

Becoming a Medical Educator

Experiences in the Scholarly Concentration
in Medical Education

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Class of 2011



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Introduction

Growing up the eldest of three children, I have always enjoyed leading and teaching others. It started with me directing my little brother on how to properly act at a tea party or behave as a student, progressed to taking teaching positions in college and at a kindergarten, and concluded with me joining the scholarly concentration in medical education. Throughout my medical career I would like incorporate teaching others. I enjoy being able to share my knowledge and passion in medicine and see someone else get excited about a concept. I also greatly value the wonderful teachers I have had and would like to be that wonderful teacher to someone else. What follows is my journey in medical education teaching patients, medical students, and residents and the impact each experience had on my teaching abilities and philosophy.

Hasbro Summer Asthma Camp

My first summer of medical school started in Exeter, RI at Hasbro Children's Hospital's annual Summer Asthma Camp. Asthmatic kids ages 8 to 14 gathered at the picturesque camp for a week filled with swimming, exploring, and camp fires as well as learning about asthma. The morning started with learning the message of the day such as "Know Your Triggers" and "Use Your Controllers". In the afternoon, we had an activity that related to the daily message. For the trigger day, we conducted a Trigger Treasure Hunt in which the children ran around the campground finding examples of things that could trigger an asthma attack such as perfume, exercise, smoke, and pollens. Another day we learned about the different asthma medications and the importance of using daily controller medications. We then played Asthma Family Feud where three teams battled it out to see who had the most asthma medication knowledge. On the fourth day, a representative from the American Lung Association taught the children about the dangers of smoking and how it adversely affects the lungs. She brought in actual lungs from a smoker and non-smoker for comparison. The kids were fascinated by the huge, black, oozing, smoker lung.

I had a wonderful time forming friendships and being a mentor. Since I have asthma, I was able to connect with the kids and demonstrate that asthma doesn't have to hold you back in life. Many asthmatic kids feel that they can't do well in sports, but I showed them that with proper control, it is possible to do well in anything. I found that the kids really responded to hearing the information from someone else with asthma - someone who knew what they felt and had gone through. Being around other children

with asthma was also very encouraging to the campers. Sometimes, having asthma can feel ostracizing when you have to stop to take medications while others are running around having fun. At the camp, everyone lined up every morning and afternoon to take their medications. It was not an anomaly. The kids formed strong friendships with others who understood their struggles.

In any teaching setting, it is important to be able to connect to the pupils and find a common ground. When someone is struggling with a disease or a complex math equation, he/she wants a teacher to come alongside, meet them where they are, understand their frustration, and help them move forward. It is also incredibly encouraging to talk to others dealing with the same issues. At the end of medical school I gained even more insight into the importance of peer support which will be discussed later.

Draw Your Asthma

The first research project I started involved examining drawings done by asthmatic children that represented what the children thought of their asthma. The children were recruited at the Hasbro Children's Hospital Asthma Summer Camp. They were given a piece of paper and instructed to draw what their asthma meant to them. This exercise was done at both the beginning and end of the week-long summer camp. We then examined the pictures for asthma features such as triggers, symptoms, medications, and anatomy. (See Appendix A for sample drawings) We also had the children fill out an asthma knowledge questionnaire at the beginning and end of the camp. We wanted to see if any asthma features correlated with asthma knowledge and if asthma knowledge scores increased after participation in camp.

Once the drawings were collected, we identified seven features which consistently were portrayed in the drawings: triggers, symptoms, anatomy, medications, pathophysiology, management, and smoking cessation. We examined what features were drawn pre and post camp and whether any features correlated with asthma knowledge. We found that the children who drew medication had lower initial asthma knowledge scores and a statistically significant increase in knowledge scores after camp. This could be attributed to the need for rescue medications in a poorly controlled asthmatic. I created a poster for the medical school Summer Showcase and we are currently submitting an article for the Journal of Asthma.

This project honed my abilities of observation. When I first started examining the drawings, I just saw a bunch of nice pictures of lungs. But as I thought about the

meaning behind the pictures and why the kids drew certain things, I came to some important realizations. Most of the drawings contained pictures of lungs, but no other anatomy. It seemed like the kids couldn't associate the lungs with the rest of the human body. Perhaps they had difficulty associating the anatomy with their own bodies. They had been told about asthma and that it affects the lungs, but it wasn't personal. The asthma symptoms were out of their control just like the mystical lungs were out of their bodies. This made me realize that perhaps asthma education would be more impactful if we focused on the triggers of each individual and approached each child by focusing on his/her specific symptoms and triggers. Making the disease more personal could help the kids understand it better and make them more motivated to properly manage the disease. This was an important lesson to learn as a doctor. Many times, we, as medical professionals, explain a disease to a patient in very complex, broad ways. We go into detail about the pathophysiology and statistics, but sometimes we fail to make it personal. Our teaching might be much more effective if we talk about that specific patient. This reminds me of a comment I heard on my Family Medicine rotation. The doctor said that when she starts a conversation about a positive pregnancy test or a diagnosis of cancer, she starts not with the results but with a simple question: What would it mean to you if the test was positive? She has the patient talk through what changes their life may take without the added emotions of knowing that it is a reality. This helps the patient then cope with the diagnosis. I think this is an excellent example of making the disease personal. The patient needs to know how THEIR daily life will be altered, not what the statistics are for everyone else.

Children's Hospitalist Asthma Teaching (CHAT) Study

The second research project I embarked on during the first summer of medical school examined the effectiveness of inpatient vs. outpatient asthma education for pediatric patients at Hasbro Children's Hospital. Children admitted for an asthma exacerbation were randomized to either receive the usual outpatient asthma education held on specific weekday evenings or to receive extensive inpatient asthma education consisting of a trained asthma educator teaching from an asthma brochure and an asthma action plan. The goal of the study was to see if those children who received inpatient asthma education had fewer hospitalizations for asthma after receiving education than those who had the standard outpatient education.

For the project, I created patient questionnaires, the asthma education brochure, and wrote the IRB. (See Appendix B for the brochure) I also spent some time with a certified asthma educator learning how to educate asthmatics. As a part of my training, I attended a Draw-A-Breath session at Hasbro which is the outpatient asthma teaching the hospital offers. Since there are multiple research projects and programs at Hasbro targeting asthmatic patients including the Parents of Asthmatics Quit Smoking (PAQS) research project and Draw-A-Breath, I met with each group individually to discuss how my research would impact their various projects and how we could work together to improve patient education. The researchers on the other projects were concerned that we would be taking patients and entering them in our study instead of them being entered in other studies. We had to assure them that we were not taking all the patients and we promised to refer all patients that were ineligible for our study to the other

studies. We even obtained copies of the intake form for the PAQS study and handed it out to every patient we saw that would also be eligible for PAQS.

Submitting the IRB took up the majority of my time. The application form is very detailed and repetitive. In addition, it is supposed to be written in a specific way with certain phrases which I was not familiar with. Thankfully, one of the researchers on our team had submitted numerous IRBs and gave me some examples. However, I still had to make several changes after submitting the application. The whole process of submitting the IRB was very labor and time-intensive. The IRB committee only meets once every couple months, so I had to wait until nearly the end of the summer to submit the first draft. After that, the board sent back revisions, which were not significant. For the most part, they just wanted a word changed here or there or some different punctuation. It seemed silly that I had to go back and change the whole application and re-submit it just to change one word which they seemed to like better, even if it meant the same thing as what I had written. I almost wanted to say to the committee, "If you are really going to be that nit-picky about the application then you can change it yourself." Thankfully, it was finally accepted. I cannot imagine what the IRB process must be like for a study that actually poses a risk to the patient. Our study only asked that we be able to provide extra teaching to asthma patients, which one would think the hospital would be thrilled to have. I could not believe that it was so difficult just to add some teaching. It is no wonder that changes take years in a hospital.

Participating in the research taught me a great deal about the logistics of creating a study, submitting an IRB, and coordinating with the various hospital departments

impacted by our study. Dealing with bureaucracy and hospital departments convinced me that I would not like to make a career out of working in a hospital. I would like the freedom to decide that if I want to spend extra time teaching my patients and studying whether or not the teaching is effective, I can do so without months of dealing with committee's and forms.

Tutoring First-Year Medical Students

During the second year of medical school, I tutored several first-year medical students. Most of my tutoring time was spent with a student with a learning disability which made it very difficult for her to recognize words. I worked with her on breaking up words into parts that made the word recognizable and distinguishable from other similar words. For example: glycolysis, glycogenolysis, gluconeogenesis, and glycogenesis. We also created many visual aids to help her understand difficult concepts. I enjoyed thinking of creative ways to remember vocabulary words and biochemical pathways. The most important thing I did was stopping and asking if she understood and, if not, what was most confusing. There were many times when we would go over a concept and I would ask her if it made sense, and she would express difficulty with something I hadn't even thought to explain. Getting feedback from her and giving her the confidence to express her frustrations were most helpful. By understanding her specific needs, I could target them and make the tutoring much more effective. This held true for other students I also tutored. One girl just needed me to go through meiosis with her in a pictorial way and that was it. There were so many times that I would start teaching as I normally would and then realize that my usual way of teaching was not effective. I was then able to adapt my methods to suit specific needs. In addition to helping the student grasp more difficult concepts, I think the most important thing she came away with was confidence in herself. I helped her realize that if she approached the material in a way that made sense to her, she could learn it and succeed. Many times people get frustrated when the "normal" way of doing things

doesn't work out. But that doesn't mean they cannot go about it in another way. Thinking outside the box is a good thing and being able to adapt as a teacher to different learning styles is what separates the good teachers from the great.

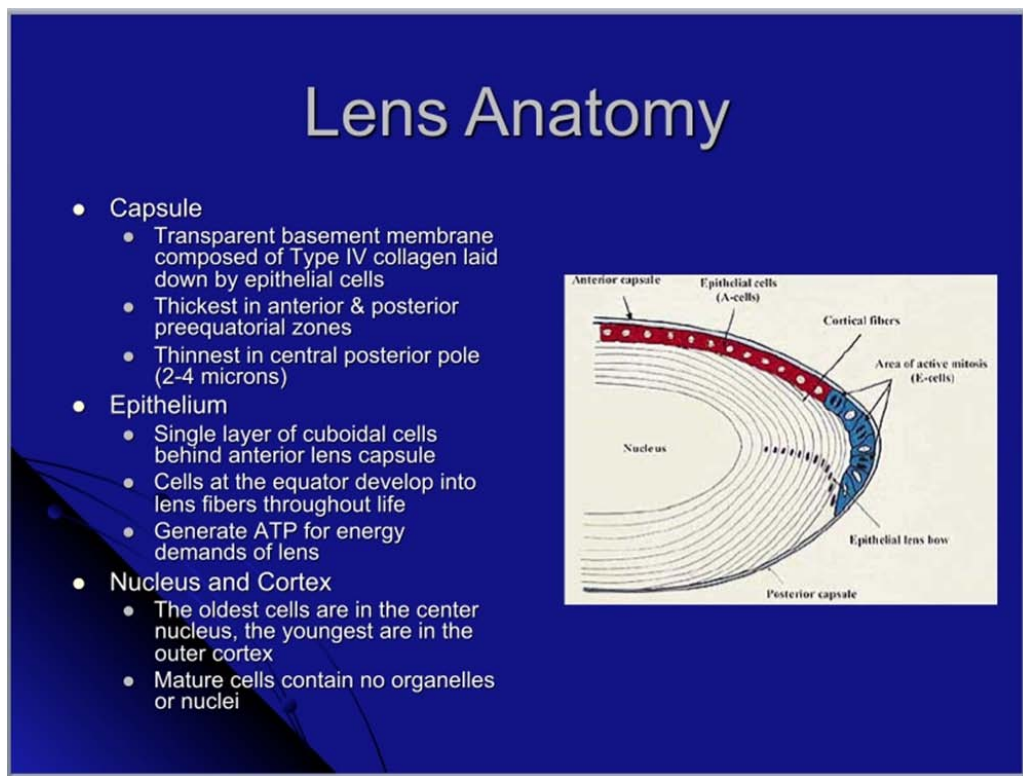
Curriculum Redesign Working Group 1

I participated in a working group for the medical school curriculum redesign. The group examined the components of the core clerkships for redundancies. We also created a new configuration for the clerkships so that students can complete all the cores by the end of third year. Lastly, we met with Group 6 to re-examine the core competencies and update them.

I found being a part of a working group to be very educational. It gave me an opportunity to understand what goes behind every decision regarding the curriculum and to see all the planning required. Unfortunately, I was in the midst of my third year of medical school and was unable to attend many of the meetings. Considering all the doctor's schedules it was amazing that as many people could get together for a meeting as there were. This served as yet another reinforcement of why it takes forever for things to change in a large hospital or bureaucratic system. With such busy schedules, it is impossible for everyone to find time to sit down together let alone all come up with a unified solution. Amazingly, we were able to make some decisions on the core competencies thanks to a deadline and a lot of administrative effort in keeping people informed.

Ophthalmology Resident Cataract Course

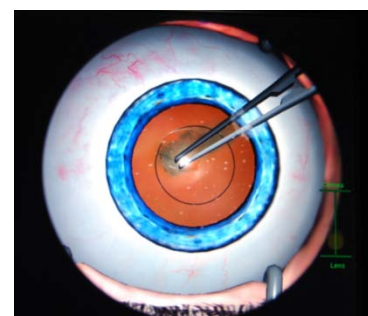
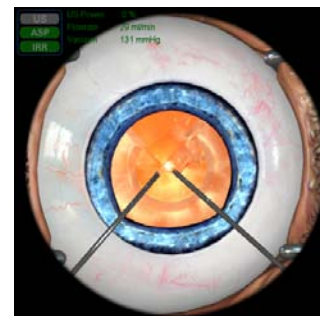
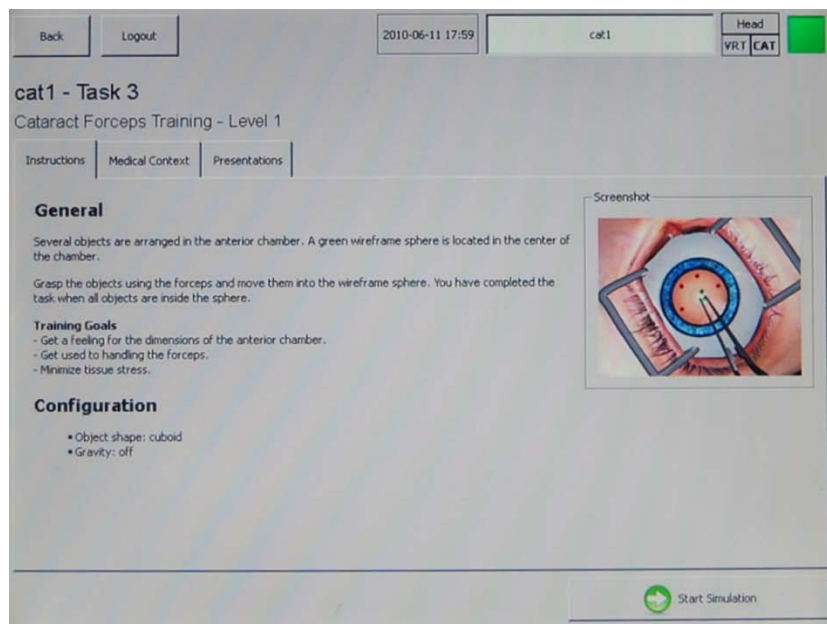
During my third and fourth years of medical school, I helped design a cataract teaching course for the Warren Alpert ophthalmology residents using a web-based didactic portion and virtual surgery. The online portion consists of two power point presentations: the pathophysiology of cataracts, and the surgical steps to remove a cataract. The second presentation also details how to handle difficult surgical cases and problems one might encounter during cataract extraction.



Sample slide on anatomy of the lens

The virtual surgery portion uses the EyeSi software. Residents can virtually operate on an eye in a mannequin head complete with the surgical tools one might use in the operating room. The EyeSi has many different exercises to help the residents

hone specific skills such as maneuvering instruments within the eye, performing a capsulorrhexis, and using the phacoemulsifier. For the course, I chose the exercises I thought most useful and created three different virtual surgery courses, one for each year of residency. The course for the first-year ophthalmology residents focuses on maneuvering instruments in the eye and performing simple tasks such as moving small cubes. The second-year course teaches the residents how to perform the basic steps of cataract extraction. The third-year course introduces the residents to more challenging exercises and how to deal with a torn capsulorrhexis. At the end of each exercise, the residents get feedback on target achievement, efficiency, instrument handling, microscope handling, and tissue treatment.



Screen shots of modules

Due to the hectic schedule of year four with interviews and a new baby as well as a new baby for the resident working with me on the project, we have not actually introduced the project to the residents. The hope is that another medical student will take over and get the information online. Then, they will develop a survey about the course to evaluate effectiveness.

I presented the project in a power point presentation at the 13th Annual Ophthalmology Research Forum and as an abstract at the RI Hospital Research Celebration.

I found creating the course to be my greatest challenge as an educator. Not only was I creating a course for doctors further ahead in their training than I, but I was teaching a subject which I knew little about. I had to do quite a lot of research on the topic, and even then, I did not feel up to the challenge. It was difficult trying to understand every aspect of cataract physiology and surgical removal when I am not working with cataract patients day in and day out. I also had never seen some of the surgeries the textbooks were describing. On the other hand, I really enjoyed creating the virtual surgery courses. I had the opportunity to try out all of the simulations and pick the ones I thought would be most useful for each level of resident all while honing my own surgical skills.

RI Breastfeeding Coalition Website Design

My final project during my fourth year was to help the RI Breastfeeding Coalition design a new website. Currently, the website is buried within the RI Department of Health website where it cannot be easily edited and pictures cannot be added. The coalition would like to have its own website that is more user-friendly and able to be updated regularly. I was the very first person to start working on the website and my job was to determine what the headings and subheadings should be.

Every state in the U.S. has a breastfeeding coalition and most of them have websites. I started by visiting a number of coalition websites to get ideas for design, headings, and material. I then looked at the current website and in the RI Breastfeeding Coalition Resource Directory to determine what information should be presented on the RI website. Armed with all the information, I made an outline of the headings and subheading. (See Appendix C) Next, the coalition needed to determine who would host the website, how much it would cost, and where the money would come from. I emailed over 25 of the other coalitions asking for information about maintenance of their websites. I typed up the findings along with the prices for each host and domain.

Currently, the coalition is forming working groups for the website creation. There is a group that will go over my outline and make any necessary changes, a group to choose the domain/host for the website and determine funding, and a group that will create a marketing strategy for the website.

I enjoyed being able to help create a needed resource for the breastfeeding women in RI. As a breastfeeding mother, I understand the need for support from

others and information on getting needed resources. I found it incredibly encouraging to go to the mom's groups and talk about breastfeeding challenges. The women were very excited about the prospect of the website and being able to directly access resources such as counselors, breast pump rental, and links to reputable websites. Much of the information that will be on the site would have been very helpful to me in the early months of breastfeeding. I hope that the website will be a success and many women will get connected to the resources and support they need. This project was especially meaningful to me as I was able to connect to the women's needs and add my own personal touch from experience. This project also brought me full-circle back to educating patients. Having been a patient myself I was once again reminded of the great importance of educating the patient and providing him/her with resources.

Reflection

For the Scholarly Concentration program, I have focused on becoming a better educator. I began my concentration work with children, educating them in both an inpatient and outpatient setting. I then moved to tutoring other medical students and creating a course for residents. My last project brought me back to educating patients and well as being in the shoes of the women I was interacting with. I have become more proficient at gauging what information is needed, adapting teaching styles to different age groups, and creating a product with which to convey information.

Working with children enhanced my ability to think of creative ways to educate. Learning is more effective when the material becomes more tangible as opposed to just being written on a page. By playing games and competing with others, the kids were able to better understand asthma and I was able to learn some new ways to present information. And by examining the post-camp drawings, we were able to see that our efforts really did have an impact on the children. I would have never thought to examine a drawing in order to evaluate a person's knowledge, but now I can see that it would be a very useful tool, especially for children or those with poor social skills.

The importance of how the information is presented was further emphasized in my tutoring sessions. I could talk all day and explain the information in a way that I think makes sense, but if I don't stop to ask the pupil then I may not be effective at all. Through tutoring and working with kids, I was continually reminded how important it is to get feedback from the student and to constantly think of creative ways to present information. This led me to developing the virtual simulation course.

I feel that the simulation part of the course will be very effective in helping new residents develop surgical skills. It might not be as useful for third year residents who already have operating skills. The feedback I have heard from residents who have used the simulator is that it is helpful for keeping up their skills but not necessarily useful for becoming proficient at cataract extraction – there is no substitute to operating on a real eye. I can see the cataract course being most useful to first year ophthalmology residents who need to learn the fundamentals of cataracts and basic surgical skills. As to the power point presentations, I think that power point is not necessarily the best way to learn, but it does a good job at presenting the information in a concise way and the residents are able to access it at any time. Probably the most effective way to teach the material would be a combination of discussion and related activities, but that would be very time consuming and time is not a luxury in residency. Therefore, I believe the course does a good job at presenting the information while allowing the residents to repeatedly access it at any time and then apply the surgical knowledge on the simulator.

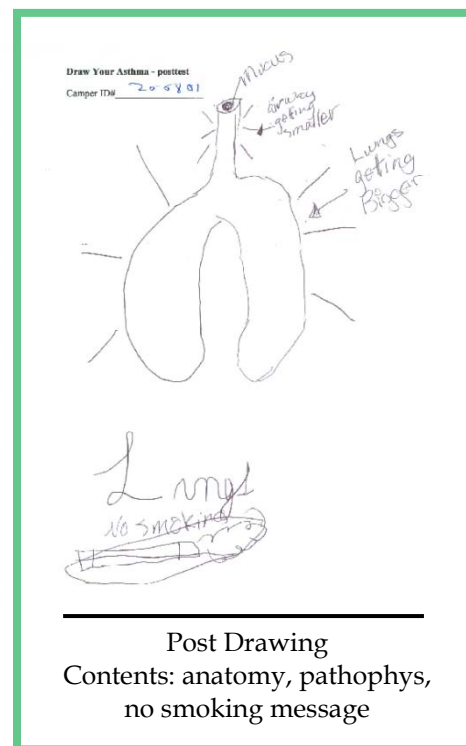
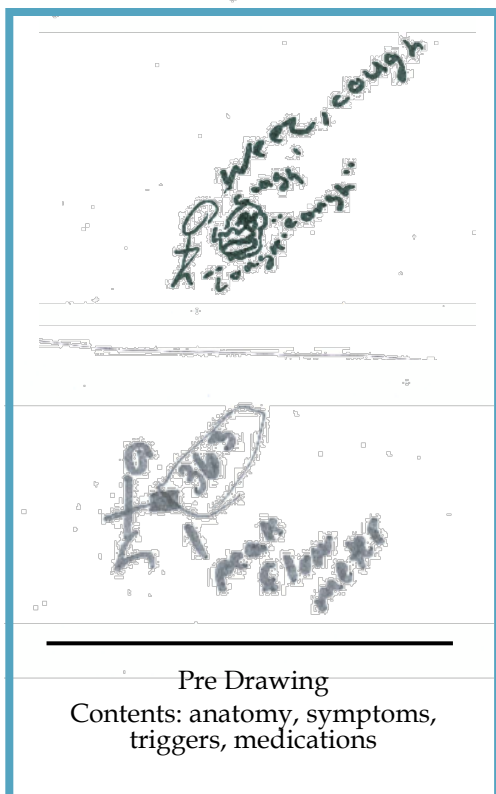
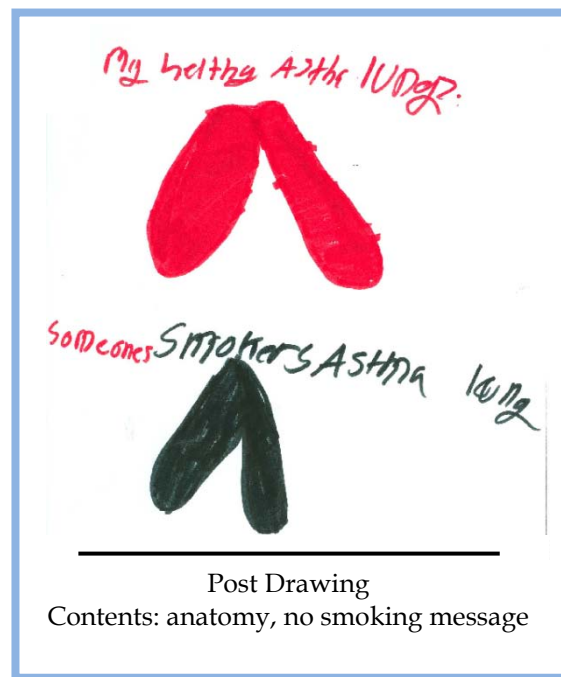
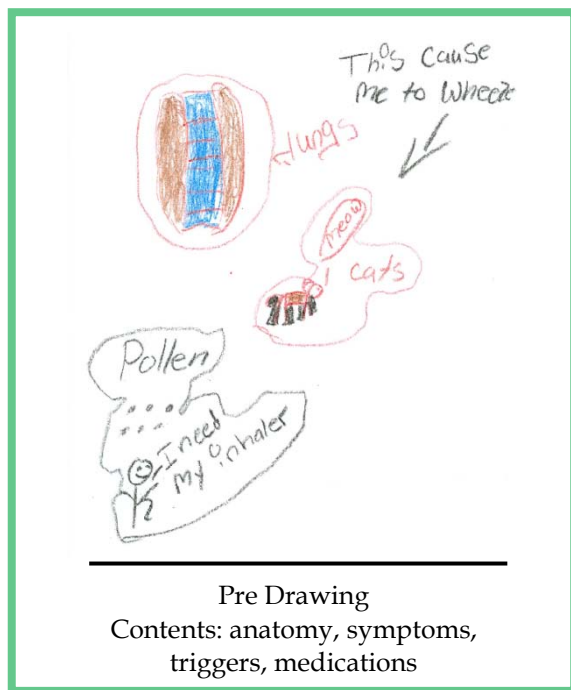
My last project, the breastfeeding website, emphasized the importance of support and providing material in a readily accessible form. The breastfeeding coalition has a wonderful resource directory but no way to make it available to patients, so all the resources go unused. I am very excited about the website and think it will significantly help the breastfeeding women in Rhode Island. Speaking from personal experience, talking to other breastfeeding mothers and breastfeeding counselors is very

helpful and encouraging. Being able to connect women to peers and professional support is invaluable to the many women who struggle with breastfeeding.

When I began my work in the concentration, I wanted to focus on teaching patients and becoming a better doctor by being able to effectively communicate with my patients. Through tutoring and interacting with medical students and residents, I have found that I also greatly enjoy educating medical professionals. I enjoy sharing my passion for medicine and discussing with someone else the amazing chemical pathways within the human body. Teaching another medical professional is akin to talking to peers about breastfeeding. You are able to not just teach, but to bounce ideas off one another and learn from each other. Although I do not see myself ending in academic medicine, I love the idea of having medical students rotate through my practice. There is also possibility of lecturing to medical students or at conferences. Being a doctor is a continual learning process as technology improves and new information is discovered. In my career I am sure that I will often find myself not only in a teaching role, but also a student.

Appendices

Appendix A: Children's Asthma Drawings



Appendix B: Asthma Education Brochure



Controlling Your Child's Asthma

Is your child's asthma controlled?

The Rules of 2

Does your child need to use an albuterol inhaler more than twice a week?

Does your child have nighttime asthma symptoms more than twice a month?

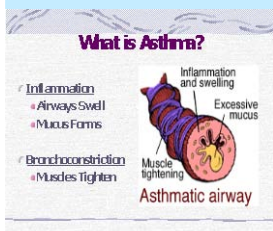
If so, your child's asthma is NOT under good control.



*6.5 million kids in the United States and
24,500 kids in Rhode Island have asthma.*

What is Asthma?

Asthma is a **chronic lung disease** involving **inflammation** and **bronchoconstriction**.



Inflammation

Swollen airways
with mucus

Bronchoconstriction

Muscle tightening

During an asthma
attack, the airways
become "hypersensitive"

Most kids do not outgrow asthma, but they can control it!

What to do when your child is having asthma symptoms:

Turn to the **ASTHMA ACTION PLAN**

Green Zone

Breathing is good

Yellow Zone

Cough Wheeze Tight Chest
Overtired Itchy throat

Red Zone – DANGER SIGNS!!

Trouble walking or talking
Hunched over posture
Chest and neck pulled in
Blue or grey lips or fingernails
Medicine not helping

911

**CALL A DOCTOR OR 911
IMMEDIATELY!**

Medications

Quick-relief

- o **Bronchodilator** – relaxes the muscles around airways
- o It takes **30 minutes** for the medication to take full effect

Long-term controller

- o Reduces **inflammation** and **mucus**
- o Helps prevent an attack



Identify Your Child's Triggers

Allergens

- o Animals/pets
- o Mold
- o Dust mites
- o Cockroaches
- o Food
- o Pollen

Irritants

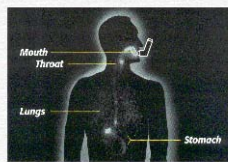
- o Cigarette smoke
- o Fumes & Odors
paints, chemicals,
cleaning supplies
- o Chalk dust
- o Exhaust/pollution
- o Scented candles

Aggravators

- o Cold/flu
- o Ear infections
- o Sinusitis
- o Weather
- o Cold air
- o Exercise
- o Reflux
- o Stress

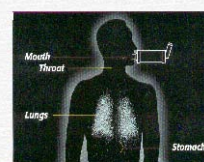
**ALWAYS USE A
SPACER WITH
INHALERS!**

Why use a spacer?



Without spacer

Why use a spacer?



With spacer

Appendix C: RI Breastfeeding Coalition Website Outline

About Us

- Meetings
- Membership Info
- Mission/Goals
- Contact Us

For Moms

- Benefits of Breastfeeding Support
 - Prenatal Classes
 - Support Groups
 - Warm Lines
 - Outpatient Lactation Services
- Working/Pumping
 - Pump Rental
 - Storing Milk
 - Laws
- Medications and Breastfeeding
- Common Problems
- Places to Breastfeed
- Breastfeeding and the Law
 - Laws by State
 - Jury Duty Exemption

FAQ

Links

Breastfeeding Advocacy

- Our Strategic Plan
 - Infrastructure
 - Communication
 - Partnerships/Advocacy
 - Education
- Surgeon General's Call to Action
- Contact Your Local Officials
- Advocacy Links

Employers

- Benefits
- Pump Station Solutions
- Employer Awards

Healthcare Providers

- Handouts
- Milk Banks
- Continuing Education
- Medications
- Resources for the Provider

Resources

- Books
- Videos
- Links

In the Media