covers a different aspect of cancer treatments, utilizing each as a tool to create a comprehensive comic book will streamline information for readers.

In Switzerland, HUGO for Kids is an application series of digital stories, animation, and preparatory exercises for children and their parents to do at home to help them understand their coming radiation therapy treatments (Ångström-Brännström, 2018; Haeberli, 2008). The most profound difference between the proposed comic book series and the educational content currently available is its method of delivery and intended use. By creating a tool that is meant to be used and provided in clinic, physicians have control over of the information shared with their patients. This will prevent unnecessary questions about unrelated diseases or treatments during appointments, while simultaneously fostering an environment for productive question and answers during patient visits.

The comic book series is generalized enough to promote universal education that can be accessible across hospitals without hindering care outcomes for physicians. Additionally, reading the comic as an active-learning activity between the patient and caregiver will allow the caregiver to feel empowered during treatment. Instead of passively taking verbal information from the physician, the caregiver can now participate in ensuring their patient understands and is comfortable with treatment.

In other specialties, like pulmonology and diabetes, comics have been a successful form of patient communication. Positive outcomes seen with pediatric patients in these specialties are thought to translate well into the field of oncology. *Iggy and the Inhalers* (2015), an educational comic series that teaches children about their asthma, is a prime example of successful patient education through comics. The series won “Best in Show” from the National Health Information Awards in 2016 and now has products linked to the comic series such as activity pages, an asthma action plan, trading cards,

animated comic videos, inhaler labels and more (Thomas, 2015). Informal research on the comic is conducted at the University of Wisconsin-Madison Madison Asthma Camp every summer and shows increased patient understanding. The comic series has also been used in schools, showing an increase in medication compliance and patient understanding (Thomas, 2015). In Northern Ireland, Revolve Comics collaborated with Diabetes Specialists to create a series of comics for people living with type I diabetes who need to administer insulin daily (Diabetes Research & Wellness Foundation, 2018). Readership for *Type 1* (2016) is aimed for teens and young adults, as compared to 6-11-year olds for *Iggy and the Inhalers* (2015), which shows the great potential for educational content that speaks to a range of pediatric patients.

Children's Comics and Graphic Medicine

Prior to making a storyboard outline for the comic series, literature regarding practices in creating comics, research on comics in medicine, and graphic novels relating to the target age range and cancer was extensively reviewed. Best practices of comics making, which include iconography, utilizing gutter space (the space in between each panel), and word choice on panels was studied and analyzed (Green & Meyers, 2010; McCloud, 1993; Weaver-Hightower, 2015). With the principles understood, stylistic choices are the next step in creating the comic series. Book length, style, target readership age, and content are all considerations that were established prior to creating the storyline.

For the first comic series, the intended audience is children ages 7-12. Comics created for this age group, like *Cardboard Kingdom* (2018), the *Human Body Theater* (2015), and *Guts* (2019) highlight aspects of style that were incorporated into *Cancer*

Comics. Cardboard Kingdom utilizes a vignette style to portray the narrative, which allows for an introduction of different characters, actions and conflicts while still connecting to a larger narrative in a more concise way. The *Cancer Comics* series follows a vignette style so as to allow for a more diverse character cast to be presented while highlighting different aspects of treatment—diagnosis, radiation therapy, chemotherapy, surgery, side effects, and daily life—in a more dynamic way. Each subsequent vignette will be created to allow seamless integration despite potential removal of books to create a tailored story for each patient. Patients who do not need surgery, for example, will not benefit from reading about it. Therefore, a way to remove sections that are irrelevant to patients is vital to maximizing effectiveness. Additionally, portions of the comic may become outdated with updated treatment protocols, so sections can be replaced or removed without ruining the entire book. The vignettes will be printed and compiled in a series, creating a boxed set that providers can easily customize. This boxed set can be further utilized by providing a new vignette each visit that directly correlates to the patient’s treatment phase. Something to learn from and look forward to may help reduce anxiety provoked by going to appointments.

Human Body Theater (2015) and *Guts* (2019) are prime examples of how medical concepts and emotions can be portrayed in iconographic form. *Human Body Theater*, however, is written for an older age group and thus provides too complex structured explanations for *Cancer Comics*. Still, this educational comic is an ideal resource for balancing text and imagery to teach children medical concepts. Comparisons of word-choice between the books and this comic were made prior to assessing the book on the

Felsch-Kincaid scale; literature searches for graphic novels relating to cancer intended for this age range did not yield results.

Some graphic novels written for older readers, like *Mom's Cancer* (2008) and *Cancer Vixen* (2006) are good examples of depicting side effects of cancer treatment. Psychological impacts that are more cancer specific were highlighted in the comic series as well. By and large, graphic medicine literature relating to cancer has to do with sharing the patient experience. This is valuable in generating connectivity amongst sufferers who witness the narrative (Frank, 2013). However, cancer narratives in graphic medicine are sparse for pediatrics and adolescents. The educational comic series will bridge this gap between patient experience and education for the younger sufferers of pediatric cancers.

Methods: Making the Comic

The comic series required integrating information from multiple disciplines including medicine, patient psychology, graphic and narrative medicine, and both patient and children's education. Each vignette fits into a larger narrative that follows common treatment components of pediatric cancers, including chemotherapy, radiation therapy, surgery, and remission (Kumar et al., 1995; National Cancer Institute, 2019; Rivera et al., 1993; Vora, 2017). Typical treatment timelines are over the course of several months to a year (National Cancer Institute, 2019; Vora, 2017). Each book is proposed to be presented in conjunction with the treatment timeline so patients and caregivers are receiving only relevant information as needed and applies to their specific treatment plan.

Figure 1

Series Breakdown and Proposed Distribution for Pediatric Oncology Patients Figure

Once the vignette subject and objectives were determined in Figure 1, the series development plan was created and can be seen in Figure 2. Logically, the process began with book 1, “Luke Lionheart Gets Sick,” which is in completion of this thesis. The same protocols will be followed for books 2-5 as future work, followed by in-clinic assessment

of their usefulness. “Luke Lionheart Gets Sick” focuses on events during the first visit with an oncologist after diagnosis. Luke meets his doctor, the care team, learns about cancer, and is reassured that feelings of anxiety are normal and appropriate. A prose narrative was written reflecting the vignette’s objectives to ensure that there was good narrative flow. Then, a storyboard, or rough depiction of panels to go along with the narrative, was drawn with an excerpt depicted in Figure 3. A multidisciplinary team consisting of a board-certified radiation oncologist with experience in treating childhood cancers and publications in pediatric malignancies, who verified scientific accuracy, graphic medicine specialist, who analyzed the panel layout and design, reviewed the storyboard and health sciences specialist, who ensured underlying themes of reassurance and validation were consistent throughout the narrative. Their feedback and suggestions were incorporated into the next phase of the book: drafting (Figure 4). The draft was then adjusted as necessary prior to entering the rendering phase of the work, which led to the final comic vignette “Luke Lionheart Gets Sick,” found at the end of this work. The back of this book also includes useful weblinks and worksheets to create another dynamic learning experience for the patient and their caregiver. The list includes resources like the 24-hour American Cancer Society hotline, Children’s Oncology Group website, St. Jude’s Hospital information, online forums for parents, and other websites approved by the radiation oncologist reviewer. There is also space in the back of each book for patients or caregivers to write questions for their physicians, draw pictures, and list important information such as medication lists.

Figure 2

Design Process Flowchart

Figure 3

Excerpt from Storyboard Outline of "Luke Lionheart Gets Sick"

Figure 4

Excerpt from “Luke Lionheart Gets Sick” Draft

Upon completion of the subsequent vignettes, the series will be evaluated in a focus group of caregivers whose children underwent pediatric cancer treatment. Their feedback will be incorporated into the series prior to testing the comic in clinic. Benefits of the materials created will then be determined via survey in clinic. Parents and children will rate their stress levels both before reading the comic and afterwards. Additionally, they will answer questionnaires to gauge understanding, comfort level with the material,

and whether they enjoyed the patient tool overall. This comic was written with the intention of creating an active learning experience for the patient and caregiver while empowering the caregiver to answer some questions their patient may have.

Readability and Understandability

The overall design process for this comic book series allows for easy adaptation of the narrative for expanded future work. Particular consideration was given to the word choice presented in the narrative, so the book would be appropriate for the intended 7-12-year-old age range. Using a readability calculator, the prose of the narrative was analyzed. It yielded a Flesch Kincaid Grade level score of 2.37, meaning US grade levels 2-3 could understand the story (Document Readability, n.d.). Additionally, the Flesch Reading Ease score was 90.41, which means the narrative is very easy to read and can be understood by the average 11-year old student.

The two Flesch scores are not interchangeable. Flesch Kincaid Grade Level Scores assess word and sentence length in determining the appropriate level distinction. Low grades correlate with the beginning years of American education (first, second, third grade, and so on). Since the average age of enrollment for each grade is relatively constant, the youngest possible age was determined based on this score. In the United States, the average second grader is 7 years old, which is the lower bound of our target age range. The Flesch Reading Ease Score is on a scale of 0-100 where higher scores indicate easily understandable prose (Document Readability, n.d.). Scores greater than 90 indicate work understandable writing for 11-year old's, which is close to our upper bound. If the series proves successful for this target audience, the vignettes will be adjusted for different age ranges, such as teens, by adding or removing specific concerns

and altering levels of scientific detail. For example, teen oncology patients are more concerned with the social and physical implications of a diagnosis, such as hair loss and missing school; whereas children aged 6-8 are more concerned with pain associated with treatment and being isolated from their parents. A breakdown of patient understanding of cancer was outlined by the American Society of Clinical Oncology website cancer.net (2019). The Patient Education Assessment Tool (PEMAT) was also used to gauge the effectiveness of communicating difficult concepts with the reader. A material's PEMAT score is the percentage of total points earned by total possible points. High percentages indicate better "actionability" or understandability (Agency for Healthcare Research and Quality, 2013). Three independent evaluators analyzed "Luke Lionheart Gets Sick" with the PEMAT tool. The understandability scores were 91.67%, 83.33%, and 91.67%, for an average of 88.89%. The actionability scores from each evaluator were 100%. Combining average understandability and actionability yielded an overall PEMAT score of 94.45%, which is very understandable content according to the Agency for Healthcare Research and Quality. It was necessary to use both Flesch-Kincaid and PEMAT to provide a well-rounded critical assessment of the quality of work (Agency for Healthcare Research and Quality, 2013). Based on the results for "Luke Lionheart Gets Sick," the series is on track for being an effective clinical education tool.

Discussion

It has been established that communication about the patient's disease and treatment plan is advantageous for reducing patient and caregiver anxiety, but what exactly does "communication" look like for children? One of the challenges in creating this series was recognizing that in pediatrics, the level of scientific understanding and

concerns felt by patients varies between ages in correlation with a child's development. It is recommended that caregivers of patients at every age approach a cancer discussion with defining their disease as "cancer" and not an alternative, less scary noun (American Society of Clinical Oncology, 2019). After the readership age range of 7-12 was established for the first series, information relating to how children of that age range dealt with a cancer diagnosis was sought. According to the American Society of Clinical Oncology (2019), 7-12-year-olds can understand some scientific concepts, but not in great detail. They acknowledge the necessary role of medication in treatment and are fearful of pain associated with treatments and procedures. Given their socialization at school, exposure to television, and in other social groups, they have some exposure to cancer related messaging, which can both inform and cause worry for children.

Communicating with pediatric oncology patients about their disease requires a level of honesty about treatment while providing encouragement that does not stifle their natural and understandable feelings of fear with overly-positive and unrealistic imperatives. Consistent use of phrases such as "stay positive" and "beat your cancer," while well meaning, can actually be damaging discourse for young and old patients alike. Discourse that inadvertently stifles negative feelings by only encouraging a positive narrative can be counterproductive and lead to an increase in the patient's suffering (Bock, 2013; Couser, 1997). Thus, remaining consistent in action items for patients to share *all* of their concerns and emotions was imperative in this project. In *Cancer Comics*, Luke takes an active role in both his imaginary view of what it means to get cancer treatment and how Dr. Owl engages with him. This subtle yet important distinction helps to curtail feelings of helplessness and lack of involvement in treatment

while also delivering a more productive and honest message to a patient and their family—without scaring them with a “harsh” reality. The word choice throughout the comic serves to validate and address feelings of anxiety, self-blame, and fear while encouraging an active role in treatment.

Prior to writing the narrative, children’s books referenced in the literature review were analyzed to find common word choices, sentence structures, and entertainment tactics. Children’s narratives and best practices for speaking and writing to children were investigated to ensure that the content remained effective and appropriate. One such example was an article written by Arthur Greenwald and another writer, Barry Head, who coined “Freddish,” which describes the careful language television’s Fred Rogers, from *Mister Rogers’ Neighborhood*, employed on the show. They wrote a nine-step action plan for “translating [language] into Freddish,” which served as a foundational guide to approaching children’s literature writing. Each sentence in “Luke Lionheart Gets Sick” was carefully constructed and reflected upon to avoid ambiguity, overly instructive, negativity, and value judgements while providing positive, actionable and inspiring suggestions (King, 2018).

The resource section at the end of the comic books was curated from multiple national resources present for parents to access (American Cancer Society, 2019; American Society of Clinical Oncology, 2019; National Cancer Institute, 2015; Nemours, n.d.; PDQ Pediatric Treatment Editorial Board, 2019). Short descriptions of each resource were provided beneath the web links so caregivers had a quick access guide to resources if they desire additional information. A board-certified radiation oncologist with significant experience in pediatric cancers ensured that each source was appropriate

for this audience. For vignettes later in the series, such as “Luke’s Armor,” which addresses radiation therapy, additional radiation-therapy specific resources will be listed. There are also sections for patients and caregivers to write checklists, questions for their provider, and important information about their diagnosis and treatment plan. The final two pages are blank and labelled for the pediatric reader to draw on allowing patients to process what they have just read in an interactive way, or to provide a positive outlet from the stress of a recent diagnosis.

Conclusion and Future Work

The culmination of this thesis project was the creation of the first book in the *Cancer Comics* series titled, “Luke Lionheart Gets Sick.” This book teaches the reader about cancer in layman’s terms, introduces the care team common to oncology practices, addresses common feelings surrounding a cancer diagnosis such as fear and anxiety, and encourages the reader to engage in good health practices. It defines concepts that may be otherwise unclear at the beginning of treatment and allows caregivers to be more involved in treatment through participation in patient education via reading with the patient. The book is an interactive tool that provides space for patients and caregivers to find relevant online resources, list specific diagnosis and treatment information, and engage in drawing activities for children—all approved for inclusion by the multidisciplinary team.

Comics are a useful medium that should be utilized for patient and caregiver education in pediatric radiation oncology clinics. The goal of this project is to improve the understanding of cancer treatment to enhance optimal care while also reducing stress experienced by patients and caregivers prior to the patient’s radiation therapy,

chemotherapy, or surgery. It will provide a guide for parents and children to visually interpret what their treatment will be like, and improve patient-physician relationships. A short series of vignettes in a boxed set for patients undergoing cancer treatment will be created, with the first book completed in culmination of this thesis. The usefulness and benefit will be assessed via survey in radiation therapy clinics. If the survey results yield the expected positive outcomes, the series will be adapted for more age groups, and subsequent books educating about specific types of pediatric cancers will be made. Anxiety will also be tested via survey for both patient and guardians, pre and post-comic versus a control group. The intended use for this work is as an educational tool treatment teams can employ in clinic; thus, the work will be distributed to healthcare providers.

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