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The Healthier Hospitals Initiative uses data to drive environmental improvement in the health care sector. While data is key to success in driving performance, it doesn't tell the story of the journey. Data doesn't highlight the hard work that goes into making those line graphs move in the right direction. Behind every data point is a team of individuals working to put all the pieces together and drive change in a complex health care environment. That's where the HHI case studies come in by explaining the steps taken from point a to point b.

The Healthier Hospitals Initiative team has been compiling case studies since the program's inception in 2012. Over 35 case studies capture progress at HHI sponsoring health systems and other hospitals – these initial case studies came from early adopters that helped others learn from their experience and are on the HHI website.

This compilation of case studies features HHI enrolled hospitals that experienced success through their work with the Healthier Hospitals Initiative. The team made an effort to identify successes from across the United States, in varying sizes and locations, to let readers hear loud and clear that any hospital can benefit from HHI's proven environmental interventions. Please share them with leadership to help further your facility's progress.

With the release of this compilation as a complement to the 2014 Milestone Report, HHI is transitioning into a permanent program of Practice Greenhealth. The measures are being reviewed to take into account any lessons learned. The initiative was a success and will continue to be an important framework for driving change as a sector, in the marketplace and for engaging new hospitals and businesses.

Thank you to those featured in this compilation for taking the time to share your stories and to help others. Hats off to the persistent, passionate health care workers and Practice Greenhealth and Health Care without Harm teams, driving for positive change.

Have a story to tell? Let us know and we'll work on your case study too. Learn more at www.healthierhospitals.org.

With appreciation,

Healthier Hospitals Initiative Team



PRACTICE
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CHALLENGE AREAS



Engaged
Leadership



Healthier
Food



Leaner
Energy



Less
Waste



Safer
Chemicals



Smarter
Purchasing

Case Study: Engaged Leadership- Bringing Sustainability Programming to the Next Level

Summary

Over the past 20 years Bronson Methodist Hospital has put considerable effort toward creating a solid sustainability program through initiatives such as recycling programs, local food sourcing efforts, and hazardous chemical reduction strategies. However the hospital reached a point where if it were to continue to expand and improve its sustainability program, it needed to grow beyond the more easily-captured efforts and focus on initiatives that would require considerably more time and effort to achieve.

Traditionally, most of the sustainability initiatives within the hospital had been employee-driven and localized to individual departments. Overall Bronson lacked a centralized department and staff to coordinate existing efforts, provide assistance to employees, create community partnerships, and have the time to drive new program implementation. To address this issue Bronson Methodist Hospital partnered with a local college to create an internship position to evaluate the advantages of a full-time position focused solely on sustainability efforts. Through calculating a return on investment, the intern was able to successfully demonstrate the value for a full-time sustainability coordinator position (refer to the "Benefits" list for identified cost savings examples) and further investment in healthier environments. The HHI Engaged Leadership Challenge provided the steps to take a good sustainability program to the next level.

Bronson Methodist Hospital, Kalamazoo, Michigan

The Problem

While Bronson Methodist Hospital had accomplished numerous sustainability successes in the past, the more easily achieved efforts had been implemented and next level strategies would require a much greater cost commitment of time and effort to achieve. As a result, old successes were maintained but new initiatives were slow in development, even when significant cost-reduction opportunities were identified. In order for Bronson to maintain its reputation as a leader in environmental stewardship in the sector, a method for increasing focus and attention solely on sustainability would have to be developed.

The Strategy Selected

Bronson Methodist Hospital's environment of care and sustainability manager, Lisa Hardesty, partnered with local college Aquinas to create an internship for a student in the sustainable business program, a program made possible by Steelcase, Herman Miller and other regional businesses. The focus of the internship would be to produce a return of investment analysis for the creation of a position focusing on hospital reduction of resource use and capturing of sustainability financial incentives, such as ENERGY STAR rebates.

Bronson brought in intern Brendan Molony in June of 2014. He used the Green Guide for Health Care LEED O + M (operations and maintenance) Program as a template to assess the state of the current program and to begin to roadmap future sustainability activities. A final ROI assessment was completed in the fall of 2014 and successfully demonstrated beneficial financial and environmental outcomes associated with a full-time sustainability position. Using the ROI, the environmental safety and sustainability manager was able to present a case for budgeting resources from recently vacated positions to develop the new role around sustainability programming (*see the "Return on Investment" document at the end of the case study for the list of activities and the return on the investment analysis*). The new position of sustainability coordinator was created in the fall of 2014, and would have the resources to explore potential opportunities that would lower operations costs, reduce resource utilization within the hospital, and capture financial incentives.

About Bronson Methodist Hospital

Bronson Methodist Hospital, located in heart of the downtown area Kalamazoo, Mich., is the flagship of Bronson Healthcare, a not-for-profit healthcare system serving all of southwest Michigan and northern Indiana. With 434 licensed beds and all-private rooms, Bronson Methodist Hospital provides care in virtually every specialty—cardiology, orthopedics, surgery, emergency medicine, neurology, oncology—with advanced capabilities in critical care as a Level I Trauma Center; in neurological care as a Joint Commission certified Primary Stroke Center; in cardiac care as the region's first accredited Chest Pain Emergency Center; in obstetrics as the leading BirthPlace and only high-risk pregnancy center in southwest Michigan, and in pediatrics as one of only six children's hospitals in the state.

Bronson serves the largest percentage of Medicaid patients in the area and provides a substantial benefit to the community through outreach and charitable care. It is the recipient of the 2005 Malcolm Baldrige National Quality Award, the nation's highest presidential honor for quality and organizational performance excellence. In 2009, the hospital received the AHA McKesson Quest for Quality Prize awarded annually to only one U.S. hospital and joined the top five percent of hospitals in the nation to be designated a Magnet Hospital for Nursing Excellence.



Implementation Process

The HHI Engaged Leadership Challenge was used to elevate the established hospital sustainability program to the next level. Bronson Methodist Hospital performed a gap analysis of the Challenge to establish a list of objectives that would further embed sustainability into the core operations of the health care environment.

One baseline requirement of the challenge was to create an executive commitment statement. The intern was tasked with developing the documentation while leadership was engaged for review and approval. Having an intern to evaluate the qualitative measures, as well as the support of the environmental safety and sustainability manager to drive engagement of upper management, was a very important aspect which attributed to the success of this Challenge.

The Engaged Leadership Challenge identified 24 other qualitative activities that can be tackled to further support a long-term, successful initiative integrated into the overall operations of the facility. The measures were identified as key activities which would create a more formal sustainability program that could withstand staffing changes, competing agendas and a 24/7 operation. The full list of opportunities is identified below. Bronson Methodist Hospital achieved the highest recognition of Level 3 by implementing more than the ten required qualitative measures:

The Green Team

Brian DeRoo, Contract Specialist

Carolyn Wyllie, Communications Specialist

Dan Kettenbeil, Director of Facilities

Daphne Johnson, Property Coordinator

Dorinda L Diaz, Manager Materials Management

Grant Fletcher, System Director of Nutrition and Retail Services

Lisa Hardesty, Environment of Care and Sustainability Manager

Mike Way, Senior Vice President

Tiffany Brady, System Director of Environmental Services and Patient Transport

HHI Engaged Leadership Challenge Activities

Yes	Baseline: Sign and submit an executive commitment statement.
No	Create a strategic sustainability plan.
Yes	Create an environmental mission statement/guiding principles/charter.
No	Formulate a sustainability program budget. (in the works)
Yes	Appoint a sustainability executive owner.
No	Build in sustainability measures as an organizational priority.
Yes	Create a sustainability reporting structure.
Yes	Create sustainability responsibilities within the organization.
Yes	Create an environmental steering committee with routine meetings.
Yes	Conduct a sustainability baseline assessment.
No	Define measurable sustainability objectives
Yes	Identify leader for sustainability efforts.
Yes	Identify the clinical champion.
Yes	Demonstrate progress on at least two HHI challenges.
Yes	Communicate progress on sustainability initiatives to the board.
Yes	Report progress regularly on sustainability initiatives to the leadership team.
No	Communicate sustainability progress from the leadership team to the organization regularly.
No	Create and distribute an annual sustainability report.
No	Provide a feedback mechanism for sustainability initiatives.
Yes	Participate in programs to support employee and community engagement.
Yes	Educate all employees about sustainability including new employee orientation.
No	Share sustainability best practices within the industry.
Yes	Engage organizational leaders to act as spokespeople for the sustainability program.
No	Include sustainability initiatives in the community benefit report.

Factors Included in Bronson Hospital's ROI Analysis:

Financial Benefits (savings or cost avoidance)

- \$3,560 Battery Savings
- \$912 Lead Recycling
- \$50,223.95 PC Management
- \$50,839 - SUD Reprocessing
- \$17,800 - Energy Rebates

Environmental Benefit (reduced energy, pounds reduced)

- 502,239 kWh PC Management
- 15,756 kWh AHU4 \$27,439
- 73,220 kWh Lighting Project \$29,288
- 160,017 kWh \$17,601.87
- Increased Recycling Rate from 16.9% (2013) to 29.35% (2014)

Other Measurable Outcomes (reduced exposure, increased satisfaction)

- Better understanding of programs and outcomes.
- Increased amount of sustainability programs and employee engagement.
- Continuation of car seat recycling program.

Challenges and Lessons Learned

Hospitals can realize great benefit to a sustainability program through a team approach, and may benefit from considering internships or other low-cost strategies to focus on certain key areas. However in order to maximize the capabilities of a program, an identified team lead is optimal. The case for a full-time sustainability lead can be made by tracking positive outcomes and cost savings, increasing staff engagement, and improving safety.

Return on Investment: Sustainability Coordinator

Investment

- **One FTE Salary + Benefits**
- **Job Training (One-time cost)**
 - \$550 Building Operator Certification (\$1,450 - \$900 rebate)
 - \$3,750 Power Logic (\$1,400 + \$2,350 travel)
 - \$4,800 Tridium (\$3,200 + \$1,600 travel)

\$9100 = Total Training Cost

Savings

- \$136,550 (Consumers Energy rebates)
- \$114,398 (energy reduction)
- \$4,909 (water)
- \$5,593 (natural gas)
- \$2,109 (solid waste)
- \$25,000 (can/bottle deposits)
- \$48,000 (contractor hours saved)
- \$3,062 (batteries)

\$339, 621 = Total Savings

Soft Savings

- \$50,000 - \$100,000 (sustainability report - consultant cost)
- \$60,000 (LEED O+M (Existing Building) analysis)

Return on investment (%) = (Net profit / Investment) × 100

Cost	Savings	%ROI	\$ROI
Salary = xxx Training = \$9,100	\$339,621	1 Year	xxx
		5 Year	xxx

Sustainability Coordinator

	Job Duties	Deliverables	Benefits	Cost	Savings		
1	Manage Consumers Energy Smart Building Program for Bronson Healthcare System	<ul style="list-style-type: none"> 1.1 Assist Facilities Services in completing pre-approval 1.2 Research & Identify Program Criteria 1.3 Track projects from pre-approval through completion 1.4 Operate as a main contact for Consumers Energy 1.5 Research Future Consumers Energy Programs 1.6 Building Operator Certification (BOC) 1.7 Grow the program throughout the Bronson System 	<ul style="list-style-type: none"> ❖ Reduce Cost to Capital Projects ❖ Recognition ❖ Reduction in Operation costs ❖ BOC – National Database ❖ Shows \$16,000/yr in energy reduction 	<p>1.6 BOC- \$1,450 - \$900 rebate = \$550</p>	<p>Up to \$1,000,000 for the system AHU 4 – \$87,000 in rebates 2012 estimated loss: \$221,400 2013 estimated loss: \$220,360 2014 potential gain: \$188,300 2015 potential gain: \$136,550</p>		
2	Monitor and Reduce Energy Consumption	<ul style="list-style-type: none"> 2.1 Gain a better understanding of energy usage 2.2 Establish energy reduction goals 2.3 Maximize Power Logics 2.4 Develop programs to change behavior related to energy usage 2.5 Target areas to invest in energy efficacy upgrades 2.6 Research innovative energy saving technology and techniques 	<ul style="list-style-type: none"> ❖ Energy Reduction ❖ More knowledgeable decision-making on capital projects ❖ Less reliance on vendors ❖ LEED Credits 	<p>Power Logic Cost- \$2,350 training + \$1,400 travel \$3,750/100 per hr = 37.5hr (by eliminating contractor fees)</p>	<p>Reduction of Energy Consumption 1 Year Plan 3% = \$114,398 5 Year Plan - 15% = \$571,990 Reduce fees to contractors to pull trending reports. Currently 10-30 hours per month (\$24,000 Yr) Total Savings of \$138,398</p>		
3	Monitor and Reduce All Utilities of BMH When Possible	<ul style="list-style-type: none"> 3.1 Add water to Key Green solutions 3.2 Target Water Reduction Areas for Analysis <ul style="list-style-type: none"> ❖ Outside Sprinkling System ❖ Analyze Chiller Plant and Cooling Towers 3.3 Perform a study on BMH's dependency on City Water 3.4 Certified on Tridium Building Automation System 3.5 Create a baseline for all utilities 3.6 Normalized meaningful data of all Utilities 	<ul style="list-style-type: none"> ❖ Better understanding of utilities ❖ Less expensive to operate ❖ Ability to sustain in a disaster ❖ A second opinion of plant operations ❖ LEED Credits 	<p>Tridium Cost- \$2,200 training costs + \$1,600 Travel On-site custom education \$1,000 \$4,800/\$100 per hr =48hr payback (by eliminating contractor fees)</p>	<p>Reduction of Water Consumption 1 Year Plan 3% = \$4,909 5 Year Plan 15% = \$24,547 Reduce fees to contractors to pull trending reports: 10-30 hrs month (\$24,000 Yr)Reduction of Natural Gas 3% = \$5,593 Total savings 34,502.</p>		
4	Maintain Comprehensive Waste Management System	<ul style="list-style-type: none"> 4.1 Complete an annual waste audit 4.2 Educate staff on proper waste disposal 4.3 Track all waste streams to promote reduction <ul style="list-style-type: none"> ❖ Regulated Medical Waste ❖ Construction ❖ Pharm Waste ❖ Hazardous Waste 	<ul style="list-style-type: none"> ❖ 5% reduction in municipal waste in 5yrs ❖ Reduce Liability ❖ Reduce Projects cost ❖ Employee Safety ❖ Recognition ❖ LEED Credits 	<p>Up to a \$50,000 fine per day</p>	<p>Solid Waste Reduction 5% = \$2,109(Minus Increased Recycling) Regulated Medical Waste reduction: 5% \$2,550 Total savings of \$ 4,659</p>		
5	Identify Areas to Improve Recycling Efficacy	<ul style="list-style-type: none"> 5.1 Research new opportunities to increase recycling 5.2 Create programs that helps facilitate participation in recycling 5.3 Identify opportunities to recycle with local/ regional buyers 5.4 Use annual waste audit to find areas of improvement 	<ul style="list-style-type: none"> ❖ Increased recycling material ❖ New partnerships with local and regional buyers 	<p>Increased Recycling 5% = \$1,574 added cost</p>	<p>Establish rebates for recycling \$3,400 Total Savings of \$3,400</p>		
6	Promote Reduce Reuse Recycle	<ul style="list-style-type: none"> 6.1 Facilitate a Reduce Reuse Recycle campaign 6.3 Work with all departments to identify opportunities 6.4 Organize Green Leaders throughout BMH 	<ul style="list-style-type: none"> ❖ Increased recycling ❖ Connectivity of BMH ❖ Culture Shift 				

7	Sustainability Community Engagement	<ul style="list-style-type: none"> 7.1 Identify and contact community partnerships <ul style="list-style-type: none"> ❖ KVCC ❖ Western Michigan University ❖ Southwest Michigan Sustainable Business Forum ❖ West Michigan USGBC 7.2 Create community interest in sustainability 	<ul style="list-style-type: none"> ❖ Publicity ❖ Community Engagement ❖ Recognition ❖ Knowledge Sharing ❖ Certifications ❖ Partnerships 	Add dollars to the annual community benefit reporting
8	Establish and Monitor Environmental Goals	<ul style="list-style-type: none"> 8.8 Set realistic but achievable goals for reduction in waste, recycling, electricity, water, gas, and local food purchasing Note: Goals increase productivity by 50% 	<ul style="list-style-type: none"> ❖ Common Goals ❖ Progression of goal areas ❖ Inter hospital partnerships 	
9	Environmental Reporting	<ul style="list-style-type: none"> 9.1 Create a semiannual sustainability report 9.2 Create reports internally to help explain energy usage 9.3 Maintain Practice Green Health award application 9.4 Research other opportunities for awards <p>Gain higher recognition from Practice Green Health for the same fee</p>	<ul style="list-style-type: none"> ❖ Engagement of internal and external stakeholders ❖ Recognition ❖ Transparency ❖ Future Opportunities 	Professional fee estimate of \$50,000 to \$100,000 for a sustainability report
10	Monitor and Reduce Hazardous Chemicals	<ul style="list-style-type: none"> 10.1 Maintain an environmental management system that tracks hazardous chemicals 10.2 Research alternatives for existing chemicals 	<ul style="list-style-type: none"> ❖ Reduced liability ❖ Increased awareness ❖ Better health and safety 	
11	Foster a Green Cleaning Program	<ul style="list-style-type: none"> 11.1 Assess new cleaning products 11.2 Research trends to be current with new opportunities 	<ul style="list-style-type: none"> ❖ Health and safety ❖ Possible cost reduction ❖ Reduce cost associated with damaging furniture, walls, floors 	
12	Monitor and improve Environmentally Preferable Purchasing	<ul style="list-style-type: none"> 12.1 Create sustainability standards for new products 12.2 Provide an expertise on environmental issues for new products 	<ul style="list-style-type: none"> ❖ Recognition ❖ Reduced Liability ❖ In house expertise 	
13	Consult With Food Services	<ul style="list-style-type: none"> 13.1 Monitor the amount of locally/ organic food bought 13.2 Design a waste management system 13.3 Create a comprehensive composting program 13.4 Help build a strong connection with KVCC 	<ul style="list-style-type: none"> ❖ Cost Reduction ❖ New Partnerships ❖ Stakeholder Engagement ❖ LEED Credits 	Bottled Beverages Deposits- \$25,000 in missed deposits Total Savings \$25,000
14	Carbon Foot-printing and Reduction	<ul style="list-style-type: none"> 14.1 Create a relative carbon footprint of BMH 14.2 Use CFP to engage internal and external stakeholders 	<ul style="list-style-type: none"> ❖ Stakeholder engagement ❖ Reduced liability 	CO-potential carbon tax \$35,873 CA-potential carbon tax \$174,139
15	Foster Alternative Transportation	<ul style="list-style-type: none"> 15.1 Research alternative transportation opportunities 15.2 Provide knowledgeable advice for future projects 15.3 Promote use of alternative transportation <p>Note: Average cost of a yearly parking space downtown \$984</p>	<ul style="list-style-type: none"> ❖ In house expertise ❖ Less necessity for parking ❖ Recognition ❖ LEED Credits 	
16	Link Sustainability and Wellness	<ul style="list-style-type: none"> 16.1 Oversee wellness initiatives to help bring the triple bottom line(people, planet, profit) into the program 16.2 Combine sustainability programs with existing wellness programs 	<ul style="list-style-type: none"> ❖ Department Connectivity ❖ Added depth to programs ❖ Shared Costs ❖ Expansion of partnerships 	
Total Return On Investment			1 Year: 376% or \$206,621	5 Year: 431% or \$1,033,105

ENVIRONMENTAL MISSION STATEMENT
GUIDING PRINCIPLES
&
REPORTING STRUCTURE

PHILOSOPHY

Bronson strives to create a healthy healing environment for the health and safety of its patients, employees and the community. The hospital's focus is on four key areas—waste responsibility, green building design, local/sustainable purchasing and community involvement.

GUIDING PRINCIPLES

PEGS

Pollution Prevention: The goal is to reduce waste by focusing on what can be eliminated, reused or recycled, use of less harsh chemicals while maintaining high standards of infection control to create a healthy environment for patients and staff.

Energy Conservation: The goal is to reduce the amount of gas, electricity and water used through facility upgrades and staff behavioral changes and to reduce the amount of fossil fuels used during transportation by establishing contract with local vendors and suppliers.

Green Building Design. The goal is to design and build using healthier building materials as a means of improving public health and preserving the global environment. Bronson will strive to use natural, environmentally friendly products and low-emitting materials to provide a healthy healing environment.

Sustainable Food: The goal is to offer healthy food options that are locally grown without the use of harmful chemicals to our patients, visitors and staff.

REPORTING STRUCTURE

A number of departments within the hospital have created department specific green teams that report up through the hospital wide Green Team. The Green Team is a subcommittee of the Hazardous Materials and Waste committee. This committee reports to the EOC Oversight Committee that reports up to the Board.

The Green Team is a multidisciplinary group that includes; Director of Facilities Services, Director of Housekeeping, Food Services Manager, Distribution Center Manager, Safety Manager, Process Management Consultant, Corporate Communications Consultant, IT Tech, Surgery Nurse and Labor and Delivery Nurse. The Executive over this group is the VP of Facilities Services.

Case Study: Healthier Food Challenge – Balanced Menus Goal



Summary

Johns Hopkins Hospital (JHH) took their commitment to the Healthier Food Challenge's Balanced Menus Goal of the Healthier Hospitals Initiative seriously. Given that meat is often the most expensive product category for hospital food service departments, JHH adopted the "less meat, better meat" strategy, first reducing by 15 percent the amount of meat they purchased overall in 2014 and then investing in purchasing healthier, more sustainably-produced meat products.

Johns Hopkins Hospital

The Problem

Most hospitals buy substantial amounts of meat, typically through large distributors who source from the U.S. commodity beef, pork, and poultry markets. Significant environmental and public health costs are associated with industrialized meat and poultry production and distribution: increased antibiotic resistance due to the overuse of medically important antibiotics in conventional meat production; air and water contamination from industrial factory farms known as CAFO's – Concentrated Animal Feeding Operations; and contributions to global climate change through methane and transportation emissions in production and distribution.

Americans also eat more than twice the global average for meat consumption, which can contribute to the onset of diet-related chronic diseases, such as obesity and diabetes. Hospital food service operations often mirror this trend, with large portion sizes and several meat options available on every menu at every meal. Reducing the overall amount of meat served in hospitals provides health, social, and environmental benefits that are consistent with prevention-based medicine. Hospitals can deliver an important preventive health message to patients, staff, and communities by reducing the amount of meat and poultry they serve and by purchasing more sustainably-produced, healthier meats as an alternative.

The Strategy Selected: Balanced Menus Challenge, "Less Meat, Better Meat"

With much support from the hospital administration and concerned clinicians, the food service staff at JHH made the Balanced Menus Challenge a priority. They took a multi-tiered approach, examining all of their menus to see where they could reduce the meat options, increasing their vegetarian entrée offerings, implementing a Meatless Monday program, and transitioning from a 6oz chicken breast to a 4oz chicken breast to reduce portion size, which still met the nutritional guidelines. JHH has a station in their retail cafeteria called The Mindful Station, where they started introducing the new sustainable meat products, produced without the routine use of antibiotics, in 2013. While they were introducing these new products, they were in conversation with their distributor and local producers communicating the need for more sustainable meat products on a weekly delivery schedule. With good feedback from the public about The Mindful Station, they began to gradually introduce the new meat products on all of their menus, retail and patient. One and a half years later, over 60 percent of their meat served at JHH is antibiotic-free. And they have not stopped at sustainable meat procurement. They now use only cage-free eggs, 100 percent of their seafood is sustainably-produced and having participated in the

About Johns Hopkins Hospital

Johns Hopkins Hospital is a large, urban, research hospital, one of 6 facilities in the Johns Hopkins Medical Institutions system, serving an average of 850 patients per day with over 1,000 beds. The combined total of both patient and cafeteria food service amounts to 13,000 meals per day. The food service contract is managed by Sodexo, with Sysco as the main, broadline food distributor.

Buy Local Challenge program for the past three years, they are increasing their local procurement targets every year and now looking into a transition to more locally-sourced organic products. For example, the locally-produced pickles and tofu that they found during last year's Buy Local Week are now on the menu year-round.

Implementation Process

The success of the Balanced Menus Challenge at JHH is illustrative of their whole approach and commitment to healthier food for their patients and staff and a healthier food system. The food service department regularly organizes health screenings for their staff in conjunction with the Employee Wellness program, staff tastings and trainings about how to prep, cook and store new vegetables and other products on revised menus. There is an active Green Team at JHH and much support from the administration and clinicians on improving the food environment throughout the facility. JHH just removed sugar-sweetened beverages from the hospital last year, which generated a lot of debate internally, but with the wide-reaching support and consistent messaging about food trends and the health effects of soda consumption, the hospital-wide initiative is now in place.

Benefits

- With the less meat, better meat strategy, the increase in sustainable, healthy meat procurement has been offset by the reduction in meat procurement overall – cost-neutral.
- Hospital can feel better about serving meat products that don't take such a toll on our environment and our public health.
- The work the staff is doing to improve the food service operations are recognized and being praised by clinicians, senior leadership, patients and staff, and advocate groups for sustainability.

Challenges and Lessons Learned

When the hospital started trying to source more sustainable meat products from their broadline distributor, often times the products were not available to them. They have invested time in conversations with their distributors to be explicit about the type of products they want, the volumes they need and the emphasis on local and sustainable whenever possible. Pricing is always a challenge, but the less meat, better meat strategy did help to offset the costs of increased sustainable meat procurement. Data collection continues to be a challenge. It is often difficult and time consuming to quantify their progress, everyone seems to want different data sets, and stakeholders in the supply chain collect data sets differently. Still working on this one!

Case Study: Healthier Food - Healthier Beverages



Summary

National and local data identified childhood obesity as a growing problem.

Based on that research, Dayton Children's Hospital chose to address childhood obesity by eliminating sugar-sweetened beverages (SSBs) from their campus.

Since May 2014, they have been 100 percent SSB-free in the cafeteria and vending machines.

Dayton Children's Hospital

The Problem

Pediatric health assessments completed by Dayton Children's Hospital identified more than a third of local children are overweight or obese. Further, that data demonstrated this problem often goes undiagnosed and under-addressed, as this can be an uncomfortable and emotionally charged conversation. The uncertainty over ownership of the issue (hospital, school, family) furthers the difficulty surrounding this issue.

The Strategy Selected

Dayton Children's Hospital decided to take a proactive role of ownership in addressing childhood obesity. The team investigated multiple options for reducing obesity rates. Due to the robust research linking SSB consumption with increased weight gain, the team concluded that eliminating SSBs would have the greatest impact. This decision did not initially gain consensus - some of the leadership team wanted to go much further, while others wanted it to be a more relaxed policy. Ultimately, the executive leadership team made the final decision to formalize an official policy to eliminate SSBs.

Implementation Process

The SSB elimination policy was followed by an extensive communication plan, which was distributed in advance to all management. The CEO crafted a video message to explain the decision, with the core message emphasized that this decision was based on the most current research, science and community-needs assessment.

This policy was also incorporated into the Healthy Way Initiative, a multi-disciplinary team of over 150 members dedicated to improving employee health and addressing healthy lifestyles for all patients, as a strategy to increase support and identify champions to be the messengers for this new initiative. Each team member had a particular responsibility. For example, the dietitians provided education and support, while the dietetics and nutrition director helped execute and share the message with the staff directly impacted by the policy. The marketing department distributed the message more broadly to all staff, patients, and the community. The leadership team helped to reinforce the message and addressed complaints right away. One of the most important lessons learned from this process was that it opened up so many opportunities for educational conversations—with staff, patients, families and friends.



Sticker placed on every vending machine explaining what happened to the sugar-sweetened beverages.

About Dayton Children's Hospital

Licensed/Staffed beds - 155 beds

ED 73,000 visits/year and 290,000 children visits/year (including satellite sites)

Covers a 20-county region

The Team

C-Suite Leadership Team

Marketing Team

Director of Development

Organizational Nutrition and Healthy Way Officer

Director of Dietetics and Nutrition

Clinical Dietitians

Hospitalist

The initial implementation was followed up by a planned communication response: an article in the organizational newsletter (sample article at end of this case study), educational display in the cafeteria, and conducted focus groups of employees from all different departments through the healthy way committee. This identified groups that needed re-education or training. Even if there was resistance to the decision, once they heard the “why,” the employees were on board. Finally, every vending machine had a sticker explaining what happened to the beverages.



The Healthy Way educational display in the Dayton Children's Hospital's cafeteria.

Benefits

- No SSBs in vending and cafeteria.
- Medically necessary spend on SSBs was less than four percent of total beverage spend.

Challenges and Lessons Learned

- The resistance was actually far less than anticipated. By fostering positive discussions using evidence-based research, many employees and families were receptive to this healthy lifestyle message.
- The messenger and the message mattered: CEO support was critical, as was being able to back up the policy with science. Having a multi-disciplinary team of well-respected individuals supported the message due to the array of content expertise. Trust in the decision makers was also an important factor.
- When those medically necessary exceptions arise, it is important to address those situations openly and be transparent about those decisions.
- This is ongoing. This initiative isn't “done.” The commitment has to be maintained through constant communication.
- Finally, not all clinicians are trained to deliver public health messaging. Asking them to change their job roles and responsibilities is a culture change.

Dayton Children's Hospital is looking next to initiatives for tap water promotion through water bottle refill stations throughout the hospital.

GUEST ARTICLE: WHY WE'RE "CANNING" THE SODA

03-20-2014



Guest article by Rachel Riddiford, MS, RD, LD, organizational nutrition and healthy way officer

The press took off after we announced we're discontinuing the sale of sugar-sweetened beverages starting May 1. Why did we come to this decision?

Our Pediatric Health Assessment identified more than a third of local children are overweight or obese. Children and parents do not receive adequate guidance on the negative health effects from sugar-sweetened beverages from their pediatrician or school. Neither pediatricians nor schools feel confident identifying weight problems or educating on how to develop healthy lifestyle habits. We also know this is an emotional topic.

Interestingly, CVS Pharmacies recently decided to ban the sale of cigarettes for a similar reason. As they shape their identity to better resemble a health care provider, they cannot rationalize selling cigarettes even when it will cost them several billion dollars in sales. We cannot, in good conscience, sell or regularly offer sugar-sweetened beverages to a vulnerable population that looks to us to lead the way in health.

We couldn't stay idle and hope that someone else will take the painful issue of childhood obesity off of our list of concerns. We needed to join the community in addressing this problem.

Our organization has creaked and groaned through major culture changes in addressing childhood obesity for the last few years. This led to an organization-wide initiative called the Healthy Way Initiative to address this problem. I'm grateful to the hundreds of employees involved in Healthy Way for their involvement – and leadership – here at the hospital and in our community.

Every action taken by the Healthy Way Initiative is made in the best interest of patients and employees, including the decision to no longer offer sugar-sweetened beverages. There is simply no nutritional value in soda. Period.

Sugar-sweetened beverages are certainly not the only cause of overweight and obese children, but regular consumption is strongly associated with excess weight. If you choose to have a soda, you can bring it to work, but the hospital will no longer make money off of sugar-sweetened beverages.

We have made - and will continue to make - changes in the food and drinks available here at Dayton Children's to help make the healthy choice the easy choice. The lack of sugar-sweetened beverages makes the healthy choice the easy choice.

We know that all employees won't agree with this decision. Your comments are [welcome](#) and we'll share them on FOCUS to keep the dialogue going on this topic.

Case Study: Healthier Food Challenge: Sustainable, Local and Organic Food Purchasing



Summary

With its position in the community, 4,400 employees, and over 2 million meals prepared per year, Palomar Health has a significant opportunity to make a positive impact on human health and the environment by serving more sustainable, local, and organic produce.

Palomar Health

Benefits

- Increased purchasing of sustainable, local, and organic (SLO) produce by up to 60 percent in two hospitals and one site saw a 38 percent increase in sales in the third quarter in fiscal year 2014.
- 18 percent increase in cafeteria revenues in January 2015 of FY2014-FY2015, with an additional 19 percent increase over budgeted as of January 2015 in FY2015.
- Improved Press Ganey scores; Villa Pomerado, a skilled nursing facility attached to Pomerado Hospital, increased from the 75th to almost 90th percentile.
- Success with produce has inspired an expanded emphasis on SLO foods; 13 percent of total food purchasing is now sustainable, local, and organic.

Build a Healthier Food System

Integrating SLO produce into hospital food service using seasonal and plant-based menus has numerous positive outcomes around health, chemicals, communities, and the environment. The purchase of organically produced foods lowers exposure to toxic pesticides for vulnerable populations like farm workers and patients. Supporting locally-owned farms reinforces the economic well-being of producers and communities. Increasing consumption of fresh fruits and vegetables improves overall health and contributes to healthy weight maintenance.

Foster Leadership

Palomar's sustainability efforts have benefited enormously from the creation of a sustainability manager position in 2008. The manager coordinates teams, ensures follow-through on targeted goals, and addresses sustainability from a holistic perspective across departments.

Create a Healthy Food Council

The SLO food team effort was initially led by the sustainability manager and the Food Services Director using resources from Health Care Without Harm and the Healthier Hospitals Initiative. To expand the effort, an executive-supported Healthy Food Council was created comprised of leaders in food service, sustainability, wellness, clinical nutrition, and human resources.

About Palomar Health

Palomar Health is an 800-bed, three-hospital health system located in north San Diego County. Palomar Health is the first and only California member of the Mayo Clinic Care Network, the largest public health-care district by area in California, and the most comprehensive health care delivery system in northern San Diego County. It is governed by a publicly-elected board of directors, and its primary service area in San Diego County has more than 500,000 residents. Palomar Health provides medical services in virtually all fields of medicine, including primary care, cardiovascular care, emergency services, trauma, cancer, orthopedics, women's health, rehabilitation, as well as robotic and bariatric surgery.

Engage Executive Support

A formal commitment of executive support and a sustainable food and beverage policy (currently under development) will ensure the success of the program throughout any changes in management. The Healthy Food Council provides quarterly updates to the executive team via the Executive Balanced Scorecard.

Leverage the Supply Chain

The sustainability manager and food services director educated Palomar's produce distributor about the health system's goal to increase SLO purchasing. As a regional vendor with existing farmer relationships, the distributor was able to expand connections with local farmers while achieving competitive pricing and ensuring on-time delivery. Palomar requested information about farm identification, location, and sustainable or organic farming methods on purchasing guides and requested quarterly reports. The food service team selected cost neutral hot buys identified by the distributor, meaning seasonal or bumper crops available in large quantities at a reasonable price. The team looked for ways to offset additional costs when they occurred by reducing costs in other areas, such as meat procurement.

Educate the Food Service Team

The Sustainability Manager, along with food service managers, supervisors, and the director, engaged the entire food service staff throughout the process. This radically improved success. Sharing sales data and information about how the hospital is helping to build a healthier food system gave the food service staff a sense of pride in the work and inspired them to promote SLO food options. Providing tastings for staff, patient tray lines and in the café also helped to build excitement.

Prioritize Marketing

Marketing the transition to local and sustainable offerings is critical to programmatic momentum and success. At one location where the food service team rolled out a healthier alternative through tastings and marketing, there were lines out the door and customers demanded more of the new product. At another campus where the team did not go the extra mile, there was no continued interest and the new product was taken off the menu. A variety of avenues are used to market healthy food programs—signage in cafés and on patient trays, in newsletters, flyers on the units, the intranet, external publications, through industry groups, and in regional and national presentations. A multi-pronged marketing strategy ensures clear messaging around the health and sustainability goals of the initiative.

The Team

Barbara Hamilton, Sustainability Manager

Jim Metzger, Director of Hospitality Services

Javier Guerrero, Food and Nutrition Manager, Palomar Medical Center

Sheradon Kalani Smith, Food and Nutrition Manager, Palomar Medical Center

Kelly York, Food and Nutrition Manager, Palomar Health Downtown Campus

Margaret Mertens, RD Clinical Nutrition Manager

Todd Nadeau, Wellness Coordinator

Zohra Fahim, Clinical Pathmaker Intern

Shari Hogle, Director of Benefits and HR Information Services

Khristina Teope, Food and Nutrition Manager, Pomerado Hospital

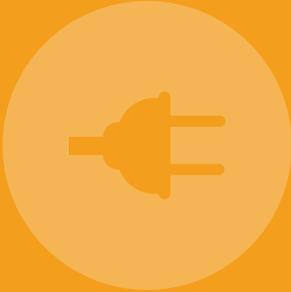
Jennell Bussell, Operations Support Assistant



Collaborate with Other Health Systems

Palomar Health is part of a coalition of 19 hospitals in the San Diego County Nutrition in Healthcare Leadership Team (NHLT), which are committed to implementing the HHI Healthier Food Challenge with support from San Diego Community Health Improvement Partners (CHIP) and Health Care Without Harm. The participating hospitals share best practices and combine purchasing power to help transform the marketplace and to increase the availability of sustainable foods.

Case Study: Leaner Energy Challenge - Combined Heat and Power Expansion Project



Summary

The CHP project was undertaken to better support a growing campus.

To make this project financially possible, UMass Medical School combined current construction efforts to include a new Combined Heat and Power System and received financial incentives from the local utility company.

The project saved annually 58,000 MWh in electricity and \$6.2 million.

UMass Medical School

Problem

In 2010, UMass Medical School (UMMS), including UMass Medical School and UMass Memorial Medical Center, had an existing and sophisticated central plant that provided steam, chilled water and power to the entire campus. However, they needed to support its growing campus, specifically the energy needs of the planned Albert Sherman Center, a \$300 million 512,000 square foot bio-medical research and clinical education facility, scheduled to open in January 2013.

The Strategy Selected

UMMS's long-term campus and utility master plan envisioned the continued expansion of combined heat and power on their campus. With the inception of the Sherman Center, UMMS began programming this CHP expansion project to include looped chilled water and steam distribution systems as well as the equipment diversity such as steam drive and gas turbine drive generators. In order to accomplish this financially, they included the upgrade as part of a larger \$450 million campus capital campaign and integrated it into plans for new construction. This allowed UMMS to capitalize on low-cost financing and also ensured a fully integrated implementation approach. UMMS installed a new 7.8 MW gas turbine with 60,000 pph heat recovery steam generator to support the campus's existing and future electrical, steam and chilled water loads. The system was also designed with enough capacity to support future expected construction at the campus.

Implementation Process

Leadership from the school and hospital supported the strategy and project on all accounts—infrastructure resiliency and redundancy, green gas reductions, energy efficiencies and life cycle cost reductions—making the project possible. UMMS's project team completed the construction and installed a Taurus 70 Solar Turbine—a mechanical drive package, which can be combined with one or more centrifugal gas compressors to form a complete compressor set. Designed specifically for industrial service, Taurus 70 packages are compact, lightweight units requiring minimal floor space for installation. The project also included an electric drive 4,000 ton chiller, two new cooling towers and associated electrical switchgear. The CHP system was installed as part of a \$48 million overall expansion to the campus's existing central plant, which was offset by \$7 million from a National Grid incentive.

UMass Medical School

The UMass Medical School campus supports the 400-licensed bed Level 1 Trauma Center, known as UMass Memorial Medical Center. In addition, the campus supports a \$250M per year bio medical research center and the medical school. The CHP provides steam, chilled water and electrical production for over 3million square feet.



Benefits

Increased savings, power and energy efficiency were realized through this project including:

- 58,000 MWh in annual electricity savings.
- \$6.2 million in annual savings.
- Less than 3 year payback period.
- Increased power production and chiller capacity for the 500,000 square foot Sherman Center.
- Designed to support future construction at hospital.
- Back up for the hospital's existing central plant.

Challenges and Lessons Learned

The central plant at the UMMS campus is a complex and sophisticated system of multiple technologies. Effectively integrating the new gas turbine into this system and optimizing system-wide performance was a complicated engineering task.

Additionally, given the scale of the system, interconnecting the CHP unit into the local electrical grid was a challenge. UMMS staff had significant experience working with National Grid on previous projects and were able to work closely with utility representatives to meet all interconnection requirement.

School staff noted that incorporating the CHP system into the early planning phase of the hospital's long-term master plan was a major reason for the success of the project. This long-term view of CHP project development allowed the hospital to take a careful and considered approach to CHP system planning. Staff also noted that a close working relationship with utility staff was a critical success factor for the project.

Case Study: Leaner Energy Challenge – Energy Efficiency



Summary

Hackensack University Medical Center (HackensackUMC), a nonprofit teaching and research hospital located in Bergen County, New Jersey, is the largest provider of inpatient and outpatient services in the state.

HackensackUMC is committed to sustainability and doing no harm by providing a sustainable environment for patients, staff and community.

HackensackUMC recognized that there was an opportunity for energy conservation and to address an infrastructure that was outdated and inefficient.

The hospital partnered with PSE&G to make necessary energy efficient upgrades to decrease greenhouse gas emissions as well as costs.

Hackensack University Medical Center, Hackensack, New Jersey

The Problem

Hospitals are significant energy users as they operate 24/7. HackensackUMC was faced with outdated and inefficient infrastructure, which was in need of significant upgrades but at minimum capital investment. They needed a creative solution/partnership.

The Strategy Selected

HackensackUMC partnered with PSE&G, through the utility's Hospital Efficiency Program, to make necessary energy-efficiency upgrades via a two-phase project that included installation of three 1,500 T Chillers and LED lighting and replacing cooling towers, among other improvements. The PSE&G program provides upfront funding for the entire project, eliminating the need for upfront capital. The program includes a buy-down incentive for eligible energy-efficiency measures, coupled with the on-bill financing at a zero percent interest rate. After PSE&G program incentives, HackensackUMC will ultimately repay approximately 43 percent of the project cost over a period of 36 months. HackensackUMC leadership supported this initiative and saw it as a win-win, enabling the medical center to significantly reduce its carbon footprint as well as save money for years to come. The annual utility cost savings, when the full project is completed, is estimated to total \$1.06 million. The annual energy savings is estimated to total 4,218,984 kWh and 217,693 therms.

Implementation Process

The project was set out in two phases. Phase 1 was completed in 2013 and included:

- i. Installation of a 1,500 T chiller and related pump to replace antiquated equipment.
- ii. A facility-wide lighting retrofit of more than 9,600 lighting fixtures with efficient fluorescent lighting in the medical center and LED lighting in the parking garages.
- iii. Upgrades of the lighting controls, including the installation of more than 1,100 occupancy sensors.
- iv. Optimization for greater monitoring, control and efficiency of the natural gas boilers.

About Hackensack University Medical Center

HackensackUMC, a nonprofit teaching and research hospital located in Bergen County, NJ, is the largest provider of inpatient and outpatient services in the state. Founded in 1888 as the county's first hospital, it is the flagship hospital of Hackensack University Health Network, one of the largest health networks in the state comprised of more than 11,300 employees, 3,100 credentialed medical staff members and 1,697 hospital and nursing home beds.

The investment for Phase 1 totaled \$2.7 million, of which HackensackUMC is repaying 36 percent through the PSE&G program's on-bill repayment feature, at zero percent interest over a period of 36 months.

Currently, the medical center is working to complete Phase 2 by summer 2015. Phase 2 of the project includes:

- i. Upgrading the main chiller plant consisting of the installation of two additional 1,500 T chillers, as well as replacing cooling towers, pumps, header piping and controls.
- ii. Connecting the research building to the main chiller plant, thus eliminating the standalone rooftop air conditioning units.

The investment for Phase 2 of the project is estimated at \$7.5 million with HackensackUMC to repay 46 percent of the cost. Upon completion, the combined investment of Phase 1 and Phase 2 is estimated at \$10.2 million, of which HackensackUMC will repay approximately 43 percent of the total combined project cost through the PSE&G program's on-bill repayment feature at zero percent interest. PSE&G's program provides funding for the remaining amount.



PSE&G and Hackensack University Medical Center held a ribbon cutting for a new air conditioning chiller that is part of \$2.6 million in energy efficiency improvements happening at HackensackUMC through the PSE&G Hospital Efficiency program.

Pictured from left to right: Mike Savage, PSE&G; Allen Prinzi, HackensackUMC; John Nesbitt, HackensackUMC; Joe Forline, PSE&G; Robert C. Garrett, Hackensack University Health Network; Mark D. Sparta HackensackUMC; and Bill Wicker, PSE&G.

Benefits

The annual utility cost savings for the combined project is estimated at \$1.06 million.

- Phase 1: \$487,000 annual saving in operating costs.
- Phase 2: \$582,000 annual savings in operating costs.

The Team

Mark Sparta, EVP & Chief
Population Health Officer,
Hackensack University Health
Network

Allen Prinzi, Director, Plant
Operations, HackensackUMC

John Nesbitt, Supervisor, Plant
Operations, HackensackUMC

Donald Ferrell, Director Design &
Construction, HackensackUMC

Mike Savage, PSE&G, Customer
Solutions, Energy Services

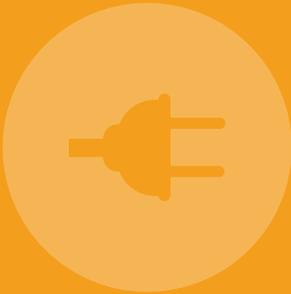
The annual energy savings is estimated at total 4,218,984 kWh and 217,693 therms.

- The savings is significant; sufficient electric savings (kWh) to power about 630 homes, and sufficient natural gas savings (therms) to heat about 230 homes.
- Phase 1: saves 1,388,817 kWh and 155,264 therms in energy annually.
- Phase 2: saves 2,830,167 kWh and 62,429 therms in energy annually.

Challenges and Lessons Learned

One of the main challenges for HackensackUMC was energy-efficiency measures. There were so many opportunities, but they had to choose which measures would fit the required PSE&G program payback parameters. Because of the number of ongoing energy-efficiency measure installations, they had to meet certain deadlines to ensure the PSE&G program incentives did not run out due to the program's popularity. Another key challenge was designing and implementing around the patients and staff so as to advance the energy-efficiency project seamlessly and silently in the background of hospital operations. Beyond identifying energy-efficiency opportunities, tremendous coordination was needed to implement heavy construction to critical systems while maintaining a safe, healing hospital environment 24/7.

Case Study: Leaner Energy: EcoCaregiver™ - Individual Behaviors Help Reduce Energy



Summary

To meet Cleveland Clinic's \$12m energy demand reduction target, one of the reduction strategies focused on caregivers' workplace behaviors.

In November 2014, a mandatory online training on energy demand management for all caregivers was launched.

Cleveland Clinic's EUI is down 9.35 percent since the 2010 baseline, nearly 37,000 caregivers have taken the training, 29 caregiver-driven ideas are being implemented, and caregiver engagement scores are on the rise.

Cleveland Clinic

The Problem

The rate at which Cleveland Clinic uses energy has financial costs, as well as human and environmental health impacts. Reducing the rate of energy used creates a cleaner environment, improves health, and delivers substantial cost savings over the short and long term.

Cleveland Clinic is in the midst of a transformation that is focused on providing the best value for patients and leading the industry in responsible healthcare practices. In pursuit of care affordability, over \$12M of energy waste was identified across the health system. As the facilities experts fine-tune and upgrade our buildings and operating systems, caregivers' workplace behaviors come into sharp focus to help reduce energy demand.

Energy is a shared resource, and caregiver choices and actions in the workplace directly influence energy demand reduction. To achieve and sustain a conservation mindset, Cleveland Clinic needs and expects each of its caregivers to work together every day.

The Strategy Selected

The team could not hold caregivers accountable to energy conservation without first outlining the basic expectations for energy conservation in the workplace and offering guidance for workplace behaviors. In November 2014, the Office for a Healthy Environment launched *Energy Savings & You*, a mandatory online training on energy demand management. The purpose of this course is to orient all caregivers to their role in energy demand reduction at Cleveland Clinic.

Implementation Process

The EcoCaregiver™ employee engagement program developed an education module on energy management, *Energy Savings & You*, designed to reduce costs and decrease emissions while providing the highest quality medical care.

During this course, Cleveland Clinic caregivers explore an energy demand reduction program designed to reduce costs and decrease emissions while providing the highest quality medical care.

Upon course completion, caregivers should be able to:

- Identify Cleveland Clinic's commitment to energy conservation in the workplace.

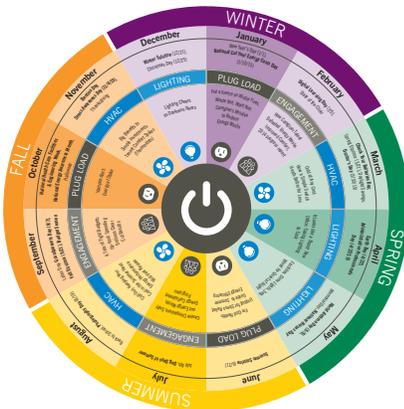
About Cleveland Clinic

Cleveland Clinic is a nonprofit multispecialty academic medical center that integrates clinical and hospital care with research and education. More than 3,000 full-time salaried physicians and researchers and 11,000 nurses represent 120 medical specialties and subspecialties. The Cleveland Clinic health system includes a main campus, eight community hospitals, more than 75 Northern Ohio outpatient locations, Cleveland Clinic Florida, the Lou Ruvo Center for Brain Health in Las Vegas, Cleveland Clinic Canada, and, scheduled to begin seeing patients in 2015, Cleveland Clinic Abu Dhabi. In 2013, there were 5.5 million outpatient visits throughout the Cleveland Clinic health system and 157,000 hospital admissions.



Energy Matters Seasonal Calendar

Conserving energy is a year-round activity. In fact, the best way for you to conserve energy is to make it a regular habit. This 12-month planner offers dozens of easy ideas and a new focus each month to plug in to what's going on around you. Check out this month's feature, then visit portal.ccl.org/energy for supporting tips, topics and tools.



- State Cleveland Clinic's expectations for energy demand reduction in the workplace.
- Identify five energy conservation behaviors to employ at work.
- Describe our key public partnerships and commitments on energy demand reduction through the EPA's ENERGY STAR Program and the DOE's Better Buildings Challenge
- State Cleveland Clinic's expectations for energy demand reduction during a crisis scenario.
- State the appropriate procedure to follow during a crisis scenario.
- Identify and initiate energy efficiency opportunities in the work environment.

Six months post-launch, more than 37,000 caregivers have completed the annual training. This 15-minute module will be updated and reassigned annually for ALL 40,000+ caregivers, including staff. It reinforces an organizational expectation for an environment of energy conversation and emphasizes the importance of individual caregiver contribution to the energy demand reduction goals. In addition to the training, the team developed a robust communications campaign to prompt desired workplace behaviors.

Benefits

- From the December 2010 baseline, the health system has seen to date on January 31, 2015 a 9.35 percent reduction in weather normalized source EUI for in-scope and reportable facilities.
- The Continuous Improvement and the Office for a Healthy Environment departments launched a dedicated MyTwoCents energy category to align with the launch of the course. Six months post-launch, 29 caregiver ideas have been posted, reviewed and implemented or deferred, often citing the energy coursework as the entry point to the site.
- Cleveland Clinic's research indicates a positive relationship between employee engagement and sustainability. Caregiver engagement scores are on the rise. Doing the simple things that make sense, i.e., turning the lights off, dressing in layers and powering down at the end of a shift, and knowing that it matters has an impact. By encouraging common sense behaviors as common practice, we demystify "sustainable" behaviors, an often misunderstood body of work and engage caregivers in lasting, positive change.

Challenges and Lessons Learned

1) Infrastructure vs. Behavior

Caregiver choices and actions in the workplace directly influence energy conservation. Cleveland Clinic's Facilities experts could work with the building occupants or against them. The course was designed to formally outline our

The Team

Director, Office for a Healthy Environment

Program Manager, Office for a Healthy Environment

Director, Facilities

e-Learning Instructional Designer

operating context and expectations for workplace behaviors for a variety of workgroups across the health system, including its facilities experts and its broad caregiver base.

Facilities experts play the largest role in saving energy. They know the buildings' systems, can uncover technological issues and see behaviors that work against reducing resources. They manage our building systems with sophisticated new technologies that improve comfort and reduce energy costs.

Caregivers make numerous decisions over the course of the day that can and will impact enterprise energy demand reduction program. They can also suggest opportunities for improvement.

As part of its energy demand reduction program, Cleveland Clinic will ensure that:

1. Job-related needs are met.
2. Caregivers can control resource use in the ways specified.
3. Legitimate needs for comfort, indoor air quality, and lighting are achieved.
4. New or adjusted behaviors become habits that make a difference as things change (e.g., new responsibilities, technologies, or caregivers).

In support of the energy demand reduction program, a series of energy-related service level agreements (SLAs) between Operations and Cleveland Clinic's leadership will ensure adherence to set temperature ranges and lighting controls.

2) Out of Sight, Out of Mind.

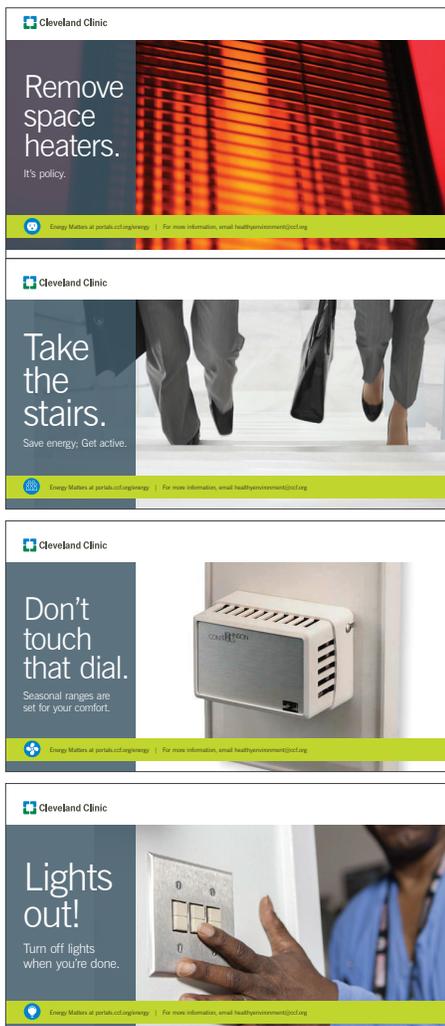
Sponsored by the Chief Operating Officer, this 15-minute formal education program was designated as mandatory a coursework, alongside topics such as safety, compliance, disease management, diversity and emergency preparedness. The course will be reassigned annually, underscoring leadership's commitment to responsible use of shared resources as the health system transforms its model of care. The team references the coursework in department presentations and a series of education and outreach events throughout the calendar year.

3) Scale: You Don't Know What You Don't Know.

It's difficult to know and manage every energy conservation opportunity in a 24 million square foot portfolio. By leveraging tools such as MyTwoCents, Cleveland Clinic's virtual suggestion box, caregivers can identify and suggest interventions for the Facilities teams' review and implementation.

4) What gets measured gets managed.

Quantifying the impact of behavior modification as an energy demand reduction strategy is a constant challenge.



Case Study: Less Waste Challenge, Regulated Medical Waste (RMW) Reduction**Summary**

Since 2009, St. Mary's Regional Medical Center has reduced their regulated medical waste (RMW) from 10 to seven percent of total waste, saving an estimated \$2,000 per year in waste disposal fees.

The operating room and endoscopy personnel identified opportunities for improvement.

This win-win opportunity was accomplished through education, improved segregation and regular audits.

St. Mary's Regional Medical Center Lewiston, Maine

A Covenant Health Hospital

The Problem

Regulated medical waste removal fees are five to ten times more expensive than solid waste removal. The RMW waste stream at St. Mary's Regional Medical Center (SMRMC) was audited and found to contain numerous items that did not meet the definition of RMW. Additionally, fluid regulated medical waste was adding significant weight to RMW, and required plastic suction canisters and a chemical solidifier to meet required standards. The audit included a review of waste receptacle types and locations throughout the site, and created an opportunity to reduce costs and waste generation. Working as a team, a baseline was established and a goal was set to reduce RMW generation to the HHI goal of less than 10 percent of total hospital waste.

The Strategy Selected

After meeting and consulting with appropriate department leaders, the team opted for an educational campaign on regulated medical waste management practices with staff from the endoscopy and operating room (OR) departments, the latter which can generate as much as 60 percent of hospital RMW¹. The team worked to incorporate the education, including disposal costs (both financial and environmental) with the simultaneous roll out a new "zero-sort" recycling stream, a welcome change, in terms of time, effort and space for staff who had been source separating recyclable materials at/near the point of care for the past several years.

Implementation Process

The team toured the OR and endoscopy departments with the directors and some interested staff members to understand current practice, which helped inform the educational content of the waste management program. Two 30-gallon RMW containers were found in every room—an indication of over use, and a challenge due to both the size and location of containers in rooms with limited space.

After meeting with infection control to review the facility definition of RMW, the team conducted inservices with departmental staff. Providing personnel with waste facts helped raise awareness around proper waste segregation and was successful in motivating and engaging staff in opportunities to reduce both waste and costs.

First Row: Denise Timberlake MSN,RN,CNOR, Michele Grass RN, Iwona Cwik CST, Loretta Hinkley CNA

Second Row: Paul Blais, Sue Kane CST, Sue Laliberte CST, Melissa Foley CST, Elizabeth Usher RN, Mike Desrosiers



With buy-in from the staff, the team reduced the size of RMW receptacles in OR and endoscopy rooms to one three-gallon container, and added a 30-gallon, clear receptacle for municipal solid waste. A simultaneous single-stream recycling program added a 30-gallon, blue recycling bin in each operating and procedural room. Standardizing the size and placement of receptacles combined with signage and ongoing education, segregation practices were improved and performance was measured and reported throughout the organization. Later, a closed fluid management system was implemented, which further reduced the volume of regulated medical waste.

The team was present on the units during the pilot and subsequent roll outs of the waste segregation program, and remained available to answer and respond to any questions. In addition to tracking their data, the team assesses the effectiveness of the program through the eyes of the EVS staff, who continue to monitor the waste streams for appropriate segregation, and provide feedback to the staff and department directors. Also, the team continues the practice of weekly rounds on the units to assess performance and compliance with hospital policy.

Benefits

- Financial benefits: \$2,000 annual savings.
- Staff engagement.
- Environmental benefit: reduced RMW 30% from 93,246 lbs. in 2001 to 65,564 lbs. in 2012.
- Reduced the purchase and use of suction canisters and chemical solidifying agents, a potential chemical hazard to workers and the environment²
- Led to implementation of further RMW reduction strategies including single-use device reprocessing, diverting pharmaceuticals out of RMW, incorporating closed fluid management technologies in building design and new construction, and removing red bags from patient exam rooms in the adjacent medical office building.

About St. Mary's Regional Medical Center

St. Mary's Regional Medical Center (Lewiston, ME), is a 233-bed acute care and behavioral health facility serving Androscoggin County area and beyond. They enrolled in HHI in 2013 taking on the Engaged Leadership, Leaner Energy and Less Waste Challenges. The facility also maintains a membership with Practice Greenhealth, and has been recognized with four Partner for Change awards since 2009.

Challenges and Lessons Learned

The anesthesia carts used to have red bags attached to them, but the trash generated did not meet the criteria of RMW. The OR director met with the anesthesiologists to clarify the hospital's policy, and the red bags were removed. In retrospect, including the anesthesia department in the education and roll out would have contributed to a more seamless transition. Additionally, the team recommends involving the facility's waste hauler early in the process, providing the same education regarding the management of hospital waste and clarification of acceptable material for recycling. Lastly, SMRMC now uses four compactors (two for MSW, two for recycling) which further reduce their waste disposal costs. The team credits their membership with Practice Greenhealth in identifying additional strategies outside of the waste stream, and they continue to build on their success.

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Case Study: Less Waste Challenge - Recycling



Summary

Environmental degradation of the St. Croix River prompted community leaders of its border communities to come together to address the issue and resolve to improve river health by improving operations in their respective organizations.

Hudson Hospital & Clinic successfully implemented a paper use reduction initiative and enhanced recycling program, which became a building block to ongoing organizational performance improvement.

Since 2010, Hudson Hospital and Clinic achieved a median recycling rate of 37.60 percent of total hospital waste (HHI goal: 15 percent).

Hudson Hospital & Clinic Hudson, Wisconsin A HealthPartners Hospital

The Problem

The St. Croix River, a national scenic waterway and state boundary of Wisconsin and Minnesota, was in trouble. Environmental runoff and development were degrading water quality and disrupting natural ecosystems¹. In coordination with other community leaders, Hudson Hospital & Clinic responded by passing a board of directors resolution that pledged to decrease the amount of waste generated by the hospital, including implementing enhanced recycling programs.

The Strategy Selected

Leaders from Hudson Hospital recognized the role of the hospital as a valuable community asset, and aligned their sustainability work with the mission of the hospital, improving community health. Additionally, incorporating sustainability into the organizational culture of the hospital was a reflection and alignment with the community values regarding sustainability. In 2009, the hospital leaders created the first “green team” at the hospital. Together the team (see Fig. 1) established a formal set of goals, including an enhanced recycling program and intense paper-reduction initiatives throughout the hospital. Using the resources of Practice Greenhealth and the Healthier Hospitals Initiative (HHI) to guide their planning, implementation and evaluation of these programs, a process was created which became the basis for later capturing additional recyclable materials such as sterilization wrap (blue wrap), plastics, aluminum, tin, paperboard, pallets, and cardboard.

Implementation Process

The team met with managers and staff of the housekeeping, surgery center, procedure center and facilities/maintenance departments regarding how best to capture the recyclable materials, as well as identify key locations for receptacles and collection processes that worked with employee work flow and facility design. Employees were accountable for disposing of materials properly, including protected health information, biohazardous and landfill waste streams. To evaluate the recycling program, the team used data tracking tools of Practice Greenhealth and HHI, and conducted regular audits of the contents of the various waste streams to inform and support ongoing performance improvement.

About HealthPartners Hudson Hospital & Clinic

HealthPartners Hudson Hospital & Clinic is a 25-bed general medical and surgical critical access hospital in Hudson, WI, 20 miles east of Minneapolis/St. Paul. Survey data for the latest year available shows that 11,003 patients visited the hospital's emergency center. The hospital had a total of 1,654 admissions. Its physicians performed 382 inpatient and 1,396 outpatient surgeries².



Ann Ripley, Mike Mader, Sally Harris, Dana Slade accepting a 2014 Practice Greenhealth Circles of Excellence Award.



From left to right: Patty Schank, Sally Harris, Jean Weiler, Ann Ripley, Jennifer Moebius, Mike Mader, Kim Kiel, Dana Slade, Lisa Everson, Sarah Stockman.

Benefits

- \$21,000 in cost savings, \$500 in cost avoidance from single-use device reprocessing program.
- Since 2010, achieved a median recycling rate of 37.60 percent of total hospital waste (HHI goal: 15 percent).
- Since 2010, reduced regulated medical waste to a median 4.21 percent of total hospital waste (HHI goal: 10 percent).
- Diverted 50-100 tons of demolition debris from area landfill.
- Listed in national [Top 20 Critical Access Hospitals](#).

Challenges and Lessons Learned

As is the case with many hospitals, the team was challenged with the mechanical barrier of limited square footage and the space needed to accommodate multiple receptacles. Pairing up environmental services staff with clinical staff, solutions were found and implemented, and relationships were strengthened. The initial success of the paper-reduction initiatives and recycling programs led to further waste reduction initiatives, including a closed-fluid waste management system, reusable sharps containers, and electronics recycling with community partners. The team is now incorporating environmental processes into future building design.

Sustainability has become integrated into the organization's culture and remains a priority at the critical access hospital. Sustainability measures have been incorporated into performance evaluations, new employee orientation, engagement surveys, newsletters and hospital signage. The team maintains effective communication regarding sustainability initiatives throughout the organization by keeping information fun, interesting and celebratory.

The Team

Marian Furlong, President and CEO, Hudson Hospital & Clinic

Ann Ripley, VP of Operations and Green Team Leader, Hudson Hospital & Clinic

Citations:

1. Wisconsin Department of Natural Resources. St. Croix River Basin. Available at: <http://dnr.wi.gov/water/basin/stcroix/>. Accessed 1/28/15.
2. U.S. News and World Report. Hudson Hospital and Clinics. Available at: <http://health.usnews.com/best-hospitals/area/wi/hudson-hospital-and-clinics-6450515>. Accessed 1/28/15.



Accepting the President's Award, from left to right: Sarah Stockman, Dana Slade, Jerry Jennings, Kim Kiel, Patty Schank, Sally Harris, Mike Mader, Jennifer Moebius, Ann Wynia, Chair HealthPartners, Board of Directors, Jean Weiler.

Case Study: Less Waste Challenge, Construction and Demolition Debris Diversion**Summary**

As a component of an application to apply for Leadership in Energy and Environmental Design (LEED) certification for a new construction project, AAMC set a goal to achieve a 50 to 75 percent diversion rate of demolition and construction debris.

AAMC enrolled in the Healthier Hospitals Initiative (HHI) Less Waste Challenge and set a goal for construction and demolition debris recycling.

The project team incorporated diversion and recycling specifications in construction management contracts and tracked and reviewed progress regularly.

HHI's goals were surpassed with 1,750 tons of waste diverted from the landfill during construction, a 93.3 percent recycling rate.

Anne Arundel Medical Center Annapolis, Maryland

The Problem

In 2006, AAMC began planning for the newest addition to the 57-acre medical campus: the construction of a 292,600 square foot, eight-level clinical care tower building. To minimize environmental impact in the community, improve interior air quality for patients and workers, and maximize energy and water efficiencies, AAMC leaders elected to pursue a Leadership in Energy and Environmental Design (LEED) Gold Certification and divert 50 to 75 percent of construction and demolition debris from area landfills. Construction debris can comprise up to 36 percent of overall landfill waste, a known source of up to 18 percent of U.S. greenhouse gas emissions^{1,2}.

The Strategy Selected

Hospital leaders rooted the project in the vision statement and corporate values of the organization. The diversion of construction and demolition debris was a good fit with the hospital mission of enhancing the health of the people in their served communities, and also aligned with their corporate values including innovation and collaboration. A project team comprised of AAMC leadership, an architect, mechanical/electrical/plumbing engineers, an owner's representative, construction manager, and a LEED consultant oversaw the project and helped guide the work.

Implementation Process

To achieve the 50 to 75 percent goal of diverting and recycling construction and demolition debris, the team included recycling and waste segregation specifications in requests for proposals and contract language. Among the expectations included in the construction contract were reuse, salvage and recycling of material through proper handling, separation and segregation, specifically, concrete (which was later used in building footing), metal, wood, cardboard, and general debris materials. Additionally, the construction contract included expectations ensuring proper certification of recycling facilities, and providing in and out weights of trucks/material in a monthly report to the project oversight team. Together, hospital leaders and construction management leaders worked to educate their employees in proper segregation and audited waste management practices.

From left to right: Carolyn Core, SVP, AAMC; Odit Oliner, LEED Coordinator, Perkins+Will; Craig Rasmussen, Project Manager, James Posey and Associates; Charlotte Wallace, Sustainability Coordinator, AAMC; Mike Moraz, Project Manager, Whiting-Turner; Chuck Goodman, Founder, CR Goodman Associates; Mark Hasslinger, Principal Architect, CR Goodman Associates



About AAMC

AAMC is a regional health system headquartered in Annapolis, Maryland, serving an area of more than one million people. Founded in 1902, AAMC includes a 424-bed not-for-profit hospital, a medical group, imaging services, a substance use treatment center, and other health enterprises. In addition to a 57-acre Annapolis campus, AAMC has outpatient pavilions in Bowie, Kent Island, Pasadena, Odenton and Waugh Chapel, all in Maryland as well.

Inpatient admissions	26,500
Births	5,500
Emergency visits	93,500
Outpatient visits	102,000+

Benefits

Meeting the goals of the LEED certification and HHI Less Waste Challenge has resulted in cascading effects of efficiency. These include:

- Timely implementation of other waste reduction and diversion programs (reprocessing, RMW, recycling) which resulted in \$800,000 savings the first year.
- A 33 percent savings in water due to low-flow fixtures and utilization of native plantings that thrive with little water, thus eliminating the need for irrigation systems.
- Eighteen to 20 percent energy conservation by installing a highly efficient HVAC system, including chillers and chiller plant controls and a de-humidification system.
- Ninety percent energy conservation on lights alone in operating rooms by implementing LED lights.
- Achieved LEED Gold certification—the first hospital in the state of Maryland to do so.
- Listed as one of *Becker's Hospital Review's* Top 50 Greenest U.S. Hospitals.

Challenges and Lessons Learned

As hospitals consider new construction and renovation projects, AAMC leaders recommend that project teams make decisions as early as possible regarding incorporating sustainability standards in building design. To monitor construction and demolition debris recycling rates, the team found meeting biweekly was helpful in reporting, tracking and reviewing progress around construction and demolition diversion rates and other credits.

The Team

Carolyn Core, Senior Vice
President, AAMC

Odit Oliner, LEED Coordinator,
Perkins+Will

Craig Rasmussen, Project Manager,
James Posey and Associates

Charlotte Wallace, Sustainability
Coordinator, AAMC

Mike Moraz, Project Manager,
Whiting-Turner

Chuck Goodman, Founder, CR
Goodman Associates

Mark Hasslinger, Principal
Architect, CR Goodman Associates

To keep hospital staff and stakeholders updated, an educational board was established in a high-volume common area. The educational tool provided updates on the project, and provided education about the health benefits of recycling and diverting construction and demolition debris. AAMC includes regular updates on sustainability initiatives in regional marketing campaigns, new employee orientation materials, and tours for civic/community groups.

Citations:

1. U.S. Environmental Protection Agency. Overview of Greenhouse Gases. Available at: <http://epa.gov/climatechange/ghgemissions/gases/ch4.html>. Accessed 1/18/15.
2. United States Environmental Protection Agency. Solid Waste in New England. Construction and demolition debris. Available at: <http://www.epa.gov/region1/solidwaste/cnd/>.



Photo credit: Boulder Associates Architects, 2003. On-site roll-off dumpsters are used to separate and collect construction demolition and debris.

Case Study: Safer Chemicals Challenge: Green Cleaning Goal**Summary**

Spectrum Health identified that many of the cleaning products used were harmful to patients, employees and the environment. In 2006, Butterworth and Blodgett evaluated existing chemicals used and transitioned to environmentally preferred cleaners. The outcome was a healthier work environment for staff, a healthier recovery environment for patients and reduced overall cleaning costs.

Spectrum Health, Grand Rapids, Michigan

The Problem

Within the hospital setting, some products that are used contain harmful chemicals linked to cancer, birth defects, asthma and a variety of other health problems. The Healthier Hospitals Initiative is working with hospitals to eliminate the use of these harmful chemicals and switch to safer alternatives in order to improve the health of patients, staff and local communities.

The Strategy Selected

The initial roll out in 2006 included an evaluation of existing products and alternative green seal products. Since implementation, a system green cleaning policy has been developed to spread and hardwire this behavior throughout the Spectrum Health System.

Implementation Process**Phase I: Transition to Environmentally Preferred Cleaners**

- Review product inventory purchased with vendor.
- Evaluate product redundancies with vendor and environmental services.
- Determine Green Seal certified product alternatives and pilot products at Blodgett Hospital.
- Develop standard cleaning products and eliminate the purchase of redundant products resulting in a reduction of inventory, increase in product consistency and elimination of redundancy.
- Transition to environmentally preferable and Green Seal certified products at Butterworth and Blodgett Hospital after a successful pilot at Blodgett.
- Supply chain transitioned items available for order to standard green cleaning products.

Phase II: Educating Frontline Staff

- Educate cleaning staff on zero-tolerance policy on purchasing cleaning products at local stores and requesting reimbursement. All products must be approved and provided by supply chain.
- Education for cleaning staff on new cleaning process, products and environmental and health impacts.

Helen DeVos Children's Hospital
Grand Rapids, Michigan



About Spectrum Health

Spectrum Health is a not-for-profit health system, based in West Michigan, offering a full continuum of care through the Spectrum Health Hospital Group, which is comprised of 11 hospitals; 1,150 employed physicians and advanced practice providers including members of the Spectrum Health Medical Group; and Priority Health, a 590,000-member health plan. Spectrum Health is West Michigan's largest employer with 21,500 employees. In 2014, Spectrum Health was named one of the nation's 15 Top Health Systems® by Truven Health Analytics.

Phase III: Eliminate Aerosols

- Communication about why eliminating aerosols and air fresheners.
- Elimination availability to purchase aerosols and air fresheners through supply chain.
- Develop policy prohibiting the use of aerosols and air fresheners.

Phase IV: Preventative Measures

- Use of floor mats at high-traffic entry ways to reduce dirt and to protect the floors.
- Cleaning procedure changed to microfiber mops, cloths and orbital floor scrubbers.
- Reduced the overall square footage of carpet in the hospitals and replaced it with no-wax, low-maintenance flooring, reducing labor costs and the need for harsh chemicals.

Phase V: Spread to Regional Facilities

- Audit existing cleaning program for regional hospitals including pulling purchasing data and evaluating stock room.
- Reduce inventory of existing products and reduce redundant products.
- Transition products utilized to standard green cleaning products and processes.

The Team

Ginger Boogerd, Environmental Services Operations Manager

Bill Julien, Environmental Services Operations Manager

Branden Michael, Environmental Services Operations Manager

Josh Miller, Sustainability Coordinator

Sarah Chartier, Sustainability Coordinator

Benefits

- \$30,000 savings through a reduction in product inventory and standardization.
- 94 percent of glass cleaner is Green Seal Certified.
- 65 percent of general purpose cleaners are Green Seal Certified.
- The carpet cleaner budget is less than 0.2 percent of total spends on cleaning supplies.
- Traditional cleaning products are harmful to both the environment and human health when prolonged exposure occurs.

Challenges and Lessons Learned

Program success was dependent on vendor partnerships, development of standards and measuring sustainability. By standardizing the items for purchase, we increased control of what products were purchased. Monitoring and auditing a program once in place helped to sustain the efforts. Without monitoring, individual departments may purchase non-compliant products. Monitoring is conducted by environmental services leadership through walk throughs and annual data evaluation of purchases made by the sustainability office.

Case Study: Safer Chemicals - DEHP/PVC Reduction**Summary**

Beaumont Health System is committed to environmental sustainability and signed onto all six Challenges of the Healthier Hospitals Initiative (HHI), including the Safer Chemicals Challenge.

The Safer Chemicals Challenge includes a goal to reduce the use of medical devices containing PVC and DEHP, many of which are used in Neonatal Intensive Care Units (NICUs)

Beaumont Health System's NICU core team worked together, with the support of hospital administration, to identify the hospitals' PVC and DEHP-containing products, specifically those in the NICU, and replace them with DEHP-free products.

The hospital was able to eliminate a number of DEHP products thus reducing exposure to DEHP and providing a healthier environment for patients.

Beaumont Health System, Michigan

The Problem

In 2002, the Food and Drug Administration issued a Public Health Notification after completing its safety assessment of a common plasticizer called Di(2-ethylhexyl)phthalate (DEHP). DEHP can be released from polyvinyl chloride (PVC) medical devices. The FDA Public Health Notification advised hospitals to take steps to reduce the risk of exposure in certain patients based on a finding that DEHP can leach out of plastic medical devices into solutions that come in contact with the plastic. Exposure to DEHP has produced a range of adverse effects in laboratory animals, but of greatest concern are effects on the development of the male reproductive system. The FDA highlighted a number of procedures, particularly in neonates, that should be prioritized for DEHP-free devices. Those procedures included multiple procedures in sick neonates including exchange transfusion and extracorporeal membrane oxygenation (ECMO), total parenteral nutrition (TPN), hemodialysis in peripubertal males and pregnant or lactating women and enteral nutrition, among others.

Since the FDA Public Health Notification was issued, many hospitals have been taking action to reduce the use of DEHP-containing medical devices, including Beaumont. HHI helped the system expand these efforts.

The Strategy Selected**Create a Team**

A core group of NICU staff and hospital administration created a team to undertake the Initiative.

Identify target products

The team decided to focus on nutritional products, pharmacy, and respiratory supplies as well as invasive lines for neonates with the goal of decreasing the use of DEHP-containing devices and reducing potential exposures to NICU patients.

The team then identified four priority product areas and divided the work among them to determine if DEHP was present in the materials. The team identified PVC and DEHP-containing products through product labeling and conversations with device manufacturers. The research uncovered that the hospital's feeding

About Beaumont Health System

One of the founding organizations of Beaumont Health, Beaumont Health System includes three hospitals with 1,778 licensed beds, more than 20,200 employees and 3,100 physicians, including 553 employed physicians in the Beaumont Medical Group and more than 2,500 private-practice physicians. In addition to its hospitals in Royal Oak, Troy and Grosse Pointe, Beaumont has 54 community-based sites of care including medical centers in Oakland, Macomb and Wayne counties, family practice and internal medicine practices, five nursing centers, home care services and hospice. The Beaumont Research Institute has 924 open research studies including 270 clinical trials with more than 7,800 participants. Beaumont is the exclusive clinical teaching site for the Oakland University William Beaumont School of Medicine. Visit Beaumont on the web at www.beaumont.edu.

supplies and invasive lines were already DEHP-free. For the other materials, the group worked to find DEHP-free options. For example, with pharmacy supplies, the group consulted the director of nursing who oversees the supply chain in that area. She was able to connect the team to their IV vendor. For respiratory, the team looked at alternatives through contacting other HHI-enrolled hospitals and looking to HHI's online resources.

Implementation Process

Once the materials were identified, the group presented the opportunity to their supply chain, with the support of the director of nursing, a clinical champion for the project. Having a clinical champion on the team resulted in meetings with key vendors and was instrumental in developing a pilot trial. The trial of the DEHP-free product was successful – the staff did not notice a significant difference with the new product and the new materials were purchased. Additionally, administrative oversight worked to ensure that henceforth inventory control delivered only DEHP-free products to the NICU.

Benefits

- Reduced exposure to toxic chemicals for patients, as per FDA recommendations and the scientific literature.
- The opportunity to promote the NICU's use of DEHP-free medical devices
- DEHP-free products are slightly more expensive, but Beaumont Health System made the commitment knowing the investment was a strong one leading to healthier patients and outcomes.

Challenges

Converting all products to PVC and DEHP-free is still a challenge. Our IV bags, endotracheal tubes, and tracheostomy tubes are still not DEHP-free. Cost and clinical acceptance are two reasons for this. For example, with respiratory supplies, physician preference is a consideration. Clinical education is critical for medical device change.

Overall, it was challenging to dedicate the amount of time necessary to this project while handling a busy unit. Assistance from Kay Winokur, VP of quality, safety and accreditation, was important for decision-making, leadership engagement and team productivity. Her leadership, and the leadership of champions within the system, was critical to getting the work done.

The Team

Mara Sipols, RN, MSN, NICU

Administrative Manager

Audrey Kalasky, RN MSN, Unit

Clinical Nurse Specialist

Susan Slack, RN and other RN staff members

Trish Riker, NNP, Neonatal Nurse Practitioner

Veena Rajanna, Pediatric Clinical Pharmacist

Jean Aphram, Senior Therapist, Respiratory Therapy

Mike Wagner, Director, Respiratory Therapy

Kay Winokur, RN, Administration

Additional staffers were consulted and worked with the group, depending on the issue.

Lessons Learned

Above all else, a focus on best practices is critical. Do not let cost be a deterrent. Administrators and clinical champions are sensitive to sustainability and health issues and willing to work with teams to move towards healthier and safer products, equipment and materials. Start small and keep building. Pilot new devices before making the switch. Organizations like Practice Greenhealth, Health Care Without Harm, and regional support like the Michigan Health & Hospital Association's Green Healthcare Committee provide technical assistance, resources and networking with others to realize success. Beaumont is optimistic that they will continue to transition away from the remaining products containing DEHP.

Case Study: Safer Chemicals - Healthy Interiors Goal



Summary

University Hospitals (UH) is committed to environmental sustainability and signed onto all six Challenges of the Healthier Hospitals Initiative (HHI), including the Safer Chemicals Challenge.

The Safer Chemicals Challenge includes a goal to reduce the use of furnishings containing polyvinyl chloride (PVC), halogenated flame retardants, perfluorinated compounds (PFC) and formaldehyde.

University Hospitals was able to report that 71 percent of target furnishings purchased in 2014 contained safer alternatives through collaboration with suppliers to develop an internal “healthy furniture” catalog and to simplify purchasing processes for UH employees in order to institutionalize the goal.

University Hospitals Health System

Benefits

- Over \$760,000 spent on furnishings free of HHI-chemicals of concern, representing 71 percent of total spend from reporting vendors.
- Data collection from 87 percent of major furniture vendors supplying UH.
- Clearer understanding of how and where to reduce exposure of patients and employees to known chemicals of concern.
- Collaboration with suppliers to develop internal “healthy furniture catalog” to simplify purchasing process for UH employees.
- Engagement by facility leaders in providing a more sustainable, safer experience for patients and employees:



Through the HHI Safer Chemicals Healthy Interiors Goal, we at UH Bedford Medical Center demonstrate our wholehearted commitment to the safety of our patients, staff and visitors, as well our devotion to our natural environment. Our Core Values of Excellence and Integrity shine through as we proudly meet this challenge.



*Wayne Aiken, Director of Support Services
UH Bedford Medical Center & UH Richmond Medical Center
Campuses of UH Regional Hospitals*

Challenge/Situation

Certain medical and nonmedical furnishings within a health care environment may contain chemicals that pose a threat to human and environmental health. To address this concern, all of University Hospitals’ major medical centers have committed to the Healthier Hospitals Initiative Safer Chemicals Challenge with the intention of avoiding in furnishings the use of halogenated flame retardants, formaldehyde, perfluorinated compounds, and PVC (vinyl), all of which are associated with a range of adverse health effects. Preferring products that avoid these chemicals helps UH improve its indoor air quality and promote human and environmental health. UH’s Healthy Interiors effort supports its mission to protect patient and community health, and is consistent with its clinical history of leadership, for example, in pediatric health advocacy.

About University Hospitals

University Hospitals, the second largest employer in Northeast Ohio with 25,000 employees, serves the needs of patients through an integrated network of 15 hospitals, 29 outpatient health centers and primary care physician offices in 15 counties. At the core of our \$3.5 billion health system is University Hospitals Case Medical Center, ranked among America's 50 best hospitals by U.S. News & World Report in all 12 methodology-ranked specialties. The primary affiliate of Case Western Reserve University School of Medicine, UH Case Medical Center is home to some of the most prestigious clinical and research centers of excellence in the nation, including cancer, pediatrics, women's health, orthopedics, radiology, neuroscience, cardiology and cardiovascular surgery, digestive health, transplantation and genetics. Its main campus includes UH Rainbow Babies & Children's Hospital, ranked among the top children's hospitals in the nation; UH MacDonald Women's Hospital, Ohio's only hospital for women; and UH Seidman Cancer Center, part of the NCI-designated Case Comprehensive Cancer Center at Case Western Reserve University.

For more information, go to www.uhhospitals.org.

In 2014, UH was among leading health systems nationwide to commit to avoiding the purchase of furniture containing chemical flame retardants, including carcinogenic and neurodevelopmental toxicants, while still meeting fire safety codes. We hope that these efforts help to transform the national supply chain to provide healthier products for all.

Strategy/Actions

Prioritizing healthier furnishing purchases at UH has required systematic education, policy development, and multi-departmental support, and has included the following strategies:

- Adoption of a sustainable design, construction, and renovation policy that prioritizes avoidance of chemicals of concern in our furnishings and interiors.
- Development of a method of internally tracking furniture purchases to regularly evaluate opportunities at the facility and system level, and track progress toward Healthy Interiors goals.
- Clear communication of our goals with all current and prospective furniture vendors so that HHI-compliant alternatives can be provided.
- Standardization of supply chain furniture catalogues to provide HHI-compliant products as first options for buyers.

Implementation Process

Using the late-2012 commitment to the Healthier Hospitals Initiative as a catalyst, multi-departmental working groups were formed system wide to implement strategies for driving better outcomes in each HHI Challenge Area. Representatives from system supply chain, facilities and construction, safety, and the office of sustainability were convened to meet on a monthly basis to address Safer Chemicals and Smarter Purchasing outcomes.

Simultaneously, a working group made up of the same stakeholders met several times in 2013 to create a new sustainable construction, renovation, and maintenance policy that prioritizes Healthy Interiors goals for construction and facilities projects. As a result of these collaborations, UH now requires suppliers of exam tables, patient recliners, mattresses, foams, panel fabrics, cubicle curtains, window coverings, fabric upholstery, and built-in modular casework to complete custom made templates containing information on the products' chemical and material ingredients. A system level contract administrator manages communication with all furniture vendors to ensure that the Healthy Interiors goals are clearly articulated and templates are completed for UH's system sustainability reporting dashboard on a quarterly basis.

The Team

Supply chain leadership and contract administrators
Facilities/construction leadership
Safety department
Office of sustainability
External online sustainability tracking dashboard partner
Legal department
Facility operations directors

To further legitimize hospital priorities, in September of 2014, UH also made a pledge through HHI's Market Transformation Group with major health systems nationwide to buy furniture free of flame retardants for all fully sprinklered spaces.

The Healthier Interiors working group meets independently with furniture vendors to incorporate HHI-compliant product options into a catalogue for UH purchasers, addressing the clear need to consistently convey standards at the point of purchase to buyers within the UH system.

Lessons Learned/Recommendations

Data gathering and tracking

Asking vendors to share whether or not their products contain HHI chemicals of concern was typically a novel "ask" that required legwork on the hospital side. Stakeholders at UH held several meetings with vendors to educate the companies about facility needs. UH ultimately developed a customized product template to be completed by vendors for use in the system's sustainability reporting dashboard. While the vendor template completion rate has been high, detailed product specifications validating what has been stated in the template have been received for some but not 100 percent of products purchased. To supplement the template, HHI's document entitled "Guidance to Achieve HHI Safer Chemicals Challenge for Healthy Interiors" is now shared with suppliers in order to verify compliance. Working with vendors to assist with tracking and reporting, as well as educating UH staff about the challenge of creating an internal infrastructure and knowledge base around tracking and reporting, has been labor intensive.

Ensuring Healthy Interiors standards reach all buyers within UH's major medical centers

UH continues to work with vendors to incorporate Healthy Interiors standards into a purchasing catalogue, but it has been challenging to share these new purchasing standards with all of the buyers throughout the large health system. There are many different parties responsible for purchasing furnishings, such as construction services, facilities, materials management, and other various departments across the system.

How does a large system facilitate and encourage people to make the right choices? This question led to the creation of a customized catalog, as well as a one-page educational memo that system Supply Chain has been using to communicate the HHI commitment to purchasers. One of the most important examples of how vendors can help UH reach its goals is for companies to clearly indicate up front in their product descriptions at the point of purchase whether the HHI Healthy Interiors goals are met.

More success meeting HHI goal in nonmedical furnishings

To date, it has been easier to meet the HHI criteria with freestanding nonmedical furnishing purchases as compared to medical furnishing purchases because major suppliers in nonmedical furnishings have been leading the way in addressing safer chemicals and sustainability issues for a long time. While UH hopes nationwide efforts like HHI can help drive both industries toward healthier options, the nonmedical furnishing marketplace is further along in this regard.

Stakeholder engagement

Multi-stakeholder engagement has been critical to UH's progress in this effort. Ongoing communication by clinical and sustainability leadership about the environmental, health, and long-term cost savings benefits of HHI-compliant products has been necessary to answer the question of "why" UH is taking on this challenge. With this education, supply chain representatives with established vendor relationships were able to communicate UH's Healthy Interiors goals externally and continue to acquire the necessary chemical ingredient data for furnishings.

Case Study: Smarter Purchasing - Surgical Kit Review



Summary

Seattle Children's Hospital has a strategic environmental management plan to help safeguard health and resources, while lowering operating costs so it can fulfill its founding promise: "To care for every child in our region, regardless of their family's ability to pay." Part of that work is the reduction of waste. By evaluating the surgical kits in operation rooms with staff and the facility's vendor every 1-2 years, the team is able to eliminate unnecessary items and prevent their waste. The end results are streamlined surgical kits, enhanced vendor relationships and cost savings.

Seattle Children's Hospital

Project

Review of 90 percent of operating room surgical kits for removal of unused or redundant items.

Challenge/Situation

Surgeons and operating room staff have evolving needs, and the contents of surgical kits can become outmoded, containing unnecessary medical supplies and redundant plastic bags.

Strategy/Actions

Seattle Children's Hospital (Children's) was one of the first medical centers in the country to apply the methods and scientific rigor of the Toyota production system to health care. Children's adaptation of this method is an organization-wide philosophy and improvement approach called continuous performance improvement (CPI). Removing waste in the operating room is an extension of our CPI work.

Implementation Process

Working with OR leadership on timing and staff participation, the team targets a complete review of surgical kits every 1-2 years. One representative from sourcing/supply chain and one from sustainability work with the vendor in a conference room disassembling surgical kits and reviewing the contents with the surgical nurses and technicians involved in those types of cases. The team uses an 80/20 rule: if you use the item at least 80 percent of the time, it stays in the pack.

Benefits/Results

- Savings:
 - Annual savings in supplies cost: \$39,642
 - Annual avoidance of regulated medical waste cost: \$3,867
- Environmental benefit:
 - Annual weight reduction of 8,470 lbs of waste, much of it regulated medical waste.
 - Annual reduction of >1000 unnecessary plastic bags.
- Staff satisfaction with participation and results.

About Seattle Children's Hospital

With over 300 licensed beds, Seattle Children's serves as the pediatric and adolescent academic medical referral center for Washington, Alaska, Montana and Idaho—the largest region of any children's hospital in the country. For more than 100 years, we have been dedicated to providing top-quality care to every child in our region who needs us, regardless of the family's ability to pay.

The Team

Kelly Malone, Director, Operative Services

Dan Salmosen, Director, Strategic Sourcing

Aaron O'Neill, Manager, Strategic Sourcing

Colleen Groll, Manager, Sustainability

Shannon Ford, Medline, Account Consultant

Susan Gibbons, Medline, Sustainability Program Manager

Lessons Learned/Recommendations

Children's has a demand-supply system for medical supplies that is organized and centralized in the OR. This has helped decrease anxiety about having to search for an item during a case. Also, by working closely with the vendor Medline, the team was able to identify and quantify the pack waste as well as increase the number of supplies that contain recycled content and dye free plastic. Medline was able to work with supply manufacturers to reduce packaging in the kits.



Case Study: Smarter Purchasing - Custom Surgical Kit Reformulation



Summary

Broward Health (BH) conducts various evaluations annually to determine opportunities for cost savings. In 2010, BH determined that waste had accumulated due to custom procedure kits (CPK), resulting in increased costs.

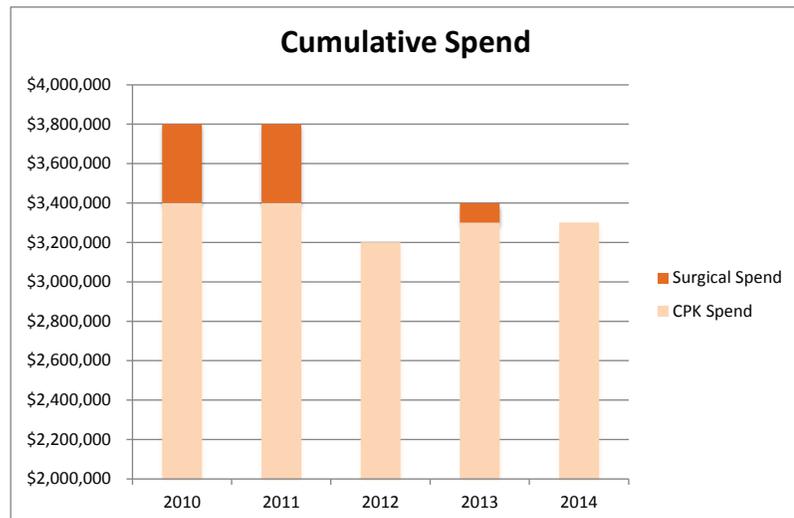
The hospital system worked with a consulting firm to analyze the CPK program, which led to successful identification of areas needing improvements and an action plan that put in place greater efficiencies.

The CPK review project yielded an overall 30 percent savings on the \$3.4MM annual CPK spend, plus an additional \$400K surgical single-pull stock keeping unit (SKU) spend which resulted in the elimination of 24,501 pounds of CPK waste.

Broward Health, Fort Lauderdale, Florida

The Problem/Situation

Every two years, Broward Health (BH) conducts an internal evaluation of its Custom Procedure Kit (CPK) program to determine opportunities for cost savings. In 2010, the hospital system worked with a CPK provider that specialized in custom procedure kits to do a complimentary analysis of its program. The provider reviewed the content of nearly 100 custom procedure kits and BH's current group purchasing organization (GPO) contract, promised an 18 percent guaranteed savings off the hospital system's current CPK spend. Initially, BH decided to stay with its original CPK vendor, which offered reduced pricing to offset these savings for a period of time and resulting in an immediate 11 percent savings. However, in 2012, BH decided to move forward with the new CPK vendor's recommendations, which led to 16 percent savings off the current CPK spend.



The Strategy

The provider performed a comprehensive utilization review by spending a week on-site with a six-member team, including clinicians, to review the contents of every custom procedure kit at each of BH's four hospitals. Each product was reviewed to determine if it was being used 95 to 100 percent of the time. If it wasn't, the product was a candidate for removal. The provider also looked at items that were being added to the sterile field outside of a CPK. Those items

About Broward Health

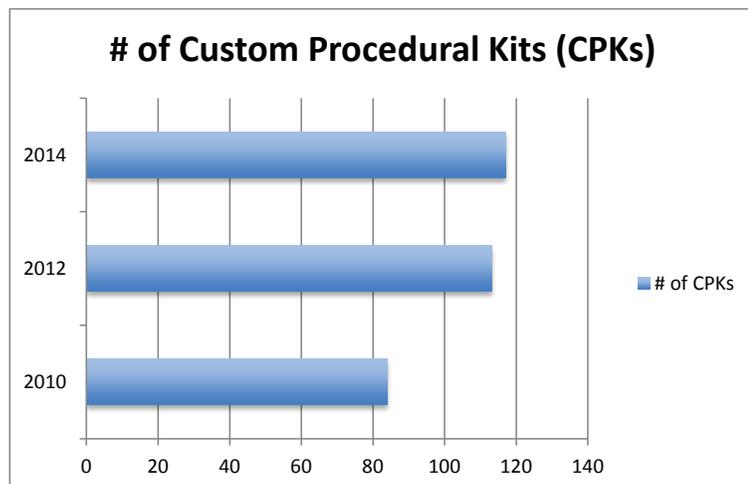
Broward Health, providing service for more than 75 years, is a nationally recognized system in South Florida that offers world-class health care to all. Broward Health includes Broward Health Medical Center, Broward Health North, Broward Health Imperial Point, Broward Health Coral Springs, Chris Evert Children's Hospital, Broward Health Weston, Broward Health Community Health Services, Broward Health Physician Group, Broward Health International, Broward Health Urgent Care, and the Broward Health Foundation. For more information, visit BrowardHealth.org.

were candidates to add to the kit. The team of professionals were in operating room (OR) suites observing case set ups. The team posed questions such as, "Are you using this sponge each time?" and "Why are you pulling a ¾ sheet to put in a ring stand?" In addition, there were clinical equivalents presented that were the same exact product, but from a different manufacturer at a reduced cost. In total, this process resulted in the elimination of redundant packs and the creation of packs that were high volume.

Implementation Process

At first, BH remained with its original vendor, realizing an immediate 11 percent savings. However at the onset of 2012, the hospital system was able to change to the new CPK provider, resulting in an additional 16 percent savings. The 2012 provider's utilization review exceeded the original review savings by nine percent, resulting in a cumulative savings of 27 percent by the end of 2012, in addition to creating three new CPKs. The partnership between BH and the provider was critical to this success. The implementation team was led by Brian Bravo, Broward Health's corporate procurement officer and included representatives from purchasing, value analysis, materials operations, OR, catheterization laboratory (Cath Lab), labor and delivery (L&D), interventional radiology (IR), and the CPK provider team. The implementation team worked together to ensure that the process was seamlessly integrated without incident or service disruption. Weekly meetings were implemented in the period leading up to the utilization review and now, three years later, are still being held bi-weekly to address any open issues. The product that was ultimately delivered was favorably received by staff, and to date there have been minimal changes.

In total, 117 CPKs were identified from OR, IR, cath lab, L&D, and ultrasound. Additional CPKs were needed as a result of the significant reduction in single pull SKUs, ensuring clinicians' needs were met for greater efficiency and successful patient outcomes. Ultimately, the hospital saved over one million dollars on CPKs.

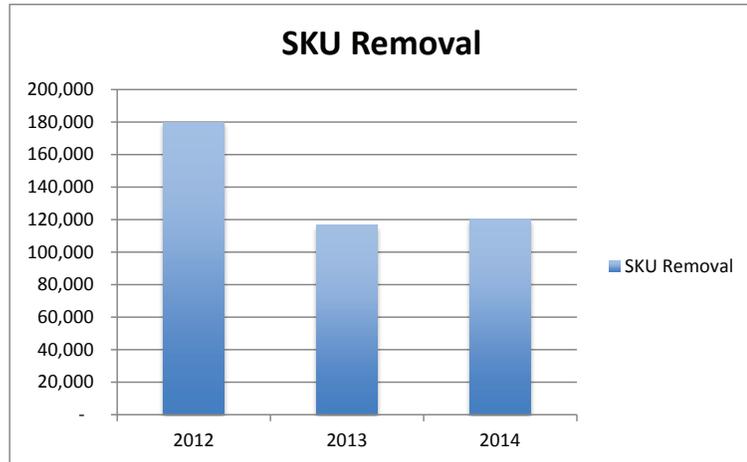


Contact Information

Name: LaRae Floyd
 OSD Manager/CRMM

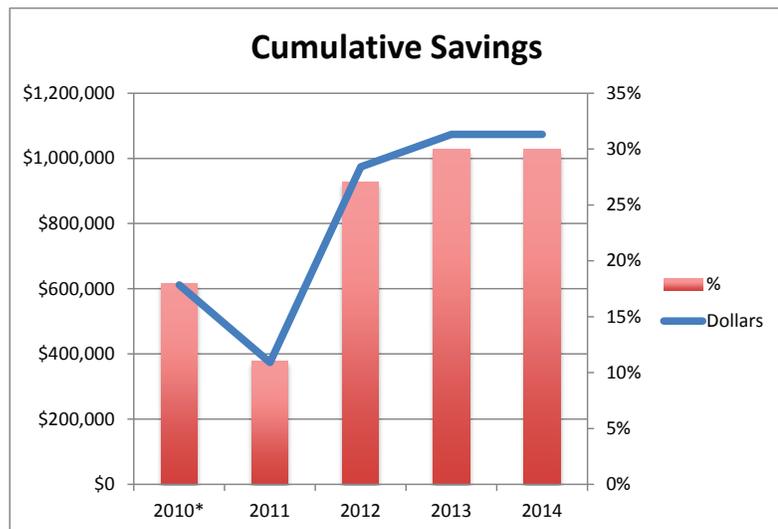
Email: lfloyd@browardhealth.org

Phone: (954) 473-7204



Benefits

- Reduction in ordering, stocking and administrative soft costs.
- Improved clinician satisfaction (*quality & convenience*).
- Standardization of CPKs across the system.
- Improved productivity and efficiency.
- Reduced 79 percent of single sterile pulls/SKUs.
- Overall 30 percent savings on CPK Spend (*\$3.4 million CPK & \$400,000 single pull spend*).
- Supplier diversity benefits: Implemented business partnerships with a woman-owned business (CPK provider/manufacturer) and a local minority-owned business (just in time [JIT] distributor).
- Elimination of 24,501 pounds of CPK waste – 14,601 pounds in 2012; 9,900 pounds in 2013; and a neutral waste avoidance in 2014.



Case Study: Smarter Purchasing Challenge - Single Use Device Reprocessing



Summary

Single-use medical devices are expensive resources that end up in the landfill after use.

By using reprocessed medical devices, Virginia Mason has provided the highest quality of care, while reducing waste to the landfill and reducing supply costs by over \$3M in three years.

In 2014, Virginia Mason reprocessed or recycled over 18,850 pounds of devices, which may have otherwise have been discarded in a landfill.

Virginia Mason

Challenge/Situation

Virginia Mason has been transforming health care since 2002, when it was the first in the industry to adopt the Toyota Production System. Virginia Mason provides the highest quality of care at the lowest possible cost. The system's commitment to environmental sustainability is integrated into its work. The system's award-winning EnviroMason program is supported on every level of the organization.

Medical devices are an important part of providing the highest quality care in Virginia Mason's hospital. The total cost of device use includes both initial purchasing and the cost environmentally responsible disposal. Virginia Mason's Perioperative Services team challenged themselves to find a way to reduce the total cost and environmental impact of these devices.

The Strategy Selected

Stryker, a reprocessing vendor, approached Virginia Mason with the idea of utilizing reprocessed medical devices. Reprocessed medical devices are FDA approved (and thus pre-audited for quality), demonstrate the same high level of quality, have a lower total cost, and a reduced environmental impact than many single use devices. Physicians joined the leadership team to evaluate the devices, including visiting the reprocessing plant and consulting with other surgeons. The group decided to start with a few devices and expanded as time went on. After learning how each device is inspected for quality and held to the highest standard, the team moved forward.

Implementation Process

With its Purchasing department's support, the devices were integrated into the facility's supply chain. Implementation required a new process, staff education, installation of new bins and signage. The Perioperative team and vendor conducted the in-service for staff. To make the process easier, the system was set up so that the staff can put all the devices in one bin, which the vendor then sorts. A Stryker representative also visits regularly to ship the collected devices offsite for reprocessing as well as assist the hospital team with regular reports. The hospital purchases back the reprocessed devices, creating significant cost savings.

About Virginia Mason

Virginia Mason is a nonprofit organization offering a system of integrated health services including the following:

- A large multispecialty group practice of 460 physicians, offering both primary and specialty care.
- An acute-care hospital licensed for 336 beds.
- Benaroya Research Institute at Virginia Mason.
- A network of medical centers throughout the region.
- Bailey-Boushay House, a nursing residence and chronic care management center for people living with AIDS and other chronic or terminal illnesses.

Benefits

- Purchasing costs reduced by over \$3 million dollars since 2012.
- Annual waste disposal costs were reduced.
- Eliminating waste disposal reduces toxins potentially released to the environment.



Challenges and Lessons Learned

Patient safety is Virginia Mason's first priority. Lack of understanding as to the value of reprocessed devices can be an initial roadblock. Sharing the clinical data and research proving that the reprocessed device has equal quality and safety to a single use device is essential.

Case Study: Smarter Purchasing - Electronic Products Environmental Assessment Tool (EPEAT)

Kaiser Permanente

The Problem

Computers have enabled Kaiser Permanente to provide members, patients, and physicians with real-time, secure access to electronic medical information, which has expedited and simplified delivery of care. But the manufacture, use, and disposal of computers and their electronic accessories have a global adverse impact on human and environmental health. Recognizing the benefits and problems with electronics, Kaiser Permanente was looking for a way to identify more environmentally responsible computer systems. The contract with a new computer system supplier in early 2006 included language specifying strong and definite preference for energy-efficient and environmentally responsible computers.

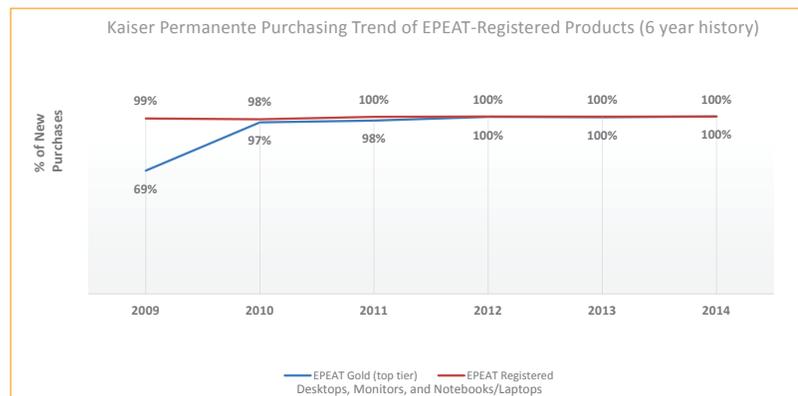
Summary

Kaiser Permanente is strongly committed to the health and safety of its patients and staff.

The organization honors that dedication by purchasing 100 percent EPEAT laptops, desktops, and monitors, and striving to replicate this for other electronic devices.

The business cost of purchasing the computer systems was cost neutral, with an added energy savings of \$5 million per year.

Progress from 2009



The Strategy Selected

- To procure CPUs, monitors, laptops, printers, tablets, and other devices manufactured with the least toxic materials, designed for easy recycling, use minimal energy for operation, and are packaged with minimal materials.
- To reduce energy consumption and costs, and create a healthy, safe environment.

Implementation Process

- In 2006, Kaiser Permanente launched the EPEAT criteria and registry system to enable easy comparison of the environmental performance of computer systems.
- Prior to EPEAT, Kaiser Permanente used the ENERGY STAR rating system as a minimum requirement for new computer systems. Kaiser Permanente's IT sourcing team quickly adopted EPEAT due to its comprehensive focus on environmental issues, which includes energy performance.

About Kaiser Permanente

Founded in 1945, Kaiser Permanente has a mission to provide high-quality, affordable health care services and to improve the health of its members and the communities it serves. It currently serves 9.6 million members in eight states and the District of Columbia.

Contact:

Vanessa Lochner
 Director, Environmentally Preferable Purchasing,
Vanessa.M.Lochner@kp.org

The Team

IT Procurement Sourcing

Pradeep Saxena
 Remi Murphy
 Kevin Williams
 Earl London
 Linda Morgan
 Lois Johannsen
 Ken Mudge
 Jeff Bruno

- Expectations were set with the incumbent supplier that as new products meeting higher registry tiers became available, Kaiser Permanente would swiftly adopt those models that met their purchasing standards.
- Kaiser Permanente made a strong commitment to the EPEAT standards with 100 percent of desktops, monitors, and laptops adhering to EPEAT standards. The organization is also buying more EPEAT printers, tablets, and other devices.

Overall Successes



Product	% of New Purchases		
Desktops			100%
Monitors			100%
Notebooks/Laptops			100%
iPods			100%
iPads			100%
MacBooks			100%
Printers	6%	93%	
Multi-functional Devices	5%	94%	

Based on supplier provided units shipped data for 2014

Benefits

- Environmental and human health impact: Vast reduction in use of energy and toxic materials (lead, cadmium, and mercury); increased use of recycled resins, recycled content packaging, and reusable packaging.
- Business impact: Upfront purchase of computer systems was cost neutral, with an added energy-cost savings of \$5 million per year.
- Kaiser Permanente now uses 100 percent EPEAT laptop, monitors, and desktops.

Challenges and Lessons Learned

- With a large organization, it is difficult to change product lines and it takes time and patience, but it can be done.
- The use of a reputable and verifiable third-party certification tool can simplify the purchasing of environmentally preferable products.
- A certification system, like EPEAT, that compares performance in a transparent and balanced fashion can help prevent price mark-ups and “green washing” (disingenuous promotion or advertising of products’ environmental attributes.)
- Continue to educate the staff on the importance of such changes and EPEAT. Many are unaware of the effects and benefits of the tool.



General Inquiries

www.HealthierHospitals.org
info@HealthierHospitals.org
703.860.9790

Media Inquiries

media@HealthierHospitals.org
703.870.7494

Mailing Address

Healthier Hospitals Initiative
c/o Practice Greenhealth
12355 Sunrise Valley Dr, Suite 680
Reston, VA 20191

www.HealthierHospitals.org

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