



**Action Research Team: Hospital Sustainability
Final Report
Spring 2014**

Steve Flores
David Mun
Austin Park
Priya Macwan
Kyle Hess

Stakeholder:
Teresa Hildebrand
Sustainability Programs Manager:
Ronald Reagan Medical Center
UCLA Santa Monica Medical Center

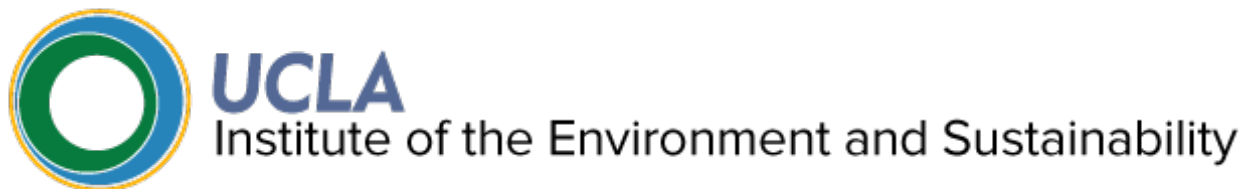


Table of Contents

Executive Summary.....	3
Significance/Background.....	4
Objectives/Project Goals.....	5
Research Methodology.....	7
Results.....	11
Discussion.....	13
Recommendations.....	14
Conclusion.....	17
References.....	18
Appendices.....	20

Executive Summary

The Education for Sustainable Living Program Hospital Sustainability Action Research Team set out to improve sustainability at the hospital through education. The 2014 Hospital Sustainability Team took on a vast array of projects this year, with topics ranging from energy use to paper towel waste. When we first convened in January, we systematically discussed many of the resources the Ronald Reagan Medical Center (RRMC) requires from a cradle-to-grave perspective. That is, we examined the quantity of each resource used, where the product or energy came from, and where the waste was sent. Resources included electricity, paper, plastics, food, linens, and biohazards. The next step was to examine the measures the RRMC and other hospitals around the world had taken to reduce their consumption. This included many hours of web research and navigating through websites and articles to educate ourselves with the forefront of hospital sustainability. After discussions with Teresa Hildebrand, our main objective for this year was to develop and establish an education module for new hires at the hospital to take as part of their orientation. This module serves as a foundation to educate employees about what they can do to be more sustainable as well as to inform them on the current UCLA Health System sustainability initiatives. We have therefore worked on creating a website that will encompass different areas of sustainability.

In addition to this module, our team undertook three separate projects. The first was helping Ms. Hildebrand coordinate the UCLA Health System RRMC Earth Day Fair. Second was measuring the number of times the stairs at the 200 Medical Plaza was used in order to set a baseline of data for future ART teams to do research. Lastly, we conducted a waste audit on the usage of paper towels in the bathrooms. With this research, we hope to have a meaningful impact in the sustainability front of the UCLA Health System.

Significance/Background

When we first met as a team our main objective was to make the UCLA Health System the paramount example for sustainability at hospitals. In addition, we also wanted our research to be applicable in other areas around the UCLA campus. Despite the current sustainability efforts at the RRMC, there were still areas where we could come in and implement research on how to make it more sustainable. Based off of previous ART teams' final reports, we knew that one of the first objectives would be helping Teresa Hildebrand with the Earth Day Fair. The Earth Day Fair at the RRMC and the Santa Monica Hospital highlights the importance the UCLA Health System is putting on educating their staff and visitors on what it means to be sustainable as well as how the hospital does its part to protect the environment. This focus on education led us to our main project of the quarter—developing an education module. By building a module that will educate staff on sustainability, we have also created a template for other hospitals to follow. Knowledge of sustainability needs to be disseminated into the hands of the individual to create any significant impact. Educating workers on sustainability will drive home its importance and provide a place for them in the environmental movement. Instilling this idea is only the first step of many leading to idealized sustainability: “meeting our needs without compromising future generations ability to meet theirs.”

Our last project focused on signage and its effect on people's behavior. Signage is a key component to getting public cooperation on a massive scale. Whether it is a sign that says where to throw your trash or to turn off the lights to save energy, signage works to educate and motivate people to change unsustainable behaviors to sustainable ones.

Focusing on education and behavioral changes by signage can have a positive impact on a local scale and global scale. This kind of research will not just have positive impacts at the

UCLA health system, but will extend to all of UCLA, to Los Angeles, to California and beyond. The world is slowly starting to change and build a sustainable infrastructure, but little progress can be made without a grassroots involvement of the people that it aims to serve.

Objective/Project Goal

The hospital sustainability team is in its fourth year for the 2013-2014 academic year. Since several years have passed since the establishment of the team, there was a strong foundation to work off of for this year's team. In the 2011-2012 academic year, the team recognized that there was a lack of cohesive force bringing various managers together. These managers were trying to make their own departments greener and setting a certain standard for all of them. This team worked on creating a new section in the Green Office Program that could be applied to clinics and adjusted the rest of the calculator to accommodate hospital offices. A "Green Guide" was also created for the hospital staff that provided sustainability facts and other resources.

In the 2012-2013 academic year, the team focused on energy efficiency in the public restrooms, the UCLA Health System Earth Day Fair, and conducted a waste-mapping project. The team intended to reduce paper usage by proposing to install Dyson Airblade hot air hand dryers in the public restrooms of the hospital. This proposal was rejected due to high installation cost and a long payback period, but provided fruitful data. The first ever Health System Earth Day Fair was also started. The fair was a success and helped educate the hospital staff and visitors about sustainability initiatives. Lastly, the team looked at the lack of recycling bins in the public areas of the hospital by doing a waste-mapping project. The mapping project covered all of the waste bins in the public areas of the Ronald Reagan Medical Center and the Medical Plaza.

From the very beginning of Winter Quarter, we were excited and ready to tackle the tasks laid out for us for our upcoming months working together. Our overall goal as a team was to work with the hospital, Ms. Hildebrand, and each other to assess and improve the sustainability of the UCLA Health System. There were several things that needed to be accomplished over the course of these two quarters, but we were also tasked with coming up with our own ideas for research into making the UCLA Health System more sustainable.

The projects that we knew for a fact needed to be accomplished included planning the Second Annual Earth Day Fair at the Ronald Reagan Medical Center and producing an interactive educational module that provides information on the medical center's sustainable practices as well as how to have sustainable practices. Throughout both quarters, our group brainstormed a variety of project ideas, from researching the feasibility of a green purchasing program to assessing the implementation and cost benefits of installing LED lighting in the 200 Medical Plaza building. After submitting these ideas to the Hospital, as well as ideas for food mapping and surveying, we were informed that these ideas were implausible, and instead settled on a waste audit of the waste receptacles in the public restrooms. Although the food mapping proposal did not come to fruition, it led to the opportunity to interview Patti Oliver, Director of Nutrition Services at the UCLA Health System, and perhaps consult her on potential projects having to do with sustainable foods at the cafeteria of the RRMC.

The common thread connecting our projects was our goal to educate the hospital staff, the public, and ourselves, about sustainability initiatives and practices that can create a more sustainable hospital environment. Our Earth Day Fair advertised many of the UCLA Health System's sustainable efforts, and brought together sustainability minded student groups to educate staff on being sustainable at home. The education module we have been working on

throughout the year will become a part of staff training. Future employees will be required to educate themselves on personal and the UCLA Health System's sustainability. Lastly, our waste audit allowed us to examine how many paper towels are being used in public restrooms. We did a before and after comparison, starting with a controlled measure of paper towel consumption. We then added "These Come From Trees" stickers to paper towel dispensers to remind the public to conserve resources by using fewer paper towels, and we compared paper towel consumption. The waste audit allowed us to gauge paper towel usage, and, in addition, allowed us to nudge the public towards more sustainable living.

Research Methodology

Education Module:

An education module was created to educate new staff hires on the current sustainability initiatives and general sustainability issues of the UCLA Health System. This module was first created on the wix.com website building platform, but was then moved to the WordPress format due to its ability to be embedded onto an HTML site. The content of the module was found through research. This research was split among the team members, with each member focusing on a different area regarding sustainability such as energy, food, waste, water, and the Health System's goals for sustainability. In the different sections of the module, various facts and data are presented to the reader such as the amount of water used in a household per day and the percent water use of hospitals compared to all commercial institutions (7%). Included are tips on what the reader can do to reduce their footprint in the hospital and at home. Extra links to external websites and sources are provided at the end of sections, such as "tips on how to be water-wise" and "calculate your water savings." Also, interactive graphics and pictures are used to keep the reader engaged and also serve as educational tools to help the reader better

understand the material being presented to them (Appendix A). Content relating to the sustainability initiatives was found from the Sustainability at UCLA Health System website that can be found here: <http://sustainability.uclahealth.org/>.

Along with the content, Ms. Hildebrand wanted to gauge how effective the module was for the new staff hires, and also wanted to ensure that the new hires were taking the time to go through the information. Originally, in the wix.com format, we embedded a survey consisting of five questions (Appendix B) and also provided a comments and suggestions section at the end of the module. In the WordPress format, a quiz could not be embedded, but the comments and suggestions section was still implemented. The quiz will be developed by Ms. Hildebrand through an online platform to be later implemented into the module. The module itself will still need to go through the approval of a steering committee in order to be officially implemented for the UCLA Health System.

Health System Earth Day Fair:

The second UCLA Health System Earth Day Fair took place on April 22nd, 2014. To help Ms. Hildebrand with the planning and execution of this event, the Hospital Sustainability Team brainstormed ideas for a theme for the event, as well as different activities and information booths that could be at the fair. Ideas included a waste sorting game that would test the signage system used at the hospital and a test-your-knowledge game where questions would be asked to staff and visitors. A prize was given to those who answered correctly. Another idea was to test the education module's effectiveness by having people read a condensed version of the module, answer five quiz questions based off the content of the module, and also provide any comments or suggestions.

Ms. Hildebrand liked the idea of testing the education module at the fair and also informed us of the approximate size of the fair as allowed by the fire marshal. In addition to having the module prepped and ready to be viewed, an informational tri-fold poster was made to educate hospital staff on the Hospital Sustainability Team's objectives and goals. Ms. Hildebrand also asked us to find on-campus environmental groups that would be able to table at the fair and be able to talk about their group and their mission, and also provide incentives for hospital staff to attend the fair next year. On the day of the event, we helped in the set up of the fair including the education module, the tri-fold poster, the waste sorting game, and also answered questions about the fair, passed out informational brochures, and helped recycle eyeglasses (Appendix C for fair layout).

Occupancy Sensor:

Another idea for reducing the hospital's energy footprint was to encourage stair use over taking the elevator. We decided to use occupancy sensors, the same instrument the Energy Action Research Team was using, to measure stair and elevator usage. In discussions with Ms. Hildebrand, we heard about the StairWell program that Ragini Gill, wellness coordinator at the UCLA Health System, was working on. This program encouraged the use of stairs by the hospital staff. However, this project was on hold, and we wanted to help the facilitation of that project by collecting baseline data on how many hospital staff and visitors already took the stairs on a daily basis so that this data could be compared to when the StairWell program is implemented. With the guidance of Sayros Yadgar, Energy Engineer at UCLA and stakeholder for the Energy Team, and help from Shannon Tyra, we were able to obtain one of these sensors and install it over the entrance of a stairwell in the 200 Medical Plaza. Unfortunately, we met

problems when dealing with the sensor because it had not been reset so it was not able to record any data.

Waste Audit:

Recognizing from last year's Hospital Sustainability Team that the Dyson airblades were not a feasible option for the RRMC, the team searched for alternate ways to reduce overall paper towel usage at the hospital. We decided to do a waste audit that included weighing and counting the amount of paper towel waste in one unisex and one male restroom on the 1st floor of the RRMC. First, a control period of data collection would establish a baseline consumption level. Then, a sticker that stated, "These Come From Trees," would be put on the paper towel dispensers, and a second data collection would be conducted. The purpose was to see whether or not a simple social incentive could enact behavioral change (Appendix D). The team first contacted Andrei Roudenko, Administrative Director of the Health System Environmental Services, to ask for his opinion on this project and for permission to conduct it. At first, Mr. Roudenko was worried about the possible interference the waste collection might have with the janitorial staff. After further talks and adjusting the time of our waste collection from peak hours to an hour with lesser traffic, Mr. Roudenko granted us the approval to go ahead with the waste audit.

In addition to getting approval, we needed an appropriate scale. We were able to obtain a grocery scale to measure the weight of the paper towels. However, on the first day of collection, the grocery scale proved to be unable to record low weights. After some searching, we found a kitchen scale that would be appropriate for the weight we were handling. Each team member was responsible for scheduling days on which they could collect the waste data a few minutes before 6:00pm and was responsible for communicating on who would have the scale. Team member

Austin Park wisely suggested that we physically count each paper towel in the receptacles for a more complete data set. In total, waste data was collected from five receptacles from one unisex bathroom and one men's bathroom that were both located on the lobby level of the RRMC. During collections, we would remove the bags from the receptacles used to collect the waste, weigh them using the kitchen scale and proceed to take the paper towels out of the bag and count them by hand. The bags would then be placed back in the bins. After a period of data collection without the "These Come From Trees" stickers, the stickers were placed on the paper towel dispensers. The same methods were used to collect the waste data after the sticker was implemented. Data was collected for ten days prior to implementation, and ten days afterwards.

Results

The Second Annual Earth Day Fair at the Ronald Reagan Medical Center was held on April 22, 2014. In addition to a waste sorting game, companies and groups represented at the fair included: ART on Water, Cintas, E3, Green Linens, PowerSave, SharpSmart, Tobacco Free UCLA, and our own UCLA Health Systems Sustainability table. The fair was a green certified event, meaning we met all of UCLA's sustainability criteria for event planning. One of the most critical aspects of the fair was that we were able to test our education module by having those who stopped by complete the module and offer feedback. We were then able to use their feedback to edit our module and produce the final product we have today.

In our attempt to be involved in the hospital's sustainable food initiatives, an interview was organized with Patti Oliver, the Director of Nutrition Services. Questions included her thoughts on the hospital's next goals for sustainable food in the hospital cafeteria, what she deems as "sustainable food," and her future plans for the RRMC. She stressed the inclusion of antibiotic free meats to the cafeteria, which would raise the percentage of sustainable foods by a

large margin. Unfortunately, our efforts towards working with the sustainable foods system at the UCLA Health System were not well-accepted. They had done exceedingly well surpassing their goal for 20% sustainable food purchases years in advance, and were not interested in doing more at this time. However, we were fortunate to be able to interview Patti and gain insight regarding the hospital's food service (interview at Appendix E).

From our very first meeting until now, the education module has been a constant work in progress. We were able to gather our research and compile our information into a PowerPoint, which we then translated into a Wix.com website builder. This is what we used at the Earth Day Fair at the hospital. Unfortunately, we had to move the entire module to an entirely new health system, because the module had to be formatted through WordPress.org in order to be embedded in the UCLA Health System website (Appendix A). The remainder of the quarter was spent ensuring that we met the requirements that would allow for the module to be embedded on UCLA Health Systems website. The module, although not fully approved, can be found here: <http://uclahospitalsustainability.wordpress.com/>.

The project that was left up to our discretion, which we created and spearheaded, was our waste audit on the waste receptacles in the public restrooms. In focusing on the men's restroom and unisex restroom on the first floor of the RRMC, we collected baseline data without the "These Come From Trees" stickers on the paper towel dispensers, then proceeded to collect data with the stickers on the paper towel dispensers. We performed this audit to see whether or not the stickers would actually affect people's habits. For the receptacles in both the men's and unisex restrooms, we did not find a significant difference between the amounts of paper towels that people used without the stickers in places and with the stickers in place. In the men's restroom, the average total for number of paper towels in the three receptacles when the sticker was not in

place was 139 paper towels (rounding to count the 0.7 as one paper towel). When the sticker was in place, there was on average 87 paper towels in the three receptacles in the men's restroom. This data indicates that, on average, when the sticker was in place, people using the restroom used fewer paper towels than when there was no sticker. However, in running a Wilcoxon-Rank Sum Test intended for non-parametric data, the results for the men's restroom indicated that our findings were insignificant. The p-value obtained for the men's restroom data was found to be .0588 (rounded), which is close, but still greater than the value needed for significance at 0.05 (Appendix F). The Wilcoxon-Rank Sum Test for the unisex bathroom also proved our findings were insignificant, despite the figures indicating that the pre-sticker average was 27 paper towels, whereas the average with the sticker dropped to 22 paper towels. The p-value for the unisex restroom came out to 0.199, well over the value needed for significance at 0.05 (Appendix F).

Discussion

Initially our team was hopeful about a successful waste audit with a noticeable change between pre-sticker and post-sticker; however, the problems that we ran into with the audit skewed the data. Ultimately, our ten days of pre-sticker and ten days of post-sticker waste collections yielded no statistical difference. That is, the stickers did not make a statistically significant behavioral change. However, because of the problems that we ran into with waste collection, we cannot place a high degree of confidence in our results.

Issues were multifarious and often unpredictable. Despite collecting waste on a timely basis and at the same time each day, our major issue was the variance in waste collection times by hospital custodians. They did not collect waste at the same time each day, which caused us to have large amounts of paper towels some days, and only a few other days. This makes any trend

in paper towel consumption indiscernible from a difference in time since the last custodian collected the paper towels. Additionally, using weight as a tool of analysis was tricky because sometimes bags were large and thick, adding to the total weight, and other times, bags were smaller and lighter. Occasionally there were non-paper objects in the bags. Even after removing them, sometimes residues remained in the bags. The most significant problem with weighing was the difference in water weight on the towels. It was difficult to know what percentage of the weight was due to water and what percentage was due to paper. We realized this before collecting any data, but decided to conduct the weight measurement because we believed most paper towels would have a similar water content.

Although counting each paper towel was tedious and took longer, it was a much better unit of analysis than weight in this situation. However, it still contained a degree of variability. The paper towel dispenser automatically feeds out towels until the towel user rips off the towel. At that point, the dispenser stops, which means that the paper towels were not all of uniform length. Thus counting individual towels was not an exact method for measuring paper towel consumption. Had our audit been successful, knowing exactly how many paper towels were collected would have been very useful.

Though we tried to maintain contact with Mr. Roudenko, it was not easy. We knew from the beginning that hospital staff are extremely busy, and though we were persistent, the staff often did not respond to our emails or calls. This resulted in specific knowledge gaps and difficulty coordinating with the hospital.

Recommendations

A major suggestion for future teams is simply to keep in mind that there are many layers of hospital bureaucracy. It helps to stay positive and not be discouraged by the many staff and

personnel the team might have to go through to have a project idea be approved. Finding a role within the UCLA Health System is not easy, as it is already a leader in sustainability initiatives among many hospitals. However, it definitely helps to scope out niche areas or look more closely at what is being done to see how it can be improve upon. Though many of our ideas fell through, we were able to hold onto several sustainability initiatives that would help the RRMC with its sustainability goals such as the paper towel waste audit and the implementation of the occupancy sensor (even though no data was ultimately collected).

It is also important to bear in mind the importance of signage and other educational initiatives at the hospital. The RRMC is ahead in this area as well, for example, the existing signage for Meatless Monday, but there is certainly more that can be done. We attempted to make education our overarching theme for our projects this year, and our hope, as mentioned above, was to show that signage makes a big difference in terms of behavior. Though our conclusions were not what we had hoped, we know that this does not have any bearing on the importance of such initiatives. If people know what to do to be more sustainable as well as how to do it, they are more likely to change their behavior. Education is the first step. Since this is a public facility, this refers not only to hospital staff, but also to patients and other visitors to the hospital.

When we first started out we had an endless supply of ideas and hopes for what we could accomplish, and we never lost hope despite the fact that many of our project ideas did not work out. We now realize that were naive in our understandings of the hospital's inner workings and that the process can be more complicated than it seems, but we have learned a lot from this experience of how a hospital functions. Having a positive attitude and carrying it through to the

end helped us hang on to our current projects. Encouraging and praising each other for our accomplishments helped spark a positive attitude among everyone.

In terms of our projects, we wanted to explore further what could be done with the paper towel waste created in the restrooms. This was a suggestion from last year's Hospital Sustainability Team. They investigated the feasibility of installing Dyson Air hand dryers and found that they were too expensive; the payback period would be roughly ten years. This year, we looked at signage to see if there could be a decrease in waste simply because of behavior, and there is much potential here. The amount of waste generated in about an hour in two public restrooms is quite high. Composting of the paper towel waste would be a potential option to decrease the waste generated. To further explore the effect of signage at the hospital, the future ART team must have a much more controlled environment that eliminates the variability we faced such as measuring the waste where it would be stored at the hospital's facilities. Additionally, the consequent team should collect for a longer period of time and increase the sample size dramatically. The best way to do this is through collecting data on paper towel consumption from the containers where the janitors deposit their waste. This will reduce variability between various collection times and create a more efficient, less obstructive method for Hospital Sustainability teams to collect data on paper towel consumption.

The Earth Day Fair at the RRMC is a continuing project. We used this as an educational initiative, allowing staff to take a look at our new education module and explaining our role as students within the UCLA Health System. This served as a great opportunity for students and the hospital to get acquainted with what each other does, and we recommend that next year's team continue to take advantage of this opportunity.

The education module went through a lot of edits and we feel that we have created a useful and streamlined introduction to sustainability for hospital staff. Nonetheless, as mentioned above, there is plenty more that can be done with education and signage. The 2014-2015 hospital sustainability team should continue updating and improving the contents of the education module to ensure that it will have maximal educational and motivational impact when viewed by incoming hospital staff or the general public.

During our occupancy sensor project, Ms. Hildebrand mentioned that prior to this year, there had been discussions about putting up a mural by the stairs in the Medical Plaza to encourage people to take the stairs. They are currently working on finalizing the murals that will be installed in the stairwells. Our plan was to establish baseline data, so that once the murals are set up a future ART team can examine the effectiveness of the murals. Our baseline data for the occupancy sensor included four weeks of data. We crafted an email for Ms. Gill to send out to staff encouraging increased stair use two weeks into the baseline data to see if it made any noticeable difference in stair usage. Though we will never know whether the email made a difference, this is certainly a project that the next hospital sustainability team should explore, as it has both sustainability and health implications.

Conclusion

In our two quarters working for a more sustainable hospital environment, our team has accomplished an immense amount of work. We have overcome barriers and setbacks that have forced us to revert to the drawing board countless times, and we succeeded in developing several significant projects. Our resulting education module is a product that we are proud will be incorporated in training new employees and educating old ones. The Second Annual Earth Day Fair at the RRMC was a success, and brought together the hospital community to learn about its

very own sustainable practices, as well as how to incorporate sustainability into their own personal lives. Our waste audit provided great insight on the waste habits in the public restrooms at the hospital, and demonstrated a need for a more effective manner to remind patrons to change their paper towel use habits. With the school year at its close, we have increased the RRMC's sustainability, and our projects will continue to educate hospital staff and patients on how to lead a greener life. We are excited to see our education module potentially become a part of new hire training, and look forward to seeing the Earth Day Fair grow each coming year. Although hospitals are highly regulated and often not considered sustainable in many of their practices, our work with UCLA Health Systems is proof that with time, effort, coordination, and passion, we can make a difference in even the most sensitive of industries.

References

"About Us - Meatless Monday." *Meatless Monday*. Meatless Monday. Web. 20 Apr. 2014.

The website assisted us with the education module.

Behjat, Joseph, Jessica Galvan, Emily Foster, Sona Galstain, Faye Mendoza, and Kumar

Nadhan. "Final Report Winter - Spring 2012." *Action Research Team: Hospital Sustainability Final Report Winter – Spring 2012*. Action Research Team: Hospital Sustainability. ESLP, Spring 2012. Web. 25 Feb. 2014.

This final report from a previous hospital sustainability team assisted us with the brainstorming of new project ideas and how the second year hospital sustainability team built off of the 2010-2011 team that laid the foundation.

Behjat, Joseph, Jessica Galvan, Nicole Dezzutti, Allison Hornstra, and Danh Lai. "Final Report Winter - Spring 2013." *Action Research Team: Hospital Sustainability Final Report Winter – Spring 2013* Joseph Behjat Jessica Galvan Nicole Dezzutti Allison Hornstra

Danh Lai Stakeholder: Teresa Hildebrand Sustainability Program Manager: Ronald Reagan Medical Center UCLA Santa Monica Medical Center. Action Research Team : Hospital Sustainability. Spring 2013. Web. 25 Feb. 2014.

This final report, the most recent, gave us insight on what projects to pursue next as a team and what projects have most recently been tested. We used the previous year's team's experiences to help guide our path for the 2013-2014 academic calendar.

Chang, Christina, Jessica Galvan, Jill Harris, Bharat Kapadia, and Kumar Nadhan. "Final Report Winter - Spring 2011." *Action Research Team: Hospital Sustainability. Action Research Team: Hospital Sustainability. Spring 2011. Web. 25 Feb. 2014.*

This final report from a previous hospital sustainability team assisted us with the brainstorming of new project ideas and gave us insight into the beginnings of the hospital sustainability team.

Hildebrand, Teresa, and Nurit Katz. "Sustainability." *UCLA Health: Sustainability. UCLA Health. Web. 05 Apr. 2014.*

This website for the UCLA Health System Sustainability was the main source for much of the information on the education module, especially sections having to do with how the health system has already been a leader in several sustainability initiatives.

"The Non-GMO Project." *The NonGMO Project RSS. Non GMO Project. Web. 24 Apr. 2014.*

This website inspired content for the education module.

Talks, TEDx. "How To Use One Paper Towel: Joe Smith at TEDxConcordiaUPortland." *YouTube. YouTube, 17 Apr. 2012. Web. 28 Mar. 2014.*

This YouTube video of a Ted Talk by Joe Smith demonstrated an easy way to reduce paper towel waste after washing your hands. He introduced a statistic in this video that motivated our action research team to pursue the waste audit project in the RRMC.

These Come From Trees. "These Come From Trees Blog." *These Come From Trees Blog*.

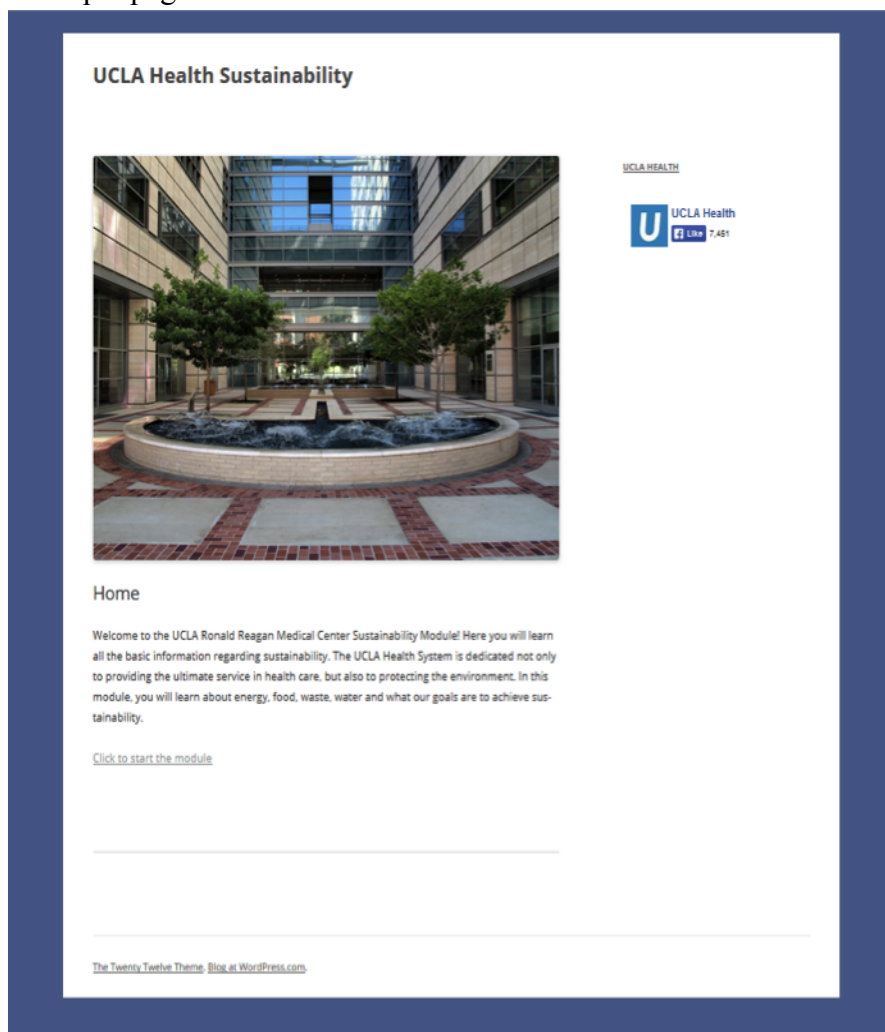
Blogspot. Web. 07 Apr. 2014.

"The Wilcoxon Rank Sum Test." *The Wilcoxon Rank Sum Test*. College of Marin. Web. 29 May 2014.

Appendices

Appendix A

Example pages of the education module.



The screenshot shows the home page of the UCLA Health Sustainability module. At the top left, the text "UCLA Health Sustainability" is displayed. Below this is a large photograph of a modern building's atrium with a central fountain and trees. To the right of the photo is the UCLA Health logo, which includes a blue square with a white 'U' and the text "UCLA Health" and "7,451" next to a Facebook icon. Below the photo, the word "Home" is written. A paragraph of introductory text follows, describing the module's focus on sustainability in health care. A link "Click to start the module" is provided. At the bottom left, there is a small footer: "The Twenty Twelve Theme. Blog at WordPress.com".

UCLA Health Sustainability



Waste

What is waste?

Waste is material that people no longer have use for and are discarded. Different types of waste require different care. The types of waste include:

- Municipal Solid Waste
- Industrial Waste
- Hazardous Waste
- Construction and Demolition Waste
- Mining Waste
- Electronic Waste

As we continue to use more and more resources, we will continue to produce waste that will end up in either a landfill or incinerator, which creates further pollution; therefore, nothing is truly disposable. That is unless we find a way to process that waste into something useful.

One solution is to create a cradle to cradle system that in its simplest sense reuses and recycles products that are worn out and turns them into something new to be used again. You can start to reduce the amount of waste you produce, by using reusable products, having a recycling bin and just reducing the amount of things you buy.



Source: US EPA

Appendix B

Example questions for the education module

By 2020, the UCLA Health System will reduce greenhouse gas emissions by

- 50%
- 10%
- 80%
- 75%

Answer: A

Which of these are efforts to reduce waste at the hospital?

- Green bed linen
- Reusable sharps containers

- c. Washable single-use gowns
- d. All of the above

Answer: D

What percentage of commercial water usage do hospitals compromise?

- a. 10%
- b. 25%
- c. 7%
- d. 12.5%

Answer: C

Which of these options is a part of the definition of Fair Trade Certified?

- a. Exploitation of Workers
- b. Access to health care services
- c. Decreasing Worker Pay
- d. Promoting Child Labor

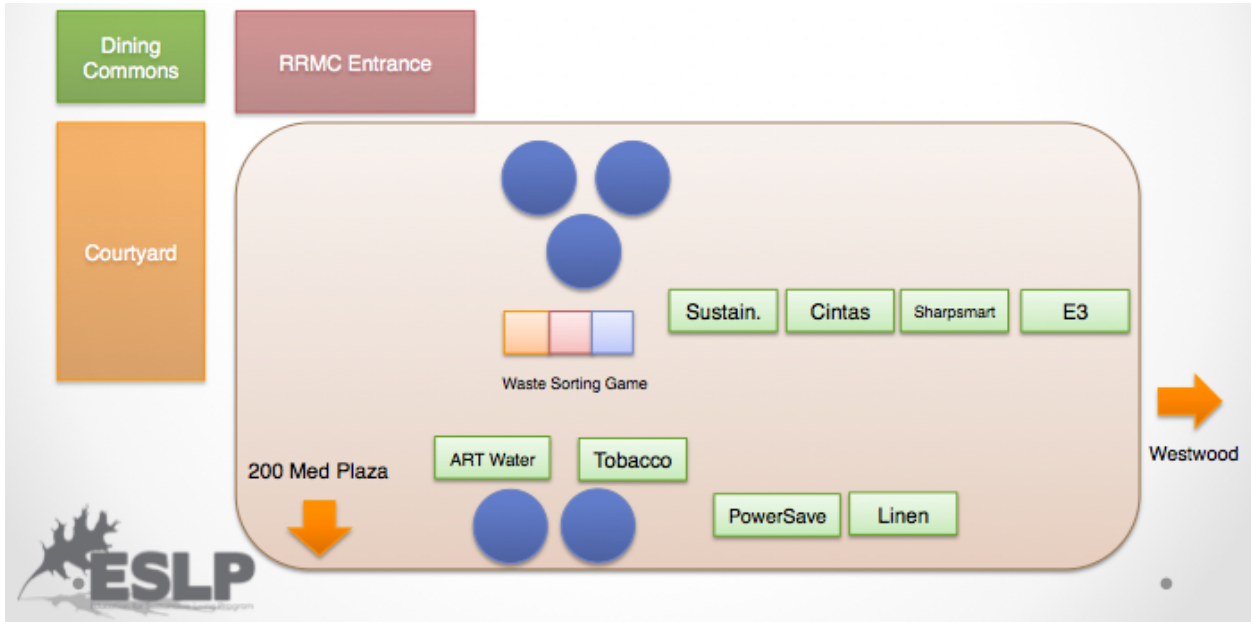
Answer: B

What is the percentage of sustainable food purchased by the UCLA Health System?

- a. 20.3%
- b. 100%
- c. 24.6%
- d. 34.6%

Answer: C

Appendix C



Appendix D

“These Come From Trees” sticker



“These Come From Trees” stickers on the paper towel dispensers.



Team member, Austin Park, conducting a waste collection for the waste audit project.



Appendix E

Interview with Patti Oliver

Date and Time: March 4, 2014 at 10:00am

- a. Background given to us by Patti at beginning
 - i. UCLA has no fried foods. The price of the salad bar has decreased from 6.99 to 4.99.
 - ii. Meatless Mondays. There is signage in the front of the cafeteria with ten reasons to eat less meat. There is also a healthy green apple program to identify the healthiest entrees where the healthiest foods have a label of 4 green apples. Goal = less than 500 calories, less than 500 mg sodium, less than 5 grams of added sugar.
 - iii. Sustainable food purchases, reached 24% sustainable food.
 - iv. Two recycling bins, one landfill, two compost near entrances. Only a few items are not recyclable or compost because there are no vendors that make that exact sustainable product.

- v. There are waste and compost bins for workers and a separate bin for compost.
 - vi. Reusable coffee mugs can be purchased and workers can bring their own mugs also.
 - vii. In 2013, every staff member was given a reusable water bottle.
 - viii. By the end of this April, antibiotic free chicken breast and beef products.
 - ix. Keep all foods within a 250 mile radius. Standard is 500, but why not just keep it at 250?
 - x. At the salad bar, organic and locally grown foods have a button by their label. Sustainable line of frozen vegetables used at the “hot” line.
 - xi. In 2013, the program won the food climate award from practice green health.
 - xii. Whole fruit was moved to the register. Also, default bun for all foods is a whole wheat bun. Brown rice at every meal with whole grain muffins. The substitutes for french fries are now salad or fruit. Oven baked chicken instead of fried chicken, salmon everyday, tilapia, etc.
 - xiii. Hospital management has been so supportive = waste initiative took a LOT of work, two weeks of people standing around making sure trash goes to the same place
- b. We see that you are the LA Area organizer for the healthy food in health initiative. You said that over 30 hospitals signed onto the healthy food healthcare initiative. What is the healthy food pledge and how was this possible to get 30 hospitals to sign on?
- i. The food pledge is posted in a frame near the entrance. IT involves the hospital committing to certain food practices, purchasing antibiotic and hormone free things. This is her 2nd year of being the LA organizer.
 - ii. The hospitals can sign onto any or all of the three hospital initiatives (UCLA has signed on to all 3)
 - 1. Balanced menus = less meat or better meat
 - 2. Healthier beverages = UCLA is currently working on a rating system
 - a. Green = water, milk, tea
 - b. Yellow = diet soda, coffee
 - c. Red = energy drinks and regular soda
 - 3. Sustainable purchases
- c. What do you see the actual percentage being at 2020? In other words, what is a new goal that can be set for 2020?
- i. Personal goal of a 5% increase this year. At the end of the month the addition of antibiotic free meat should ramp up the percentage.
 - ii. Healthy food and healthcare = able to have price point of sustainable foods be very affordable.

- iii. A lot of work and communication is done with vendors to get an affordable product. The availability of sustainable foods is tough in Cali, but a lot of work is done towards that.
- d. How do you see students, staff, faculty helping move towards your goal?
 - i. People are very appreciative of the sustainable foods being provided. The goal is to keep everything affordable.
 - ii. There is a plan to have a completely sustainable menu on Earth/ Food Day.
 - iii. At the end “people do pay the price.”
- e. We are working on an education initiative. Do you have any recommendations?
 - i. Serious waste initiative = it’s the pre-consumer waste and patient post consumer waste
 - 1. Somat food pulper = food comes out and it also recycles water
 - 2. Disposables are compostable or recyclable
 - 3. Sustainable food is so high
 - 4. Antibiotic free meat.
- f. We know it must be tough to cater to everyone, how do you organize around specific dietary needs?
 - i. Usually patients are put onto dietary restrictions by physicians that require a certain nutrient, fat, potassium, etc.
 - ii. The challenge in general is the physician making the dietary order and following that.
- g. Sustainable Food Systems means accounting for the full cycle of the food we eat— considering how it is grown, harvested, packaged, transported, and then disposed of. How “sustainable” is the food? Ex: Is the grass-fed really grass-fed? What does pasture raised actual mean? <http://www.sustain.ucla.edu/our-initiatives/food-systems/>
 - i. UCLA policy = different policy
 - ii. “Go to the page and read” - Page 19.
 - iii. In the UC policy, the food has to just meet one of the requirements.
 - iv. “What you can get for the price you pay.
 - v. Fact of today = LA drought causing lack of grass to feed cows. SO the choice has to be made. -- antibiotic-free and grass-fed but not local-- drought in CA so have to feed them grains -- do what is affordable
- h. How much of UCLA Health system’s food meets more than one of the criteria to deem it sustainable?
 - i. Cattle = antibiotic free and grass fed
 - ii. Produce = local and organic
 - iii. Etc. Doesn’t know off top of head.
- i. What does sustainable food mean to you?
 - i. To continue to exist = have to practice sustainability and comply with UC

- Policy.
- ii. “It’s just the right thing to do”
- iii. Antibiotic free meat is important because of antibiotic resistant strains coming up everywhere. Take care of the patients at the hospital!
- iv. March 26th = medicine ground rounds = antibiotic overuse in animals.
- j. What are your future plans for the hospital?
 - i. Continue with the initiatives, LA has to be the example.
 - ii. This is the morally right thing to do. It is in line with the UC goals in increasing sustainable food practices.
 - iii. Continuing to increase services to guests while increasing sustainable food practices.
- k. Is there a food map you can provide us with?
 - i. Yes
- 2. Meeting with Starbucks
 - a. Practices of regular Starbucks coffee = regular coffee is so sustainable that it should be considered sustainable
 - b. Fair trade not used = different types of coffee, more pricy
 - c. Matt st clair = look him up
 - d. coffee as well as tea
 - e. Research Starbucks Sustainability

Appendix F

Men’s Restroom:

Male Restroom Without Sticker (# of p.t)

Day	Receptacle 1	Receptacle 2	Receptacle 3	Total Combined
1	76	91	14	181
2	4	7	5	16
3	84	77	57	218
4	60	30	114	204
5	70	0	39	109
6	73	24	50	147
7	37	20	40	97
8	64	24	72	160
9	23	32	30	85

10	69	79	22	170
Total	560	384	443	1387
Average	56	38.4	44.3	138.7

Male Restroom With Sticker (# of p.t)

Day	Receptacle 1	Receptacle 2	Receptacle 3	Total Combined
1	150	26	35	211
2	9	12	5	26
3	10	8	10	28
4	37	6	17	60
5	39	44	60	143
6	72	21	61	154
7	24	17	2	59
8	20	17	40	77
9	32	5	31	68
10	3	1	55	59
Total	396	157	316	869
Average	39.6	15.7	31.6	86.9

Wilcoxon Rank Sum Test for Male Restroom

Before	After		Rank (Before)	Rank (After)		
181	211		17	19	Med1	153.5
16	26		1	2	Med2	64
218	28		20	3		
204	60		18	6	R1	130
109	143		11	12	R2	80
147	154		13	14		
97	59		10	4.5	N1	10
160	77		15	8	N2	10
85	68		9	7		
170	59		16	4.5	U1	25
					U2	75
					U	25
					z	-1.889822365
			Wilcoxon Rank-Sum Test		p	0.058781721

Unisex Restroom:

Unisex Restroom Without Sticker (# of p.t)

Day	Receptacle	Total Combined
1	36	36
2	29	29
3	11	11
4	9	9
5	19	19
6	48	48
7	33	33
8	22	22
9	15	15
10	43	43
Total	265	344
Average	26.5	34.4

Unisex Restroom With Sticker (# of p.t)

Day	Receptacle	Total Combined
1	1	1
2	26	26
3	17	17
4	26	26
5	80	80
6	53	53
7	0	0
8	4	4
9	8	8
10	0	0
Total	215	215
Average	21.5	21.5

Wilcoxon Rank-Sum Test

Before	After		Rank (before)	Rank (After)		
36	1		16	3	Med1	25.5
29	26		14	12.5	Med2	12.5
11	17		7	9		
9	26		6	12.5	R1	122
19	80		10	20	R2	88
48	53		18	19		
33	0		15	1.5	N1	10
22	4		11	4	N2	10
15	8		8	5		
43	0		17	1.5	U1	33
					U2	67
					U	33
					z	-1.28508
					p	0.198765