Implementing Sustainable Supply Chain Initiatives Within UCLA Health

2018 FINAL REPORT

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Stakeholder | Sara Lindenfeld

UCLA Sustainability Action Research

UCLA Health

Introduction

The Sustainability Action Research Hospital Team of 2018 specifically targeted green purchasing and supply chain initiatives within UCLA Health. This project supports the university in its "Zero Waste by 2020" goals while simultaneously addressing issues unique to a healthcare environment. The team collaborated with stakeholder, Sara Lindenfeld, as well as other experts in the field to pinpoint areas in which UCLA Health can effectively reduce waste, improve patient care, and maximize cost savings. Over the past two academic quarters, the team has researched green purchasing best practices, compiled a list of sustainability initiatives from other healthcare facilities, and determined specific product alternatives and strategies that UCLA Health can implement.

Hospital Background

Sustainability within healthcare is an emerging concept that has historically been overlooked because of the prioritization of patient safety and sterile environments in medical centers. However, the failure to address sustainability has incidentally had numerous consequences including those related to human health, costs, and efficiency. In a single day, an average staffed hospital bed produces 26 lbs of waste which translates to an annual accumulation of around 5.9 million tons of waste

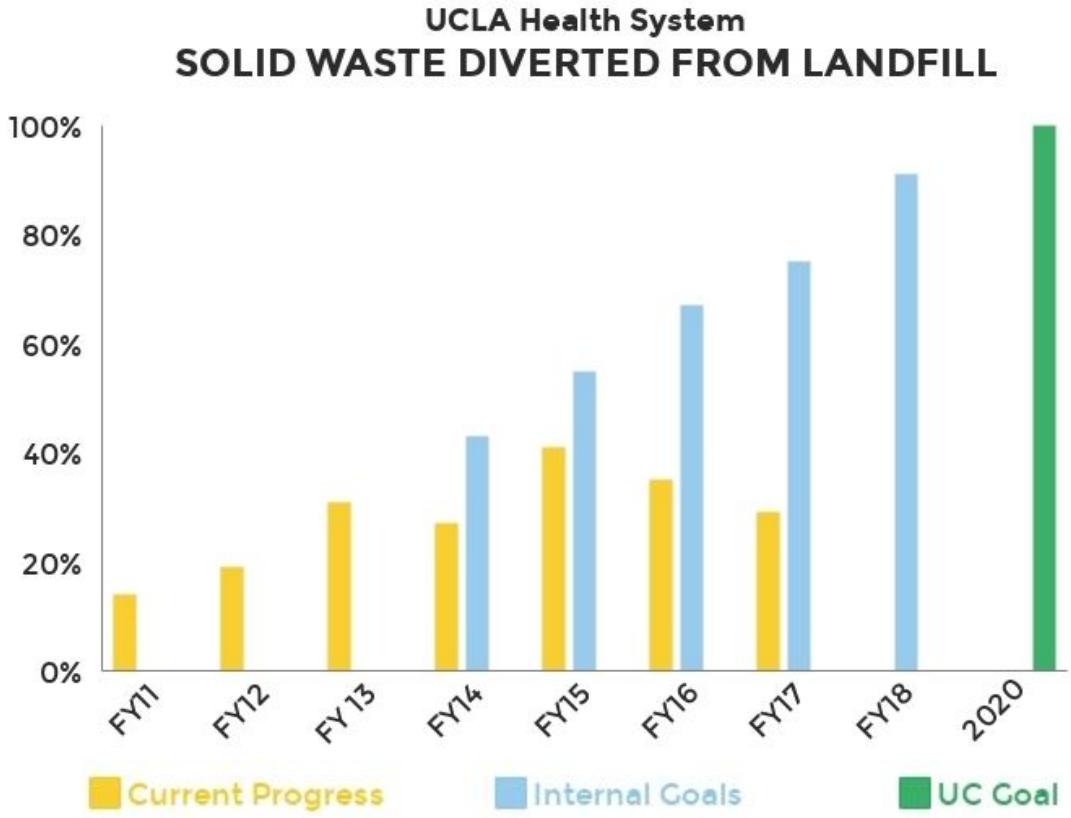
countrywide. In 2007, emissions related to these disposed materials equated nearly 215 metric tons of carbon dioxide. These emissions contribute to rising global temperatures which in turn contaminate water resources, diminish food supply, decrease species diversity, worsen air quality, enhance the spread of vector-borne diseases, and increase the occurrence of extreme weather events. In addition to the quantity of landfill contributions and harmful emissions, other methods of hospital waste disposal also threaten biodiversity, ecological systems, and human health. For example, improperly disposed pharmaceuticals can develop as runoff into

rivers and both harm wildlife and compromise the safety of drinking water. Medical incineration can also lead to an increase in mercury exposure to humans and the environment. While some waste is undeniably biohazardous and must be properly disposed of, 50-85% of non-hazardous waste is improperly sorted out and disposed of using biohazard precautions. These techniques, such as the use of an incinerator, cost an average of eight times as much as standard disposal methods, use significantly more energy, and have additional safety risks.

UCLA Health Progress

Fortunately, UCLA Health has already made environmental health a priority. UCLA Health is comprehensive health care system serving around 600,000 patients every year. UCLA Health includes Ronald Reagan UCLA Medical Center, UCLA Medical Center, Santa Monica, Resnick

Neuropsychiatric Hospital at UCLA, Mattel Children's Hospital UCLA, Jonsson Comprehensive Cancer Center, medical clinics throughout the Greater Los Angeles Area, UCLA Health Training Center, and Tiverton House. Such a large, complex healthcare network comes with significant opportunity for sustainability. One noteworthy accomplishment is the implementation of a recycling program in the operating rooms and intensive care units. This recycling system not only diverts waste from the landfill but also helps change the waste culture among healthcare workers. UCLA Health has also transitioned to more efficient bed linen procedures which saves water and energy, washable rather than single use precaution gowns which has diverted over 108,900 pounds of waste from the landfill since 2012, reusable totes to reduce cardboard consumption, and reusable sharps containers which prevents 40 to 60 tons of UCLA waste from being added to landfills. UCLA Health dining facilitates are also already almost zero waste and surpassed the 2020 goal in July 2013 reaching 25% sustainable food purchases.



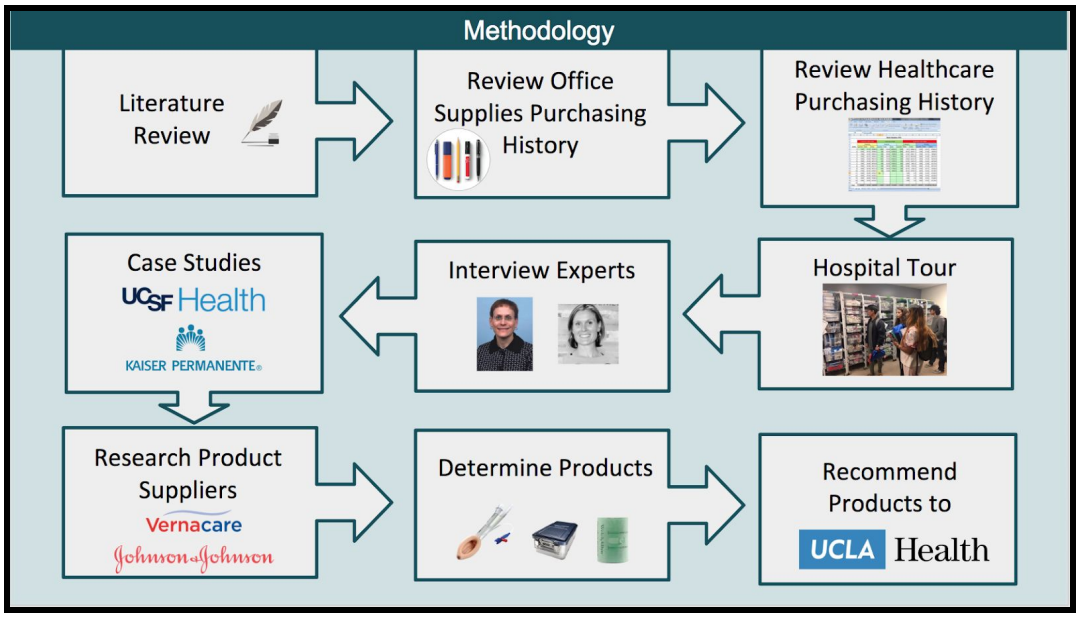
With UCLA's goal of becoming waste free, the need to think outside the box and develop creative solutions has become even more critical. The previous SAR Hospital team of 2016 worked on making UCLA Health more sustainable through an educational module that focused on educating the health center's entire medical staff and employees. However, little success was achieved in regards to influencing employee habits because the initiative was not sustained or institutionalized as a habit. This year, our team has taken a different path to tackle hospital sustainability through the area of green purchasing in order to reduce environmental impacts of the hospital. Opportunities to improve sustainability in the purchasing realm include improving packaging materials, increasing reprocessing of single use devices, reformulating operating room kits, reducing disposable sterilization wrap, and reselling unused medical devices. UCLA Health has massive buying power and the capability to influence consumption in the healthcare system has potential for significant savings, in regards to both carbon emissions and cost.

Our team's focus of green purchasing within UCLA Health can be implemented via the initiatives and alternatives that our research proves has a reduced cost to human health as well as the environment in comparison to the other products in the market. We have utilized the aid and resources from the supply chain practices of healthcare facilities at the forefront of sustainability. Our preliminary research provided valuable information to the team on general practices that we can partake in to contribute to hospital sustainability. This first step was also crucial in leading us to a variety of resources, such as the implemented sustainability scorecard from Kaiser Permanente used to influence the company's supply chain (Kaiser Permanente, 2010) or the just-in-time inventory strategy that has the ability to reduce unnecessary waste

generated from a surplus of supplies (PricewaterhouseCoopers 2012). From the sustainable initiatives we have researched from other successful healthcare institutions, we hope that UCLA Health can leverage its purchasing power to choose the more sustainable alternative in the future. The initial research in its entirety assisted the team by providing a gist of the magnitude of a hospital's operations and by aiding in the discovery of items for environmentally preferred purchasing. Fortunately, hospitals have significant potential to become "greener" without compromising the quality of patient care. Health centers throughout the world have committed themselves to raising awareness and taking the next steps to create measures that improve environmental sustainability. Hospitals are not restricted to a single action in which they have the ability to make an impact; hospitals have various opportunities to reduce waste and have a positive environmental impact.

Methodology

From the very conception of our project we knew we would be working to increase the sustainability of UCLA Health's supply chain and operational methods. Through consultation with out stakeholder, we narrowed our scope to researching potential product switches.



Interviews and External Contacts

Our team conducted interviews and contacted experts within the medical, sustainability, and supply chain management field. First, we arranged a phone interview with Hillary Bekmann the Associate Director of Sustainability at University of California, Office of the President. Her expertise in sustainable procurement proved quite insightful, navigating us through the process of supply chain management and providing us with advice on our project. In regard to specific products, she recommended that we begin researching spend analyses and life cycle assessments so that we would be better able to identify which products are having the largest impacts and thus have the most room for improvement. Bekmann also recommended we look at products that hit multiple environmental, health, and economic criteria. She emphasized that a product that is fairly small, in terms of quantity or significance .but fulfills many criteria is more impactful and preferred over a big product that does not check off as many boxes. A product hitting many criteria tells a more complete story of a hospital's commitment to sustainability and adds credibility to budding environmental programs. Bekmann also highly advised us to understand what is important to hospital decision makers. If we are cognizant of where their priorities lie we can ensure our alternative products are complementary, which will increase the likelihood of the new products being adopted

> **"Go for smaller products that hit more drivers; you want a story"**
>
> *Hilary Beckmann, Associate Director of Sustainability at University of California Office of the President*

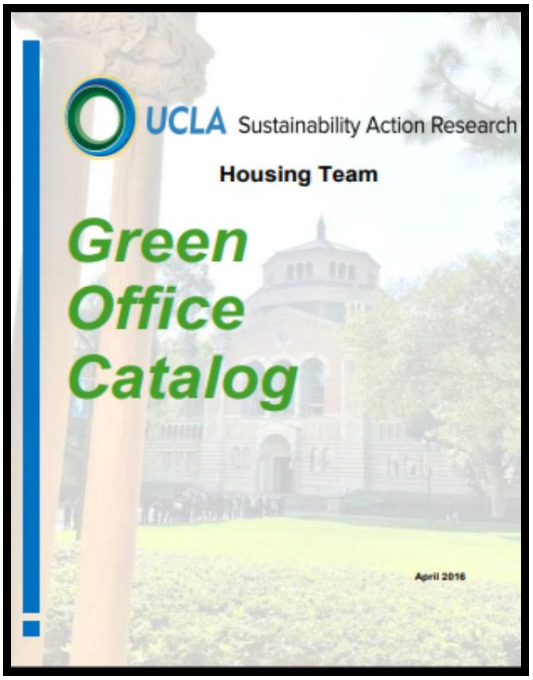
Another phone interview we conducted was with Jacquelyn Hedlund, a hematologist at the Maine Medical Center. She has been working in the medical field for many years; witnessing what occurs when a new product is introduced into the supply chain. Often doctors and other healthcare practitioners resist and pushback against new products because they are comfortable with the tools they are currently using. These products more familiar to the users and are already proven to function properly, so changing products creates a sense of uncertainty. The efficiency and simplicity of use are some concerns raised by doctors when given new products. Getting the users of new products on board with the changes is integral to the impact we desire to have. If a product is supplied to a hospital, but very little of the practitioners are actually using it, then the benefits are diminished. Overall, through speaking with Hedlund we learned of the pushback new products may receive and how to transcend these barriers.

> **"Greening the supply chain is not an easy task… doctors want to order their own preferred products"**
>
> *Jacquelyn Hedlund, Hematologist at the Maine Medical Center*

In addition, we also came in email contact with Gail Lee, the Director of Sustainability for UCSF, and a representative from Kaiser Permanente. After sending a list of accomplishments UCSF has achieved to Gail Lee she provided specific details of the process to such feats. This was helpful to our team because it guided us towards certain products and operational methods. Furthermore, UCSF Health and Kaiser Permanente, like UCLA Health, are very large institutions conscious of their environmental footprint. From Kaiser Permanente we learned the

importance of accountability is in the sustainability field. To address accountability, Kaiser Permanente has an Environmental Stewardship Council and Environmentally Preferable Purchasing Principles and Standards, to ensure environmental regulations and policies are upheld. These interviews provided us with insight of the field and its potential obstacles along with solutions.

Office Supplies

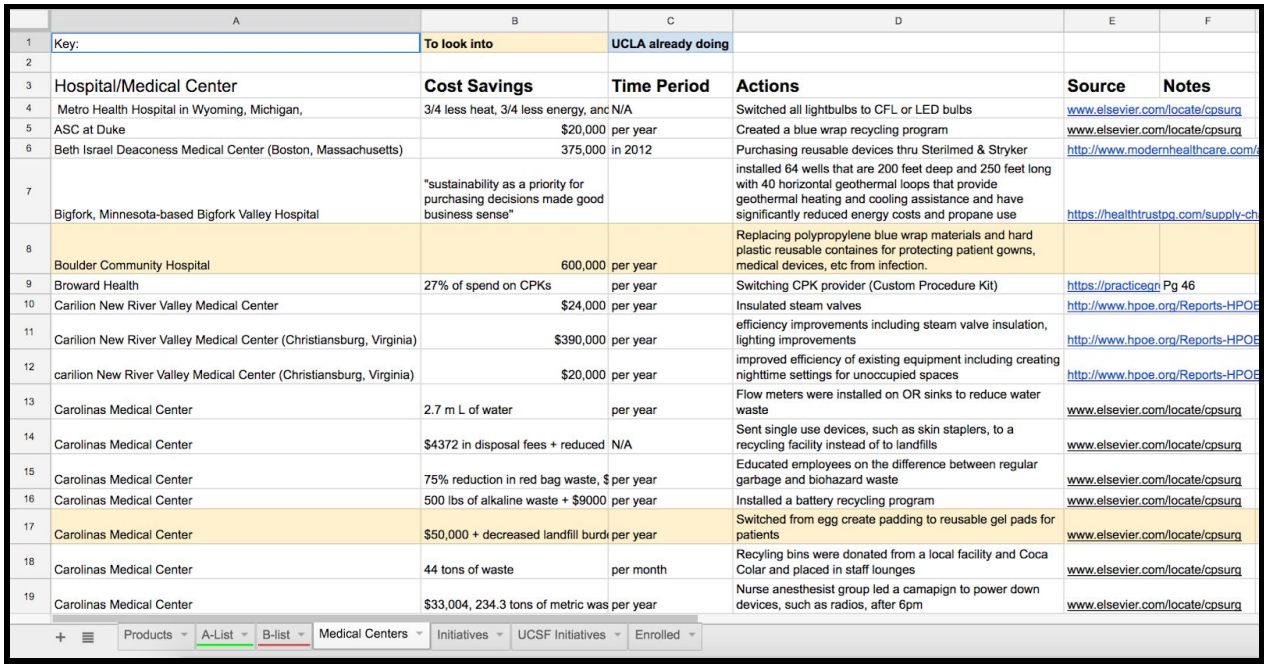


One of our first tasks was to analyze the office supplies purchasing history at Ronald Reagan. Although this aspect of the hospital does not have the largest environmental impact, initiating change in this department was more feasible given our time frame. Our task was to find items that were both environmentally friendlier and preferably cost saving. Using the vendor item number, we were able to exactly find what was being purchased. We then searched for the environmentally preferable products on OfficeMax, UCLA Health's main supplier. We were able to find 22 possible office supply replacements for UCLA Health before discovering the work of a previous SAR team. In 2016 the Housing SAR team produced a green office catalog, specific to Office Max, which listed environmentally preferred products and supporting details. Thus, they had essentially

already conducted the research we were in the midst of. After analysis of their catalog we concluded that it was still highly relevant, even given the two-year gap. We sent the catalog, along with our own discoveries, to our stakeholder.

Healthcare Sustainability Initiatives Database

Throughout the entire course of our project we have been archiving healthcare sustainability initiatives and best practices into a spreadsheet. The spreadsheet contains a wide array of information on specific medical devices, initiatives undertaken by other medical centers, and the products we recommended to UCLA Health. In order to gather this information we have been conducting extensive literature reviews within the field. The purpose of this spreadsheet is to create one centralized database where not only our stakeholder but others in the healthcare sustainability field can find relevant information on environmentally preferred products and practices.



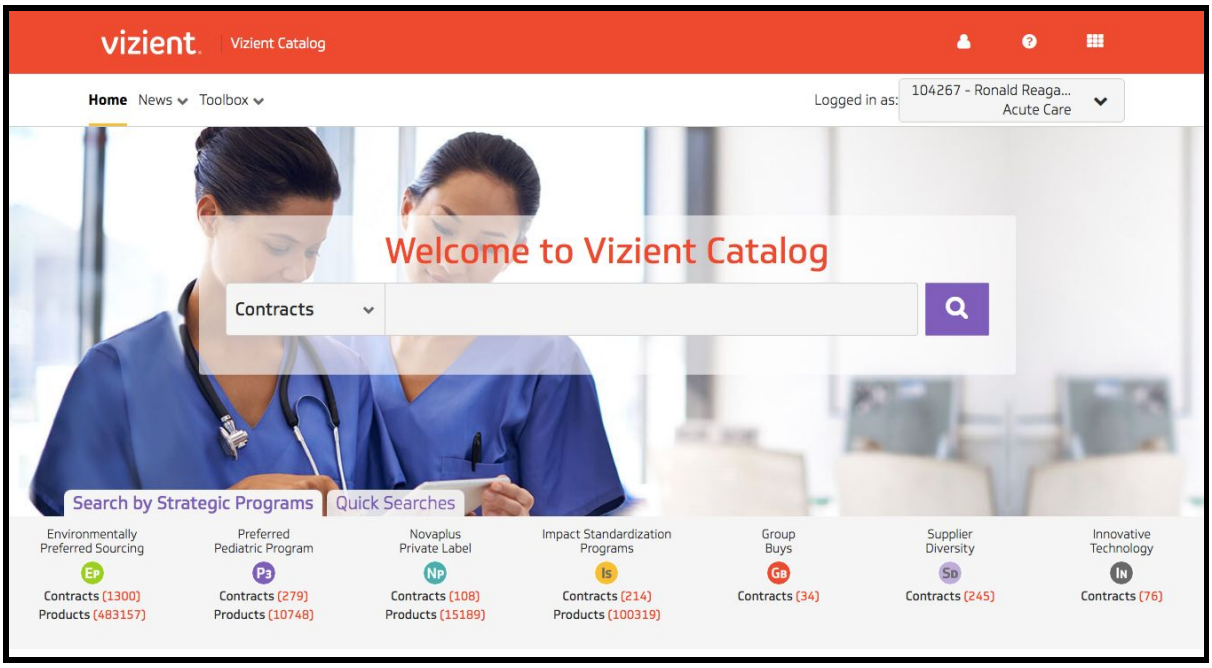
	A	B	C	D	E	F
1	Key:	To look into	UCLA already doing			
2						
3	Hospital/Medical Center	Cost Savings	Time Period	Actions	Source	Notes
4	Metro Health Hospital in Wyoming, Michigan,	3/4 less heat, 3/4 less energy, and	N/A	Switched all lightbulbs to CFL or LED bulbs	www.elsevier.com/locate/cpsurg	
5	ASC at Duke	$20,000	per year	Created a blue wrap recycling program	www.elsevier.com/locate/cpsurg	
6	Beth Israel Deaconess Medical Center (Boston, Massachusetts)	375,000	in 2012	Purchasing reusable devices thru Sterilmed & Stryker	http://www.modernhealthcare.com/	
7	Bigfork, Minnesota-based Bigfork Valley Hospital	"sustainability as a priority for purchasing decisions made good business sense"		installed 64 wells that are 200 feet deep and 250 feet long with 40 horizontal geothermal loops that provide geothermal heating and cooling assistance and have significantly reduced energy costs and propane use	https://healthtrustpg.com/supply-ch	
8	Boulder Community Hospital	600,000	per year	Replacing polypropylene blue wrap materials and hard plastic reusable containes for protecting patient gowns, medical devices, etc from infection.		
9	Broward Health	27% of spend on CPKs	per year	Switching CPK provider (Custom Procedure Kit)	https://practicegr	Pg 46
10	Carilion New River Valley Medical Center	$24,000	per year	Insulated steam valves	http://www.hpoe.org/Reports-HPOE	
11	Carilion New River Valley Medical Center (Christiansburg, Virginia)	$390,000	per year	efficiency improvements including steam valve insulation, lighting improvements	http://www.hpoe.org/Reports-HPOE	
12	carilion New River Valley Medical Center (Christiansburg, Virginia)	$20,000	per year	improved efficiency of existing equipment including creating nighttime settings for unoccupied spaces	http://www.hpoe.org/Reports-HPOE	
13	Carolinas Medical Center	2.7 m L of water	per year	Flow meters were installed on OR sinks to reduce water waste	www.elsevier.com/locate/cpsurg	
14	Carolinas Medical Center	$4372 in disposal fees + reduced	N/A	Sent single use devices, such as skin staplers, to a recycling facility instead of to landfills	www.elsevier.com/locate/cpsurg	
15	Carolinas Medical Center	75% reduction in red bag waste, $	per year	Educated employees on the difference between regular garbage and biohazard waste	www.elsevier.com/locate/cpsurg	
16	Carolinas Medical Center	500 lbs of alkaline waste + $9000	per year	Installed a battery recycling program	www.elsevier.com/locate/cpsurg	
17	Carolinas Medical Center	$50,000 + decreased landfill burd	per year	Switched from egg create padding to reusable gel pads for patients	www.elsevier.com/locate/cpsurg	
18	Carolinas Medical Center	44 tons of waste	per month	Recyling bins were donated from a local facility and Coca Colar and placed in staff lounges	www.elsevier.com/locate/cpsurg	
19	Carolinas Medical Center	$33,004, 234.3 tons of metric was	per year	Nurse anesthesist group led a camapign to power down devices, such as radios, after 6pm	www.elsevier.com/locate/cpsurg	

Products | A-List | B-list | Medical Centers | Initiatives | UCSF Initiatives | Enrolled

Specific Product and Supplier Research

After working through some confidentiality issues, our team was granted access to the UCLA Medical Center's purchasing report for the month of September. This report contains information on items, vendors, manufactures, and quantities of products being bought. With so many items on the report, we first attempted to locate products we had already collected data on. Once discovering a product within the report, we used the manufacturing code to find information online about it. Through a continual process of cross referencing the products we had information on with the products on the report we were able to discover what more sustainable options UCLA Health currently is and is not purchasing. Often we discovered the environmentally preferred products we researched were already being purchased, which was encouraging to see UCLA Health already prioritizing sustainability. After finding products UCLA Health is not already purchasing, we then used the purchasing tool Vizient, which is a platform

for the procurement of medical devices and a database of management supply strategies. Through Vizient we have been able to discover price ranges for certain products, who the

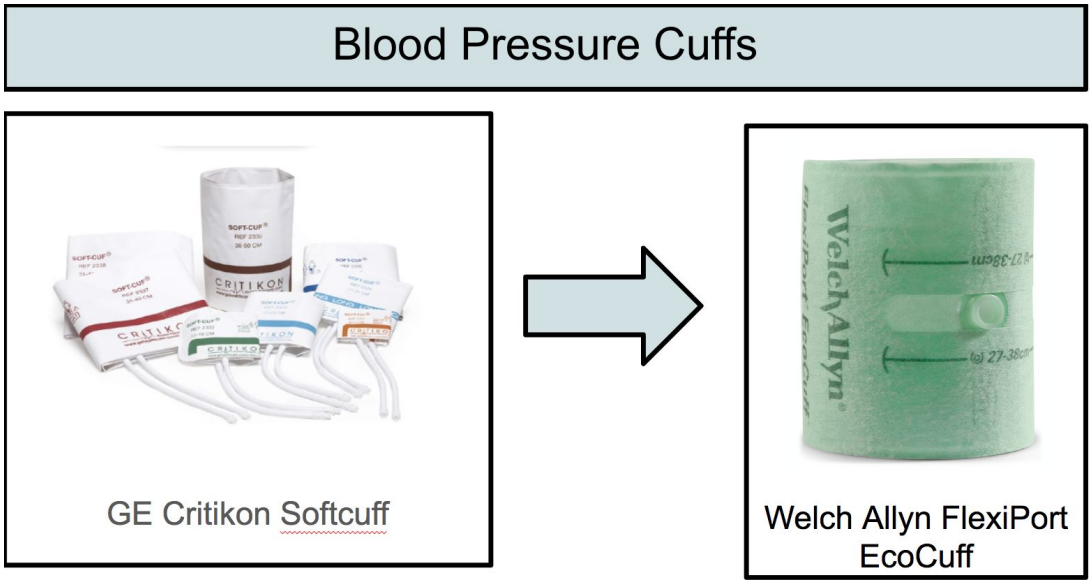


suppliers are, and distribution methods. Information on suppliers is especially important because we need to discover who could potentially supply UCLA Medical Center with more sustainable yet cost effective products. From utilizing the supply purchasing report and Vizient we were able to focus in and identify products and suppliers which we would later recommend to UCLA.

Recommendation to UCLA Health

Upon completing thorough research of multiple products we identified five which could benefit UCLA Health the most. In order to pitch these products our stakeholder invited us to present at the UCLA Health Sustainability Steering Committee's monthly meeting. In our presentation we went into great detail about each of these products and why they are preferable to the product

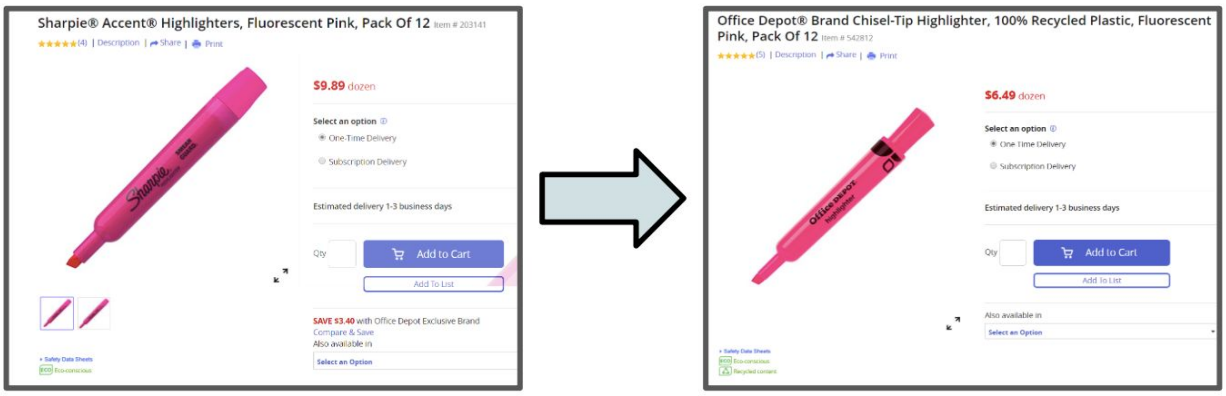
currently being purchased. Furthermore, we also pitched the more sustainable office supplies and made the committee aware of the existence of the Green Office Catalog. After the presentation we received feedback on the feasibility of such products switches as well as more information on other sustainability ventures within UCLA Health. The committee was quite receptive to our proposed switches and interested in our research. We will be providing them with our health sustainability initiatives database.



Results & Discussion

Our goal from the start of our research was to help make UCLA Health more sustainable. After we learned our research was focused on supply chain at the hospital, we specified our scope to implementing at least one product change that benefited the supply chain. After numerous hours of online research, we had examined a plethora of products but were unable to locate a satisfactory product early enough to implement a trial period for one.

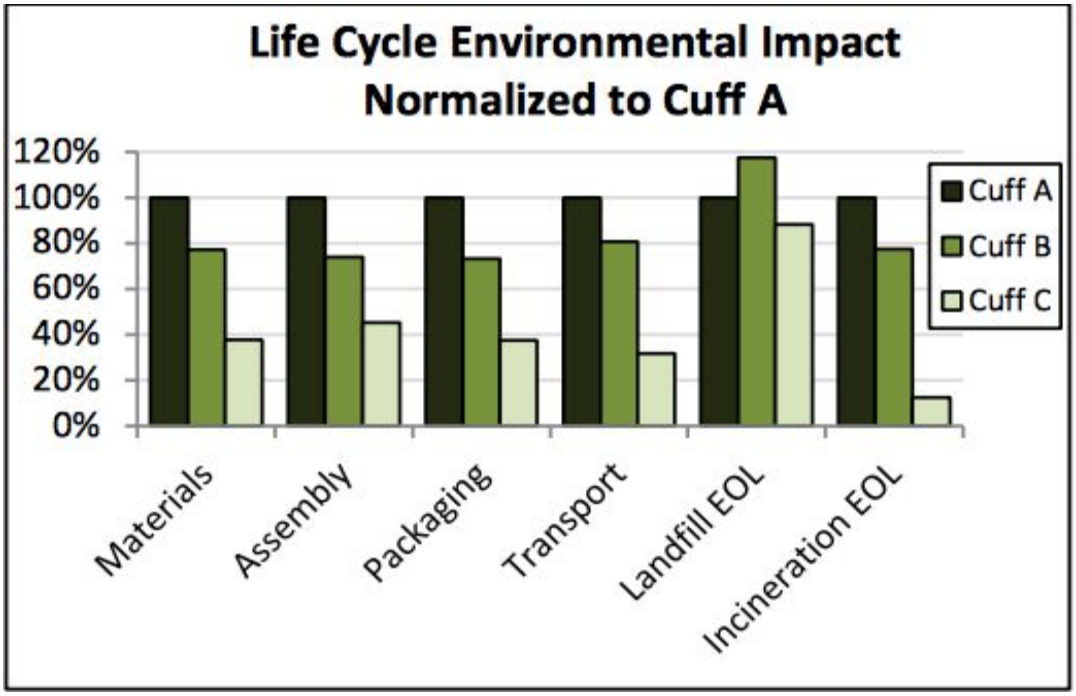
Although our initial goal of implementing and testing a few of our researched products via trial periods did not come to fruition, we still assisted UCLA Health's efforts in greening the supply chain. Because of how massive and confusing the purchasing report was, we were aimlessly tackling products unaware of what UCLA Health was currently in the process of utilizing. Numerous products that were discovered by the team through research showing potential benefits had turned out to be already in use at UCLA Health. It was difficult to recommend products since we located many more green products that were already in use compared to products not in use. Initially disheartened about the research we put forth with no avail, we realized the potential to approach this dilemma as a deliverable--develop a list of alternative more sustainable products to suggest to UCLA Health's purchasing department.



Pictured above is a product switch we suggested, moving from highlighters $9.89/dozen to those that are $6.49/dozen and also made of recycled content when the previously used ones were not. It was tough to find products that were both cost and environmentally effective but here is one example of that

The products we researched differed in complexity levels ranging from standard office supplies such as highlighters made of recycled materials to highly technical medical devices such as a laryngeal mask. Our team had little clinical background prior to our research and unsure of exactly how important every medical device was along with the feasibility of a change.

Therefore, we created an A and B List of recommendations. The A-List consisted of what we believed to be most plausible. These products were products that we were confident were not already in use at UCLA Health, be a plausible switch, and would help green the supply chain. The B-List still featured items that we believed would green the supply chain, but we were unsure of the feasibility of the change, and whether or not the product was in use at one of UCLA Health's facilities.

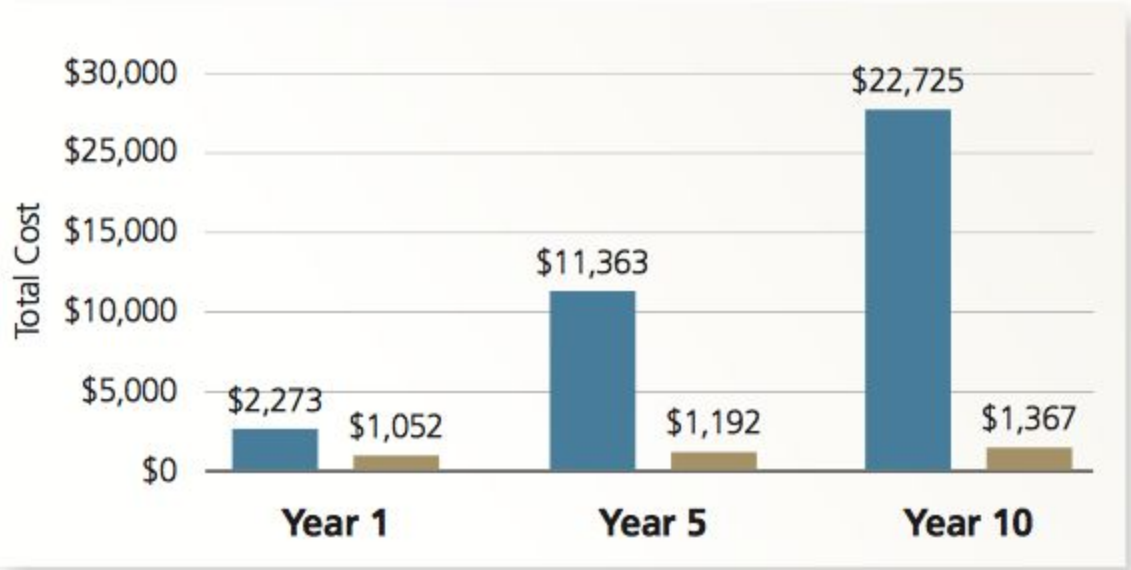


Pictured above is a graph demonstrating the reduced impact from switching blood pressure cuffs from the standard single-use cuff (A) to the Eco-cuff (C) which uses only 40% energy of usual cuffs and is still ISO compliant.

On June 14th Team members Sarah Paset and Eddie Galvin presented the team's findings and recommendations to the Hospital's sustainability Steering Committee at Ronald Reagan Hospital. It was a wonderful opportunity to be able to present first-hand our accumulation of research to many decision makers and influencers at UCLA Health. The committee was much more familiar with the medical industry and was able to provide us invaluable feedback

regarding our research. The committee was excited about our involvement and was interested in a few of the products we suggested. Immediately following our presentation, the committee discussed the potential for our products.

The Committee expressed interest in the Welch Allyn FlexiPort Ecocuff we recommended and will further examine the performance and safety of it before starting the product change. However, UCLA Health recently signed a new contract and transitioned from the vendor GE to the new Philips monitoring system. Contractually, UCLA Health must use Philips products for the vendor to honor the warranty. Members of the Committee also expressed concerns about the accuracy of this EcoCuff so further research is still needed.



Pictured Above is a graph estimating the potential savings in blue sterilization wrap that could be obtained by switching to the alternative of reusable sterilization container. Fortunately for UCLA Health, they implemented it before our research.

From our presentation to the Sustainability Steering Committee we also learned that a product from our "B-List," a reusable container sterilization system to replace disposable sterilization wrap, had recently been introduced to UCLA Health and had just completed a very successful trial period at the Santa Monica facility. Although it was disappointing to hear yet another product we thought would be new to UCLA Health was already in use, it was enlightening to learn that the trial period went seamlessly and we were on the right track.

Conclusion

Our team is confident in the capability of UCLA Health to implement some of these initiatives. With UCLA's zero waste goal by 2020 rapidly approaching, it is crucial that sustainable measures are applied to every aspect of the university, including UCLA Health. While patient safety should always be prioritized, we believe that our list of recommendations will continue to optimize health while working towards a greener medical system. The hospital has increasingly been optimistic about sustainable initiatives and hopefully will continue to investigate and perform trial runs of alternate products. By implementing even just one product in our proposal, UCLA Health could have a massive impact. The hospital system has tremendous buying power and could help to encourage real change in the medical world. We hope that a hospital team can be part of SAR 2019 and that future members can run trials of our products and find new products to propose additionally.

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Healthcare Initiatives

https://docs.google.com/spreadsheets/d/1I8kubFtUgm3Y2rfoMRDQWl7Ha6sb-OT8b6AamOnSIi8/edit?usp=sharing