2005

Asthma Brochure and Logo for Rochester General Hospital's Camp Bronchopower and Pediatric Associates

Christine Marie Curtiss

Follow this and additional works at: http://scholarworks.rit.edu/theses

Recommended Citation


This Thesis is brought to you for free and open access by the Thesis/Dissertation Collections at RIT Scholar Works. It has been accepted for inclusion in Theses by an authorized administrator of RIT Scholar Works. For more information, please contact ritscholarworks@rit.edu.
A Thesis Submitted to the Faculty of
The College of Imaging Arts and Sciences
In Candidacy for the Degree of
MASTER OF FINE ARTS

Asthma Brochure and Logo for Rochester General Hospital’s Camp Bronchopower and Pediatric Associates

by

Christine Marie Curtiss

18 May, 2005
Approvals

Chief Advisor

James Perkins
(Please print)

James Perkins
(Signature)

Date: _______________

Associate Advisor

Glen Hintz
(Please print)

Glen Hintz
(Signature)

Date: _______________

Associate Advisor

Martha Mullane
(Please print)

Martha Mullane
(Signature)

Date: _______________

Department Chairperson

Don Arday
(Please print)

Don Arday
(Signature)

Date: _______________
Acknowledgements

This thesis is dedicated to the memory of three people:

Gertrude A. Curtiss
Francis J. Curtiss
Rodney B. Wagner

I would like to thank my advisors, Professor James Perkins, Professor Glen Hintz, and Martha Mullane for their assistance during the development of my thesis. I appreciate the help of my contacts at Rochester General Hospital: Susan Crane, Gina Lord, Dr. Suzanne Mullin, Lina Corona, and Neil Pedraza. I would like to thank Muriel Gerardi, Mike Hallinger, and Sara Krause from RIT.

I would like to thank Mr. and Mrs. Rodney Wagner for their support and encouragement over the past four years. Thank you to my brothers and sisters who have helped and encouraged me along the way; Susan Anderson, Alice Curtiss, John Curtiss, Mary McGovern, Nora Sethi, Margaret Curtiss, Maureen Curtiss and Frank Curtiss.
Thesis Reproduction Permission

I understand that I must submit a print copy of my thesis or dissertation to the RIT Archives, per current RIT guidelines for the completion of my degree. I hereby grant to the Rochester Institute of Technology and its agents the non-exclusive license to archive and make accessible my thesis or dissertation in whole or in part in all forms of media in perpetuity. I retain all other ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of the thesis or dissertation.

Print Reproduction Permission Granted:
I, Chrisine Marie Curtiss, hereby grant permission to the Rochester Institute of Technology to reproduce my print thesis or dissertation in whole or in part. Any reproduction will not be for commercial use or profit.

Signature of Author:  Christine Marie Curtiss  Date:  

Inclusion in the RIT Digital Media Library Electronic Thesis & Dissertation (ETD) Archive

I, Christine Marie Curtiss, additionally grant to the Rochester Institute of Technology Digital Media Library (RIT DML) the non-exclusive license to archive and provide electronic access to my thesis or dissertation in whole or in part in all forms of media in perpetuity. I understand that my work, in addition to its bibliographic record and abstract, will be available to the world-wide community of scholars and researchers through the RIT DML. I retain all other ownership rights to the copyright of the thesis or dissertation. I am aware that the Rochester Institute of Technology does not require registration of copyright for ETDs. I hereby certify that, if appropriate, I have obtained and attached written permission statements from the owners of each third party copyrighted matter to be included in my thesis or dissertation. I certify that the version I submitted is the same as that approved by my committee.

Signature of Author:  Christine Marie Curtiss  Date:  
# TABLE OF CONTENTS

I. Introduction .................................................. p. 5  
II. Background Information About Asthma .............. p. 7  
III. Treatment Options ......................................... p. 10  
IV. Socioeconomic Factors and Asthma ................ p. 14  
V. Camp Bronchopower ........................................ p. 16  
VI. Contacts ........................................................ p. 18  
VII. Thesis Project Development .......................... p. 20  
VIII. Audience .................................................... p. 21  
IX. Creation of the Brochure ............................... p. 23  
X. Creation of the Camp Bronchopower Logo ........ p. 29  
XI. Thesis Show ................................................... p. 31  
XII. Conclusion .................................................... p. 33  
XIII. Bibliography ............................................... p. 36  
XIII. Figures ......................................................... p. 38
I. Introduction

Asthma worldwide is often referred to as an epidemic. There has been a seventy-five percent increase in cases of asthma between 1980 and 1994.\(^1\) This increase is a cause for alarm among health care professionals. Many of the reasons cited for the rise in asthma are increased exposure to allergens, a lower occurrence of childhood infections, poor diet and the use of antibiotics in young children which may alter the naturally occurring bacteria present in the lungs and intestines.\(^2\) There is also fear that environmental air quality may be a factor which contributes to the prevalence of asthma. Air quality in new construction may be a problem because of formaldehyde present in rugs and particle board furniture.\(^3\) Also, modern air systems recirculate the same air and many allergens and chemicals are not filtered out.\(^4\) The increase in asthma worldwide makes it a disease that needs to be understood through proper education.

Children’s asthma affects the lives of many young people throughout the world. “Asthma is a leading cause of chronic illness in children and is responsible for a


\(^4\) Carlson 2.
significant number of lost school days."\(^5\) It is estimated that ten percent of children in North America will develop asthma.\(^6\) Families of asthmatic children are affected by this problem as well. There are many factors that can be altered to create an optimal environment for successful asthma management.

Effective materials designed to educate children about their asthma are scarce. Most literature about asthma is written for adults. Without proper education an asthmatic child will experience more discomfort, possible hospitalization and death in some cases. It is crucial for asthmatic children to know the correct actions to take to respond to an asthma attack. This information can help the child to be safer in the world and help to foster their independence.

In my thesis I created a lay public educational brochure for Rochester General Hospital. This brochure illustrates how to use a spacer device with a metered dose inhaler (MDI). Learning to use a spacer with an MDI is necessary for children who are prescribed an MDI for their asthma. The target audience of the brochure is children age seven and up. I created original artwork for the brochure in Adobe™ Photoshop and Illustrator. The layout of the brochure was done in Quark. The brochure text was translated into Spanish and the layout was adopted for a Spanish version.

The second part of my thesis was to revise the logo for Camp Bronchopower. Camp Bronchopower is a children’s asthma camp run by Rochester General Hospital.


The camp originally had a logo with a gloved hand and a rope. This was changed to a logo that relates to asthma and the active focus of the camp.

The brochure and logo will be used starting this year at Camp Bronchopower. The brochure will be distributed to campers. It will also be distributed by the pediatric clinic at Rochester General. The logo will be used on future publication materials about the camp and will be printed on T-shirts that the children and staff wear at camp.

II. Background Information About Asthma

A basic background in the anatomy of breathing is helpful to better understand children’s asthma. Air exchange in the body occurs when the patient inspires. Air enters the mouth, goes down the trachea and splits from the trachea into the right and left main bronchi. The air then flows from the main bronchi into smaller branches called bronchioles. The bronchioles terminate at the alveoli. The alveoli are thin membrane sacs surrounded by capillaries. Oxygen enters the bloodstream and carbon dioxide leaves the bloodstream by diffusion across the capillary and alveolar membranes. In a healthy person air is inspired and expired regularly.

The anatomy of the bronchioles affects air exchange. The lumen is the hollow space in the center of the bronchiole tubes. The bronchioles are surrounded on the outside by bands of involuntary smooth muscle. When air is inspired it is warmed and moistened by the secretions of the mucosal surfaces that line the bronchiole tubes. The moist air is effectively exchanged at the alveoli.
In asthmatic people the flow of air is compromised. Some symptoms of an asthma attack may be wheezing, shortness of breath or coughing. Difficulty breathing indicates a problem with normal airflow. In an asthma attack bronchoconstriction, inflammation, and increased mucus production inhibit normal airflow. These three factors narrow the lumen of the bronchiole to a size that make it difficult for the body to efficiently exchange oxygen and carbon dioxide.

Bronchoconstriction is a significant problem in an asthmatic response. Bronchoconstriction occurs when the involuntary smooth muscle around the bronchioles constrict. When this occurs the lumen narrows and less air reaches the alveoli. Some asthmatics have hyperreactive or twitchy airways. This means that they are prone to airway constriction when they encounter certain airborne irritants.\(^7\) Bronchoconstriction is a physiological response that causes the asthmatic to experience shortness of breath.

Inflammation is a second cellular response that occurs during an asthma attack. The mucosal lining of the bronchioles swells and becomes red when an irritant is encountered. The inflammatory response involves IgE at the cellular level. IgE is a protein involved in allergic responses that interacts with mast cells. Mast cells contain granules that cause an inflammatory response. When IgE comes in contact with the allergen it is specific for, it stimulates mast cells to release their granules. This release recruits other cells to the site and inflammation and swelling occurs. "Within seconds of mast cell degranulation there is an increase in the fluid and mucus being secreted into the

Researchers maintain that inflammation is present in the bronchioles of an asthmatic even when they are not in the midst of an attack.  

Atopy is a condition which can affect the degree to which a child exhibits asthma. Atopy is a genetic predisposition to high levels of IgE. If a child has high levels of IgE he will be more inclined to have a strong inflammatory response. Atopy is linked to chronic inflammation and increased mucus production.

Increased mucus production is another factor that makes it difficult for a patient to breathe during an asthma attack. Goblet cells are the sites of mucus production in the mucosal lining of the bronchioles. During an asthma attack the goblet cells increase mucus production. The thick mucus compromises airflow through the bronchioles. There is evidence that chronic asthma causes the number of goblet cells in the mucosa to increase. More goblet cells would result in the overproduction of mucus.

Triggers are an important concept in understanding asthma. A trigger is an irritant that causes the asthmatic response to occur in a person’s body. Some examples of triggers are dust mites, pollen, weather, smoke, animal dander, mold, cockroaches and their droppings, viruses, and sulfites. These triggers activate the asthmatic response in an individual who is sensitive to them. Each person who suffers asthma can have many

---


different triggers. It is important to understand one’s triggers and make every attempt to avoid these triggers if at all possible.

Weather is an important trigger to consider. Cold air causes tightening of the bronchioles. This trigger can be easily avoided in the winter by wearing a scarf. Enhancing the ability of the airways to interact with warm, moist air prevents the cold air response of the bronchioles.

Exercise is an important aspect to a healthy asthmatic’s life. It is important to keep weight down for the added benefit of breathing easier. This is true for both children and adult asthmatics. However, an asthmatic person must be aware that exercise can be a trigger. Exercise induced asthma occurs because the air volume inhaled increases from about one gallon per minute to 5 to 10 gallons per minute during intense exertion. The increased air volume does not have the time to be warmed sufficiently and the cool, dry air induces coughing and bronchoconstriction. A patient should take medication before exercising when exercise is a trigger.

III. Treatment Options

Treatment options for asthma vary widely. To insure optimal treatment it is important to monitor how asthma symptoms change over time. There are many medications for asthma and different methods for drug delivery. Children have unique needs to consider for treatment of their asthma.

Asthma symptoms can fluctuate in different circumstances. The environment around a patient directly affects their breathing. Different temperatures and exposure to potential triggers affect the asthmatic constantly. Asthma diaries and peak flow meters are two standard ways to monitor environmental changes.

An asthma diary is a useful tool for tracking asthma. The idea of the asthma diary is to keep a record of all medications taken and responses to environmental stimuli. When accurate records are taken the patient can become more attuned to triggers and effects of medications. The discipline needed to keep a detailed diary is often too difficult for children. If the parent or guardian is able to oversee the use of an asthma diary it is a great asset in asthma treatment.

Airflow measurements from a peak flow meter are also kept in an asthma diary. A peak flow meter is a device used to measure airflow. Consistent use of a peak flow meter can reduce the number of severe asthma attacks for the asthmatic. The device is a cylinder with a mouthpiece that the patient expires into. Upon expiration a gauge on the side of the cylinder registers a number and this is the measurement of airflow. If the patient is monitoring this flow consistently and they notice that airflow is poor, they can treat an attack at an early stage. This may prevent hospitalizations and undue stress. This is another technique that requires discipline and parental guidance. If the patient does not use the peak flow meter consistently the information is not useful.

There are many medications available to treat asthma. Sometimes a patient may receive different types of medication to target different symptoms of their asthma. In an acute attack a patient uses a medication that is fast acting. In daily use a patient uses a medication to control ongoing symptoms of their disease.
Albuterol is a common medication that is prescribed for use in an acute attack. Albuterol is a β₂ adrenergic agonist known as a “rescue medication.” This type of medication causes bronchodilation, the relaxation of constricted smooth muscle around the bronchioles. Albuterol targets the β₂ receptor in the muscle and causes the receptor to relax. Albuterol does not address the problem of inflammation or hyperreactivity of the asthmatic airways.

Inhaled corticosteroids are taken daily and are referred to as “maintenance medications” or “control medications.” These medications counteract the inflammation often present in asthmatic airways. The steroid reduces the inflammation of the mucosal lining of the bronchioles.¹³ This type of medication needs to be taken consistently and must be built up in the system of the patient to be a successful control medication.

There are different devices available for drug delivery. A nebulizer is a common device used for drug delivery. A spacer device used with a metered dose inhaler (MDI) is an alternate way to take medication. Research supports that the spacer device and MDI combination offers a better method of drug delivery than a nebulizer.

Previously, the best method to deliver medicine to the lungs in an acute attack was a nebulizer. A nebulizer uses a stream of oxygen to suspend a liquid medicine into particles that are inhaled slowly. The machine is attached to an air compressor that forces air through plastic tubing and into a chamber where it mixes with the liquid medicine so it can be inhaled. Nebulizers, even smaller portable models, are heavy and difficult to carry. The nebulizer delivers constant particles to the patient during both inspiration and

expiration. The medicine is thus wasted and unnecessarily exposes the patient to lingering medicine which can result in oral thrush.

The spacer device on the other hand is cheaper, lightweight, portable, and easy to use. The spacer limits medicine intake only to when the patient inhales. In an acute attack it is important to obtain fast delivery of medicine for the best possible asthma management. This is best accomplished by using a spacer device with a metered dose inhaler. “Although the spacer is advantageous at all ages, it is absolutely critical when using MDI therapy for the young child, alleviating the need for precise coordination of breath and actuation during the drug delivery maneuver, as well as assisting in reduction of medication side-effects.”

Another significant factor that may contribute to the superiority of the spacer/MDI combination is the difference in how the medicine is inhaled. When a patient uses a nebulizer the rate of respiration remains constant and normal. When using a MDI with a spacer, the patient breathes out before putting their mouth around the mouthpiece. Then, the patient takes a slow and deep breath to inhale the medication. There has been some research to support the idea that taking this deep breath may allow the medication to penetrate more deeply into the patient’s lungs and allow the patient to


16 Magee, 689.
open up smaller bronchioles that may not be accessed by the nebulizer's constant rate of inhalation and exhalation.\textsuperscript{17}

Spacers with metered dose inhalers are used to inhale different medications. The spacer/MDI can be used to inhale rescue medications such as albuterol or maintenance medications such as inhaled corticosteroids. The spacer and metered dose inhaler combination is a versatile drug delivery system.

IV. Socioeconomic Factors and Asthma

Socioeconomics plays a role in the prevalence of asthma in different populations. There is a significant relationship between deaths attributed to asthma and income. The rate of asthma in African American populations is disproportionate to the incidence of asthma in white populations: “For example, in 1993, among children under age 5, African American children were six times more likely to die from asthma than white children.”\textsuperscript{18} Often, in the African American demographic, emergency room visits are used to treat asthma flare-ups rather than use of a primary care physician.\textsuperscript{19}

\textsuperscript{17} Francis V. Adams, M.D., \textit{The Asthma Sourcebook: Everything You Need To Know}. 2\textsuperscript{nd} Edition (Los Angeles: Lowell House, 1995) 53.


It has been noted that poor children in general, not just African Americans, are five times more likely to end up in the emergency room for an acute asthma attack.\textsuperscript{20} This is a problem of lack of quality health care for this population as well as lack of solid asthma management skills and education.

A 2002 study in the \textit{Journal of Asthma} examined why the asthma morbidity rate for African Americans in Arkansas is well above the national average. Only about half of the inner city children who were prescribed a metered dose inhaler were using a spacer device. This problem occurred because of the health care system in the state.

Medicaid required pharmacies to fill out paperwork and submit it in order for the patient to receive a spacer device with their metered dose inhaler. Many pharmacies were unwilling to go through these necessary steps. Without a spacer device the risk to the patient is oral thrush and possible vocal cord paralysis. Oral thrush is a yeast infection in the mouth. These occur when inhaled corticosteroids are deposited in the mouth and throat.\textsuperscript{21} Also, insuring proper drug delivery is difficult without the spacer device. This difficulty is of great concern for children with asthma. It is essential for children to use a spacer device with a metered dose inhaler.

The \textit{Journal of Asthma} article asserts the point that the lack of spacer device use in the African American population was directly affecting asthma morbidity rates.

\textsuperscript{20} Dr. Neil Buchanan and Dr. Peter Cooper. \textit{Childhood Asthma: What it is and what you can do.} (Berkeley: Tricycle Press, 1991) 225.

Addressing this one problem would improve the lives of countless people. The care of those on Medicaid is directly impacted when the pharmacies do not file appropriate paperwork. It is important for individuals to realize that not following through with their responsibilities can negatively impact the lives of others.

The problem with obtaining spacer devices through Medicaid has been resolved since 2002. Other problems now affect urban populations. There are limits to the number of spacer devices covered through insurance. This is a problem for a child who needs to use a spacer at home and at school. Another issue involves the provider. It is essential that the providers prescribe the spacer and educate the patient to use the device properly. These actions take valuable time. Some insurance companies are now paying for teaching and visit costs but there are many patients whose needs are not met.

Asthma has social implications as a disease that can be altered by greater public awareness. If society begins to recognize the significance of the needs of asthmatic people the rates of deaths attributed to asthma will decrease. There are many asthma outreach programs that impact asthma in urban populations.

V. Camp Bronchopower

Rochester General Hospital runs a children’s asthma camp called Camp Bronchopower. This three-day camp takes place in August at Camp Haccamo in Penfield. Many nurses and other healthcare professionals from the hospital run the camp and volunteer as counselors. Rochester General and Regional Community Asthma
Network fund the camp one hundred percent. This community outreach helps many in the greater Rochester area.

Camp Bronchopower offers a positive solution to lack of asthma education in Rochester. The inner city environment poses many challenges for asthmatic children and their families. Unfortunately, not every child with asthma has the best possible home environment. There may be general lack of education of children and parents about asthma triggers and ways that the environment could be altered to help the asthmatic.

The supportive and educational environment of the camp provides a wonderful and safe atmosphere for children to learn in a fun way. The camp environment provides new life experiences for many campers. These experiences include performances, nature education, arts and crafts, exercise, and education focusing on a healthy lifestyle. The structure of the environment and scheduled times for medication management create a great backdrop for successful asthma management.

The camp environment is more conducive to learning than the clinician office. The ability to connect with an asthmatic child over a three-day period allows for many more opportunities to reinforce education than is available in a short office visit. The atmosphere at camp is more fun and relaxed than the clinic and is a better place for the child to learn about asthma.

The hope of Camp Bronchopower is that children will learn to manage their own asthma. Denise R. is a thirteen year old camper who attended camp this past summer and has attended camp since she was nine years old. Her favorite part of the camp has been going horseback riding. In terms of her asthma, the camp has given her great independence. She now has a permission slip to carry her inhaler with her at school and
she can use it if need be without going to the nurse’s office. Her triggers are exercise, weather, and smoke. The smoke is difficult because someone in her family smokes indoors. She has also “learned about the mucus” that gets thick in her lungs during an attack. A big plus to camp is “camping” with other children that have asthma and learning you are not alone.

Some children who attend Camp Bronchopower enjoy the experience for the social aspect. Often, asthmatic children can feel different or as though they do not belong. It is a benefit to the camp for the children to be surrounded with other children who understand what it is like to have asthma. Ryan P., an eleven year old camper, enjoys “meeting other people.” Camp Bronchopower is a dynamic place and it serves the needs of many asthmatic children in and around Rochester.

VI. Contacts

There are many important contacts from Camp Bronchopower and Rochester General Hospital who were involved in the development of my thesis project:

Martha Mullane is a nurse practitioner involved with Camp Bronchopower. She has been my main contact in the development of the brochure and logo for the camp. Her daughter Megan was the model for the cover image and instructional steps of the brochure.

Gina Lord is the director of Camp Bronchopower and her input was received through the process of development as well.
Dr. Suzanne Mullin is a member of Rochester General Pediatric Associates at Rochester General Hospital. Dr. Mullin reviewed the brochure and gave advice about the text of the brochure and the logo.

Lina Corona was the woman who printed the brochures for the hospital.

Susan Crane, a woman in charge of PR for the hospital, was consulted about the brochure layout and printing.

Neil Pedraza, a contact of Martha Mullane, translated the body text of the brochure into Spanish.

There are many important contacts at RIT who were involved in guiding the thesis project:

Professor Glen Hintz
Professor James Perkins
Both Professor Hintz and Professor Perkins were my main source of critique as the projects evolved.

Muriel Gerardi, art director of ETC Design Services on campus, provided feedback that influenced the brochure.
Mike Hallinger, a recent M.F.A. graduate in Graphic Design from RIT, critiqued the logos in a crucial stage of development.

Sara Krause, a fellow M.F.A. candidate, helped to translate a line of text for the Spanish version of the brochure.

VII. Thesis Project Development

Last August I attended Camp Bronchopower upon invitation from Martha Mullane. Martha Mullane invited me to come to camp to see what ideas we could generate to create educational materials to improve the current camp. I had the opportunity to interview campers and to interact with them for three days. I went to different educational sessions with the children as well as some of their fun activities sessions. It was during this time that I discovered a need for a brochure about spacer devices for the camp. It was also determined that the brochure should be available in Spanish for many of the campers. Martha also mentioned that she would like to see a better logo for the camp.

After the camp was over I continued research. I began to focus my research on spacer devices and existing instructions for their use. I also began to read books about how to design a successful logo and design brochures.
The thesis project evolved and changed slightly during the course of its development. Originally, I set out to create an informational brochure for Camp Bronchopower and a new camp logo. Camp Bronchopower is affiliated with Rochester General Hospital and Rochester Pediatric Associates. At first it was determined that the brochure should have Rochester General Hospital logo on it. This was subsequently changed to Rochester Pediatric Associates. The brochure was funded by Camp Bronchopower but its distribution will not be limited to the campers. Suzanne Mullin, a Pediatric Associate at RGH, approved the brochure and showed it to the other associates. Distribution from the clinic will reach more people than if the brochure was limited to the children attending Camp Bronchopower.

VIII. Audience

Audience was an important concept in developing both the brochure and the logo. The children of Camp Bronchopower are the main audience for both projects. The average age of the children who attend Camp Bronchopower is seven years old. I strove to create educational materials that would appeal to this group aesthetically. I also made effort to consider the reading level of seven year olds.

Audience was a consideration in developing the images for the brochure. In targeting children with illustrations it is necessary to use an age appropriate model. Both of the models illustrated in the brochure were campers at Camp Bronchopower. These models serve to represent some of the diversity of Camp Bronchopower’s children. Using models that the children can relate to is a deliberate choice. For current campers
and those in the near future, the brochure will be fun for them because they know the girls who are pictured. Relating to fellow campers will aid the communication of the ideas in the brochure.

The audience determined the image of Step 4 as seen in the brochure. Martha explained that children have a different way to discharge the medication into the chamber than adults. Adults depress the canister of the MDI after they seal their mouth around the mouthpiece and before inhalation. This technique is awkward for children. It is easiest for a child to hold the chamber in one hand at waist level and depress the canister of the MDI with the thumb of their other hand. Because the chamber holds the medicine particles in suspension, the time delay before inhalation is not a problem. The child exhales and seals his mouth over the mouthpiece to breathe in the medication.

In the body copy for the brochure it was important to be sure the text was written to the level of a seven year old. Martha Mullane informed me of an option in Microsoft Word to reveal readability statistics. When this box is checked it publishes a Readability Statistics dialogue box after the document passes through a grammar check. One of the statistics is a Flesch-Kincaid Grade Level. I revised my text until it registered a first grade reading level.

On February 8, 2005 my nephew Harwant Sethi read me the brochure. He is seven years old and does not have asthma. He was able to clearly read the text to me and explain the steps in his own words. I thought it would be helpful to have someone in the target audience age without asthma look at the brochure to see if they could understand it even if they are not familiar with the information.
Many of the children who attend Camp Bronchopower speak Spanish. The brochure text was translated into Spanish to address the needs of this part of the audience.

Audience changed the course of development of the logo design. Originally, I presented a logo design at a meeting with Dr. Mullin and Martha Mullane. Dr. Mullin liked the design, but critiqued it as “too adult.” Exercise became a new focus for a direction and the use of playful colors was introduced to appeal to children. I also tried to maintain a generic figure representation in the logo design because the camp is for both boys and girls.

Audience was a guiding factor in the development of both the brochure and the logo. Many critical decisions about how to convey information were influenced by the target audience.

IX. Creation of the Brochure

There were many steps in the process of creating the spacer brochure. The printing method was a primary consideration. Choosing software to create the artwork and layout of images and text was another important decision. Digital reference photos were necessary to develop the instructional steps. Creating the artwork and writing the body copy for the brochure came next. The layout of the images and text followed until the final draft emerged. The final draft was emailed to the printer and delivered to the hospital upon completion.

An important aspect of designing the brochure was meeting the requirements of the printing process. Rochester General Hospital utilizes a Xerox Docutech to print
brochures for lay public education. With high quality digital copiers available it is cheaper to print small jobs in this manner.

The printing process affected my choice and use of color in the brochure. Originally, I thought that the brochure would be produced via traditional offset printing. I assumed that a two color printing process would be most cost effective and was envisioning a design in a Pantone color and Black. Once informed that the brochures would be printed on a Xerox Docutech copier, I had much more freedom of color use and execution.

There are several reasons why Illustrator was chosen as the software for the creation of the instructional images in the brochure. Illustrator line art has the beauty of traditional pen and ink illustration but offers much more diversity. The ability to scale line art to any size is a significant factor in choosing this software. The same brochure images were scaled larger for the poster display in the thesis exhibition. Another reason for choosing Illustrator is the clean, graphic quality of images created this way. For instructional steps it is important that the choice of style does not obscure the information. Illustrator line art serves to distill the proper information in an effective way. Illustrator line art is a common choice in the current field of Medical Illustration as seen in medical text books, allied health brochures, and some websites. It is important to utilize tools that will be useful in my career as a Medical Illustrator and be current with the field.

After discovering the printing method was a high quality copier I decided to do the cover image of the brochure in Photoshop. I was seeking a strong cover image to be a focal point for the brochure. Painting with a Wacom tablet in Photoshop lends itself to
highly rendered imagery. This was the direction I wanted to pursue for the focus of the cover.

The layout of the brochure was created using Quark. This software is commonly used for creating layout designs for print. I contacted Susan Crane at Rochester General Hospital who creates all of their brochures and she took me through the basics of how she sets up a general brochure layout. She showed me how to set up guides for the text and images. The images in the brochure are linked eps and tiff files.

Last August I took my first digital photos at Camp Bronchopower of my model as she showed me how to use a spacer device with a metered dose inhaler. I used these images and my research to determine the six steps of the brochure. I had to schedule a second meeting in the fall to shoot more photos to get the correct perspective I had in mind for some of the steps.

The creation of the cover artwork of the brochure began with a digital painting of my model executed in Photoshop. I made paths for different areas of her body and painted within them using a Wacom tablet. (See Figure 1) I had the reference photograph on a layer below the paths and could hide the painting layers to check my accuracy. The background for the digital painting is a portion of a laminate sample that I scanned. This was placed on a layer below the paths. The cover image was scaled to the appropriate size and saved as a tiff file.

I used my reference photos directly in the creation of the instructional steps of the brochure. Each photo was sized in Photoshop to fit within an 81/2 x 11 page. For each image the process was the same. I placed the photo on a layer in Illustrator. On a new layer I traced the main features of the photo using the pen tool. After arriving at a basic
pleasing outline I manipulated the line weight in the stroke palette to create a sense of upper left lighting in the line art image. I then outlined the strokes and worked with the paths palette to combine the strokes and refine the gesture of the lines. The completed image was scaled to the proper size to fit in the brochure layout. The final files were saved as eps files. This process was repeated for each Illustrator image in the brochure.

After researching many websites and texts I wrote the text for the brochure. Martha Mullane and Dr. Mullin approved the text and gave suggestions for revisions. The readability of the text was checked through Word. Megan Mullane, a member of the target audience, read the brochure and explained the text. Harwant Sethi, a member of the target age group who does not have asthma, read the brochure and explained the information in his own words.

Martha Mullane had the text translated by Neil Pedraza for the Spanish version of the brochure. Professor Perkins showed me how to use keyboard commands to type the accents for the Spanish text. This Spanish text was typed into the original Quark layout of the brochure and saved as a new file. The creation of the Spanish version of the brochure was completed quickly as the main portion of the work had been completed.

With the images and text complete the layout of the brochure began. In the color design of the brochure there was a design that influenced the layout of the brochure cover. In *Brochure Design That Works*, by Lisa Cyr, there is a design by Kenneth Cole that inspired part of the cover of the spacer brochure. (See Figure 2) Although used in a different way, the red colored rectangle bleeding to the edge becomes an inspiration for the treatment of the Rochester General Hospital type as seen on the cover panel of the first draft of the brochure. (See Figure 3) This type utilizes reverse type on a purple
rectangle that bleeds to the edge. The color use in the brochure evolved throughout the project.

The brochure evolved through three drafts before the fourth and final draft emerged. The first draft of the brochure contains the general layout of the information. This draft has a neutral peach background with purple used in some areas. (See Figure 3) I took some of the color from the digital painting of Megan and began to move it around the layout.

A critique of the first draft of the brochure with Muriel Gerardi in ETC Design Services was helpful. Muriel suggested reducing the image sizes to create a more pleasing layout. Muriel noticed that I had reversed the type on the bottom right against the purple rectangle. Muriel offered a thought about repeating this motif and using a reverse type for the heading as well. This idea was incorporated into the next design draft. (See Figure 4)

The second draft of the brochure reflects the progression of the design. The image boxes were all changed to rectangles in this draft. I didn’t think this was helping the design so I changed back to a curved corner frame for the images in the third draft. (See Figure 5)

Professor Hintz gave two important criticisms of draft three which helped the overall design. He pointed out that the color scheme was very “feminine.” Also, Professor Hintz suggested there was not enough space around the border of the images. It was a good lesson to realize that images need to be appropriately scaled to work well with the design layout.
The fourth draft of the brochure was very close to the final draft. (See Figure 5) The images are scaled to a smaller size to give them enough space. The color scheme was altered to a green and purple scheme. The green works well as a color for allied health as it is reminiscent of surgical scrubs.

A critique with Professor Perkins helped to refine the fourth draft. He noticed the vertical dotted lines that floated behind the instructional steps. He mentioned that visually the vertical line was drawing the eye down. This would bring the viewer from step 1 to step 4 for example. I changed the vertical line to a horizontal one that brought the eye across the page. (See Figure 6) This modification and an update to the phone number were the last changes before the file was sent to print.

There were some problems encountered in the development of the brochure. The main problem involved creation of the pdf file for printing the brochure. Another problem involved the translation of the text into Spanish. There were points when the project was challenging.

I had a problem to work around when preparing the pdf file from the Quark layout. The Quark in the computer labs at RIT won’t generate a pdf because they are corrupt. I found a design student that suggested a creative approach to fix the problem. I exported each Quark page as an eps. In InDesign, I placed each eps page and centered them on a tabloid size page. Then I added crop marks and exported the layout as a pdf. Each time I made corrections to the layout I went through this process to generate a pdf to print at the HUB. Sometimes creative problem solving can be used to work around difficulties that present themselves in a project. I was worried that I was going to have to redo the layout in InDesign, but this was not necessary.
There was one problem that came up during the Spanish translation. When I received the translation it was missing a line of text. The version of the brochure that was sent to Neil Pedraza was not the final version. The missing line was: If you have questions or problems with using a spacer call your medical provider. A peer, Sara Krause, who is accomplished both in Spanish and Medical Illustration, translated this text. It would have taken too long to contact Neil Pedraza so I was able to find another way to accomplish this task. Figure 7 shows the Spanish version of the brochure.

X. Creation of the Camp Bronchopower Logo

Creating a new logo for Camp Bronchopower was an involved process. The first part of the process involved sketches to work out ideas on paper. After some ideas began to take shape I worked in Illustrator to develop them further. (See Figure 8) My beginning logo designs focused on the abstraction of the lungs, trachea and bronchioles. I had several general ideas started but no clear direction.

Mike Hallinger, a recent MFA graphic design graduate gave me a helpful critique that altered the course of my logo design. I showed my beginning logo ideas to Mike. Upon viewing these rough ideas, Mike suggested altering the profile of my main shapes to create an alternate meaning.

The next logo I developed incorporates the idea of an altered profile for multiple meanings. (See Figure 9) I tried to incorporate the letters C and B for Camp Bronchopower. There is a C shape that cuts through the left lung and a B shape that cuts
through the right lung. There is a suggestion of a sun and a river which hints at the nature setting of Camp Bronchopower. I also tried to create a shape that would be a figural presence. (Figure 10 illustrates these ideas.)

A meeting with Martha Mullane and Dr. Mullin reviewed this first presented logo draft. They thought it was a striking logo but felt it was “too adult.” It ended up being a great point of departure for the final logo designs. It was determined that the logo should incorporate the idea of exercise. They mentioned swimming and basketball as inspirations.

After the meeting I developed two new symbols, figures 11 and 12. These logos incorporate abstract figures in silhouette against larger abstract lung shapes. Martha Mullane and Dr. Mullin chose Figure 12 as the final logo.

The final logo is more literal and conservative than previous versions. The four teams of Camp Bronchopower are red, yellow, green, and blue. This prompted the use of the four existing team colors in the design. The yellow circle implies the sun and the trachea in an abstract way. The lung shapes allow for a color backdrop behind the figures; green hinting at grass and blue for water. I added the ball to define the foot of the right figure as a way to incorporate the fourth team color; red. The final design is playful with generic figures because the camp is for both girls and boys.

I thought the logo in Figure 9 was most successful aesthetically. Although I felt it was the most interesting design it did not meet the needs of the client. The last logo is perhaps less “exciting” visually, but it serves the needs of the target audience and represents what the camp is about. The playfulness and use of bright color make it age
appropriate. I think the lesson I learned from this perspective is that what may appeal to
the designer should be subordinate to the needs of the client.

There was an inspiration found for the approach to color as seen in the final logo. 
I read through Logo Design That Works by Lisa Silver in preparation for my logo work. 
The Handspring logo was one that I found inspiring for a playful logo. (See Figure 13) 
The use of bold shapes and an abstracted figure are successful. “The colors green, blue, 
and yellow convey a sense of youth and vibrancy.”22 Looking at other designs and logos 
has been helpful in generating ideas and ways to approach my thesis work.

The final logo was converted to a jpg file and emailed to Gina Lord, the director 
of Camp Bronchopower. The logo will appear on the T shirts for the campers and 
counselors at Camp Bronchopower. It will also be used in future printed materials for the 
camp.

XI. Thesis Show

Deciding how to present my work at my thesis show was challenging. I wanted to 
be sure that the viewers could understand some of my process. The development of the 
logo, in particular, was a process with constant revision. I decided to do a graphic design 
layout for the development of the logo. I used a checkerboard-like layout to create 
visual interest and movement. (See Figure 14) I used a neutral texture in the background 
to contrast the white squares with the logos in them. I used dotted lines to direct the 
viewer’s eye between the logos and the type.

(Gloucester: Rockport, 2001) 113.
A poster version of the Asthma Brochure information was exhibited in the thesis show. Professor Hintz suggested this idea as I was working on the brochure. This gave me an opportunity to repurpose my Illustrator line art in a larger format. This is the beauty of Illustrator vector line art. It can be scaled to any size without compromising the quality of the image. The poster presentation was 30” x 40.” (See Figure 15)

The third piece created for the thesis show was a layout showing the English version of the brochure in the tabloid layout with crop marks to show how it looked as it went to print. This poster display discussed the focus of the brochure and how it was used. This allows the viewer to see one of the steps of the brochure in its development. (See Figure 16) I utilized the same texture that I had used in the background of the Logo Designs layout. This created a presentation that was visually unified. The work was unified, but each piece had distinct features so they would function alone as well.

The last part of the presentation for my thesis show was a plastic pocket with brochures in it so the viewer could examine the final product. I had received the English version of the brochures in time for them to be displayed with the poster displays. I printed a Spanish version at the printer on campus because the Spanish version had not yet arrived.

The thesis show was a great way to get feedback about the work I did for my thesis. I spoke with other students in many different disciplines about my work.
XII. Conclusion

Developing educational materials for Rochester General Hospital has been an invaluable experience. There were many facets to the process. Observing the camp activities was a helpful starting point. Research was a useful tool to determine the focus of the project. Fulfilling the needs of a client was challenging.

Bronchoconstriction, inflammation, and increased mucus production are three main aspects of an asthma attack. The patient may cough, wheeze, or experience shortness of breath as a result of these problems. Triggers are the irritants that cause an asthma attack in the patient. Each asthmatic has a unique set of triggers.

There are different medications available to treat the symptoms of the asthmatic response. Bronchodilators such as Albuterol open the airways by relaxing the muscles around the bronchioles. Inhaled corticosteroids are responsible for targeting the problem of inflammation. Both of these medications can be taken with a spacer device and a metered dose inhaler.

The spacer device and metered dose inhaler combination is the best method of drug delivery. Nebulizers were the preferred method of drug delivery at one time. A spacer and metered dose inhaler is most economical, lightweight, and portable of all drug delivery devices.

There is a higher rate of asthma in poor populations. Without proper attention given to the socioeconomic problems of children’s asthma death rates will continue to climb. Hospital outreach programs such as Camp Bronchopower actively help urban populations.
The spacer brochure was developed successfully to address the needs of the children of Camp Bronchopower. The audience was considered throughout the development process. The text was formatted to the reading level of a seven year old. The models were from the target age group. The health professionals at Rochester General Hospital were actively involved in guiding the revisions of both the brochure and logo.

There were problems encountered in the brochure creation process. The pdf file needed for printing was difficult to create. Quark would not generate the file so the layout was transferred to InDesign. The file was exported from InDesign as a pdf. In the future I will test the application with a sample file to make sure this problem does not arise again.

Another problem was the Spanish translation. The translation was missing a line of text. A peer translated the remaining line of text. In the future I would wait until the final English brochure text was available before sending the file to be translated.

The logo development was a learning experience as well. The biggest problem was the lack of constraint to begin. I was unaware of any specific direction from the staff. In the future I would ask many questions to try to find out what the client’s focus is to save time.

Communication is essential in developing educational tools. There was a great deal of correspondence necessary to evaluate the projects during development. Emails, phone calls, person-to person meetings, and traditional mail were all used to communicate. There were many people involved in the project in various capacities. It was fundamental to the success of this project to respond to emails and follow up with
people in a timely fashion. This lesson will be helpful as a professional medical illustrator.

It was exciting to take a project from conception to completion. I was fortunate to work with many exceptional people during my thesis development and execution. I learned how to manage a large project and keep within the framework of a timeline.
Bibliography


LEFT: Various pieces of clothing appear among images that portray a certain lifestyle, making a connection between the two. The softly focused, almost grainy, black-and-white photographs help to set a nice contrast to the sharply focused product imagery that was created using a flatbed scanner.

Figure 1

Figure 2
Using A Spacer Device With Your Inhaler

Sometimes it is hard to use an inhaler the right way. It can be difficult to breathe in at the right time. A spacer makes this timing easier. The following steps show how to attach your spacer to your inhaler. They also show how to release the medicine into the spacer and how to breathe it in correctly.

1. Remove caps from spacer and inhaler.
2. Insert inhaler into spacer.
3. Shake well.
4. Depress the canister. If it is easier you can use two hands.
5. Breathe in. Close lips around mouthpiece of spacer. Breathe in slowly and deeply. Don't go too fast or your spacer will whistle! Megan is pointing to show us how we breathe in.
6. Hold breath. Remove spacer from mouth. While holding your breath count to ten. Breathe out. Repeat steps 3 to 6 if needed.

Figure 3
First draft of Spacer Brochure
Sometimes it is hard to use an inhaler the right way. It can be difficult to breathe in at the right time. A spacer makes this timing easier. The following steps show how to attach your spacer to your inhaler. They also show how to release the medicine into the spacer and how to breathe it in correctly.

1. Remove caps from spacer and inhaler.
2. Insert inhaler into spacer.
3. Shake well.
4. Push down on the top of the inhaler to release medicine into spacer.
5. Breathe out. Close lips around mouthpiece of spacer. Breathe in slowly and deeply. Don't go too fast or your spacer will whistle! Megan is pointing to show us how we breathe in.
6. Hold breath. Remove spacer from mouth. While holding your breath, count to ten. Breathe out. Repeat steps 3 to 6 if needed.

Figure 4
Second draft of Spacer Brochure
Using A Spacer Device With Your Inhaler

Sometimes it is hard to use an inhaler the right way. It can be difficult to breathe in at the right time. A spacer makes this timing easier. The following steps show how to attach your spacer to your inhaler. They also show how to release the medicine into the spacer and how to breathe it in correctly.

If you have questions or problems with using a spacer call your medical provider.

To begin stand up. Remove caps from spacer and inhaler.

Insert inhaler into spacer.

Shake well.

Push down on the top of the inhaler to release medicine into spacer. Breathe out.

Close lips around mouthpiece of spacer. Breathe in slowly and deeply. Don’t go too fast or your spacer will whistle! Megan is pointing to show us how we breathe in.

Hold breath. Remove spacer from mouth. While holding your breath count to ten. Breathe out. Repeat steps 3 to 6 if needed.

Figure 5
First draft of Spacer Brochure with green
Sometimes it is hard to use an inhaler the right way. It can be difficult to breathe in at the right time. A spacer makes this timing easier. The following steps show how to attach your spacer to your inhaler. They also show how to release the medicine into the spacer and how to breathe it in correctly.

If you have questions or problems with using a spacer call your medical provider.

To begin stand up. Remove caps from spacer and inhaler.

Insert inhaler into spacer.

Shake well.

Push down on the top of the inhaler to release medicine into spacer. Breathe out.

Close lips around mouthpiece of spacer. Breathe in slowly and deeply. Don't go too fast or your spacer will whistle! Megan is pointing to show us how we breathe in.

Hold breath. Remove spacer from mouth. While holding your breath count to ten. Breathe out. Repeat steps 3 to 6 if needed.

Figure 6
Final draft of Spacer Brochure
Cómo Usar Un Espaciador Con Su Inhalador


Si usted tiene preguntas o problemas usando un espaciador llame a su proveedor médico.

1. Para comenzar, péndase de pie. Retire la tapa del espaciador y del inhalador.
2. Coloque el inhalador dentro del espaciador.
3. Agite bien.
4. Presione la parte de arriba del inhalador para soltar la medicina dentro del espaciador. Respire hacia fuera.
5. Cierre los labios alrededor de la boquilla del espaciador. Respire hacia dentro lenta y profundamente. Hágalo muy despacio de modo que su espaciador no silbe. La niña nos muestra cómo debemos respirar hacia dentro.

Figure 7
Spanish Version of Spacer Brochure
Figure 8
The final Logo
The chosen mark, which has since been nicknamed "Flip." The colors green, blue and yellow convey a sense of youth and vibrancy.

Figure 13
The Development of a logo for Camp Bronchopower

This logo design was part of the journey to move away from line and towards form. The line becomes thicker and starts to create more visual impact.

This logo design uses the figure but the effect is too literal. The design is too specific and the detail gets lost when the logo is small.

This design was presented at a development meeting with the representatives from Camp Bronchopower. This was a point of departure which led to the focus of the final logo, exercise.

The four teams of Camp Bronchopower are red, yellow, green and blue. The lung shapes allow for a color buildup behind the figure, green hinting at grass and blue for water. The ball defines the root of the PPH figure as a way to incorporate the fourth team color, red.

The Development of a logo

This logo design uses the figure but the effect is too literal. The design is too specific and the detail gets lost when the logo is small.

This logo design was part of the journey to move away from line and towards form. The line becomes thicker and starts to create more visual impact.

Figure 14 Logo designs Poster
How To Use A Spacer With Your Inhaler

1. To begin stand up. Remove caps from spacer and inhale.
2. Insert inhaler into spacer.
3. Shake well.
4. Push down on the top of the inhaler to release medicine into spacer.
5. Breathe out. Close lips around mouthpiece of spacer. Breathe in slowly and deeply. Don't go too fast or your spacer will whistle! Megan is pointing to show us how we breathe in.
6. Hold breath. Remove spacer from mouth. While holding your breath count to ten. Breathe out. Repeat steps 3 to 6 if needed.

Figure 15 Spacer Device Instructional Poster
This brochure was developed in partnership with the Pediatric Associates of Rochester General Hospital. This brochure will be distributed to the children who attend Camp Bronchopower, a summer asthma camp offered by the hospital.

The choice was made to design the brochure for the Pediatric Associates rather than just for the camp. This will allow for a greater impact for the brochure because it will be given out to patients at the hospital clinic as well.

Reference photos were utilized to create the artwork for the brochure. The line art was created in Illustrator and the cover image was created in Photoshop. The layout was created in Quark.

The brochure will be translated into Spanish and a second version will be printed. This will accommodate the Spanish speaking population of both the camp and the clinic.

Figure 16 Spacer Brochure Development
Cómo
Espanol
Su Inhalador