ARMY MEDICINE
Serving To Heal...Honored To Serve

U.S. Army Medical Command
Sustainability Report
2008 - 2013

MISSION
COMMUNITY
ENVIRONMENT

MEDCOM GREEN
IMPROVE THE PRESENT, RESPECT THE FUTURE

www.armyhealthfacilities.amedd.army.mil/sustainability.html

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MEDCOM Sustainability Mission

To accomplish our mission through due consideration of health, value, environment, and communities while enhancing the ability of future generations to accomplish their missions.

MEDCOM Sustainability Vision

Sustainable healthcare for today and tomorrow. Improve the present, respect the future.

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MESSAGE FROM THE SURGEON GENERAL

DEPARTMENT OF THE ARMY
HEADQUARTERS, UNITED STATES ARMY MEDICAL COMMAND
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The Army Medicine 2020 Campaign Plan uses three lines of effort; Increase Capacity, Enhance Diplomacy and Improve Stamina, to create the capacity required to promote individual, unit and organizational health and to meet current and future medical support requirements. The link between sustainable practices and the health of patients, our medical team and the global community is clear. Innovation, standardization, and conservation are necessary components to meeting the current and future demands of Army medicine. The inaugural *MEDCOM Sustainability Report* details command goals and initiatives to sustain the MEDCOM mission while improving quality of life, strengthening community relationships, and reducing the total costs of operation and ownership.

The Report is a healthcare-specific sustainability guide supporting the installation sustainability and Net Zero goals of the *Army Sustainability Report 2012*. The accomplishments and best management practices described in the *Report* reflect many of the short, medium, and long-range goals and objectives of the Command sustainability strategy. Standardizing innovative and resource-saving advancements in healthcare is a major step towards increasing efficiencies in the operating model.

CSM Ecker and I are proud of the increasing efforts of MEDCOM staff to incorporate sustainability in healthcare. The relationship between sustainable practices and the health of our patients, your team and the global environment must not be understated. We are executing our mission with remarkable success and we must continue to incorporate sustainability in our daily operations for the benefit of the command. Our mission remains clear – provide responsive and reliable health services and influence Health to improve readiness, save lives and advance wellness in support of the Force, Military Families and all those entrusted to our care.

Serving to Heal…Honored to Serve!

Gerald Ecker
Command Sergeant Major, US Army
US Army Medical Command

Patricia D. Horoho
Lieutenant General, US Army
The Surgeon General and
Commanding General,
US Army Medical Command

Sustainability & Healthcare

Why Sustainability?

Sustainability recognizes the need for an organization to succeed in its mission and be financially successful while contributing to the community in which it operates.

Although sustainability is a universal concept, the definition of sustainability must be tailored to and aligned with the individual mission of the organization. The overall mission of the U.S. Army Medical Command (MEDCOM) is not changing, but how the mission is achieved will change with the implementation of sustainability.

Through sustainability, MEDCOM is improving patient and employee health, the environment, and the surrounding communities while decreasing the amount of waste generated and lowering the cost of operations and ownership.

Sustainability will enable MEDCOM to achieve a more secure future while conserving critical funds for direct patient care.

One of the accessible rooftop gardens at Womack AMC

Healthcare facilities minimize environmental risk by replacing hazardous materials wherever possible with a non-hazardous alternative. Many medical devices contain PVC plastic. PVC plastic is made flexible by bis(2-ethylhexyl)phthalate (DEHP). MEDCOM facilities have taken steps to reduce plastics in the waste stream by minimizing use of products containing DEHP.

Healthcare operations consume energy and water 24 hours a day and generate large amounts of hazardous, non-hazardous, and medical waste.

Studies have shown a connection between improved patient outcomes and healthcare facilities that have incorporated sustainability principles into their building design and day-to-day operations. Shorter patient stays, better outcomes, and reduced reliance on heavy medications have been realized at hospitals that provide patients with access to natural light and fresh air.[1,2,3,4] Furthermore, these sustainable features are also key factors in better staff health and staff retention.[5]

Key Concepts

Energy: Every year, healthcare facilities in America spend over $8 billion on energy.[6] Most of the energy used is derived from fossil fuels. Dependence on fossil fuels poses a national security concern since much of the fossil fuel consumed in the United States originates in unstable, cartel-oriented, foreign countries. Energy saving measures also reduce utility costs and can extend equipment life, which reduces MEDCOM's operational costs.

Waste: Medical treatment facilities (MTFs) generate a complex variety of waste streams and are typically the largest generator of waste on a military installation. Producing less waste provides fiscal savings and environmental benefits, including lower waste disposal costs and less landfill space needed for waste disposal.

Water: MTFs are typically the largest consumer of water on an installation, with a mission critical need for large volumes of high-quality water. Water conservation at MTFs reduces operational costs while conserving a critical resource need that is scarce in many areas. Furthermore, a considerable amount of energy is required to treat and deliver potable water to consumers. Reducing the amount of potable water used also results in reduced energy consumption.

Materials: Items that are harmful to patients or the environment or that have high disposal costs can unknowingly be brought into the healing environment. Buying products with reduced environmental and human health impacts is key to sustainable healthcare.

1 "Sunny Hospital Rooms Expedite Recovery from Severe and Refractory Depressions," K.M. Beauchemin and P. Hays, *Journal of Affective Disorders*, September 1996.

2 "Dying in the Dark: Sunshine, Gender, and Outcomes in Myocardial Infarction," K.M. Beauchemin and P. Hays, *Journal of the Royal Society of Medicine*, July 1998.

3 "The Effect of Sunlight on Post-Operative Analgesic Medication Usage," J.M. Walch, B.S. Rabin, R. Day, J.N. Williams, K. Choi, and J.D. Kang, *Psychosomatic Medicine*, January/February 2005.

4 "Study of the Relationship Between Indoor Daylight Environments and Patient Average Length of Stay (ALOS) in Healthcare Facilities," Jooh Ho Choi, M.Sc. thesis, Texas A&M University, April 2007.

5 "Evidence-Based Hospital Design Improves Healthcare Outcomes for Patients, Families, and Staff," Robert Wood Johnson Foundation, June 2004.

6 "Hospital Energy Alliance 2012 Annual Report," U.S. Department of Energy, October 2012.

MEDCOM Sustainability Program History

Under the current direction of COL Michael Brennan, G9, the MEDCOM Sustainability Program for MEDCOM healthcare facilities was initiated in 2008. The impetus for action was EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management. The program has been implemented in three phases: strategy development, data gathering, and implementation.

Phase I focused on strategy, education, and involvement; it began with the issuance of an overarching sustainability policy by MEDCOM Chief of Staff on 13 February 2009. This policy broadcast top-level support for sustainability to the entire MEDCOM community and established the guiding principles for development of the MEDCOM Sustainability Strategic Plan. MEDCOM then formed a Headquarters Sustainability Team (HQST) comprised of decision makers from all MEDCOM directorates. Under the leadership of the MEDCOM G9 Program Manager for Sustainability, the HQST developed MEDCOM's Sustainability Program Strategy and balanced scorecard (BSC), which tiered off the Army Medicine BSC and aligned with the goals set forth in Executive Order (EO) 13514, the Department of Defense Strategic Sustainability Performance Plan (DoD SSPP), and the Army Sustainability Campaign Plan (ASCP).

Phase II of MEDCOM's Sustainability Program implementation focused on data gathering and analysis. To determine the baseline state of sustainability at continental U.S. (CONUS) MTFs, MEDCOM developed and fielded a sustainability data call. Using this baseline data, initiatives on the sustainability BSC were sorted for immediate, medium-, and long-term implementation on the basis of cost, payback period, and degree of support for the triple-bottom-line of mission, community, and environment.

"Sustainability" and "sustainable" mean to create and maintain conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations of Americans.

— Executive Orders 13423 and 13514

Phase III of MEDCOM's Sustainability Program is ongoing and involves establishment of MTF Green Teams, gathering updated sustainability data from MTFs, continuing education of MEDCOM personnel, and cementing a culture of sustainability throughout MEDCOM and its facilities.

A pincers approach is being employed to achieve MEDCOM's sustainability objectives, implementing sustainable Army healthcare from both the headquarters (HQ) and ground level with the development of Green Teams at each MTF. MEDCOM leads interactive workshops to stand up each MTF Green Team, define specific measurable sustainability goals for the MTF, and develop a roster of initiatives to achieve those goals. These MTF-specific goals are then aggregated into an MTF Sustainability Action Plan tailored to the individual situation and needs of each MTF while supporting MEDCOM's Sustainability Strategy, the DoD SSPP, the ASCP, and EO13514. The MTF Green Teams include members from all hospital departments and the host installation. To ensure succession planning and the long-term success and stability of sustainable Army healthcare, the MEDCOM HQST and MTF Green Teams are comprised of both military and civilian personnel.

This mix also helps spread the culture of sustainability when military personnel rotate to new duty stations. To become sustainable, MEDCOM must create a culture of sustainability. Critical ingredients include consistent support of top leadership; staff positions at the MTF, regional, and HQ levels dedicated to sustainability; clearly identified goals and timelines; clear communication; consistent education; and engagement of personnel. A sustainable MEDCOM supports the mission to deliver leading edge health services to Warriors and military families. All sustainability initiatives have a positive impact on at least one portion of the triple bottom line: community well being, environmental quality, and the MEDCOM budget.

MEDCOM SUSTAINABILITY STRATEGY

The MEDCOM Sustainability Strategy sets forth the vision and strategic imperatives to safeguard the MEDCOM mission to provide responsive and reliable health services and influence health to improve readiness, save lives, and advance wellness in support of the Force, Military Families, and all those entrusted to their care. The Strategy is the MEDCOM community's healthcare-specific response to the DoD Strategic Sustainability Performance Plan and the Army Sustainability Campaign Plan.

The MEDCOM Sustainability Strategy establishes sustainability goals and metrics to track and measure progress. The MEDCOM Sustainability Strategy focuses on:

- Establishing Sustainability Teams at HQ MEDCOM and at all MEDCOM MTFs
- Improving waste management practices, including
  - Reducing the amount of solid, regulated medical waste (RMW), and hazardous waste generated
  - Increasing recycling
  - Weighing and tracking all waste and recycling to allow assessment of progress towards MEDCOM Sustainability Strategy goals
- Maximizing energy conservation
- Improving water conservation
- Institutionalizing environmentally preferable purchasing

Today the Army faces significant threats to our energy and water supply requirements both at home and abroad. Addressing sustainability is operationally necessary, financially prudent, and essential to mission accomplishment. The Army's vision is to appropriately manage natural resources with a goal of net zero installations.

Army Net Zero will ensure that sustainable practices are instilled and managed throughout the Army, while also maximizing operational capability, resource availability and well-being.

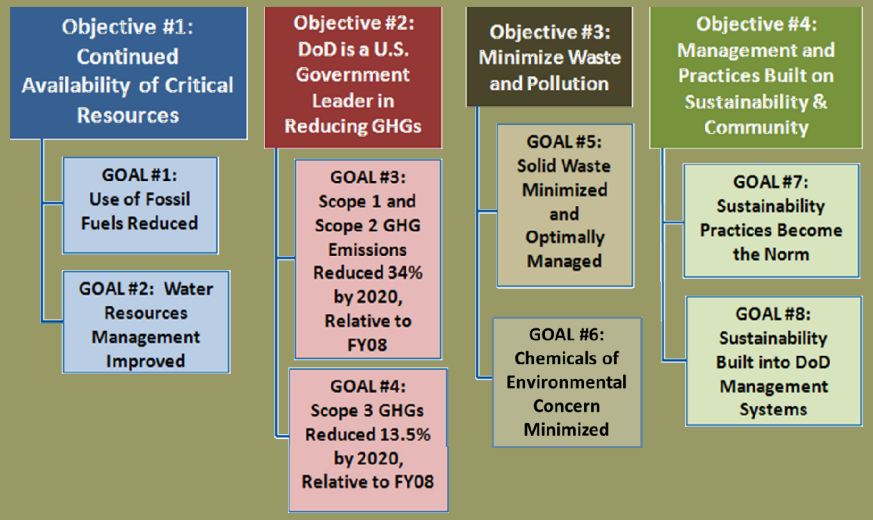
The net zero vision is a holistic approach to addressing energy, water, and waste at Army installations — an approach that is a force multiplier enabling the Army to appropriately steward available resources, manage costs and provide our Soldiers, Families, and Civilians with a sustainable future.

MEDCOM Sustainability Program Alignment

The MEDCOM Sustainability Strategy aligns with Executive Order (EO) 13514, Federal Leadership in Environmental, Energy, and Economic Performance, directing Federal agencies to meet energy, water, pollution, and waste reduction targets.

The Army has established a sustainability campaign plan and a Net Zero pilot program which focus on energy and water conservation and waste reduction through five interrelated steps: reducing, re-purposing, recycling and composting, energy recovery, and disposal.

The DoD Strategic Sustainability Performance Plan lays out overall DoD goals and sustainability performance expectations over the next decade, establishing the path by which DoD will enhance the ability to achieve America's military mission, lower life cycle costs, and advance technologies and practices that further the sustainability goals of the nation.



MEDCOM is Vital to Army Net Zero Success

MEDCOM MTFs are typically one of the largest users of energy and water, and one of the biggest generators of waste, on an installation. Given the resource intensity of MTFs, a partnership between MTFs and installations is crucial to achieving overall Army Net Zero goals.

MEDCOM Sustainability Strategy

Situation

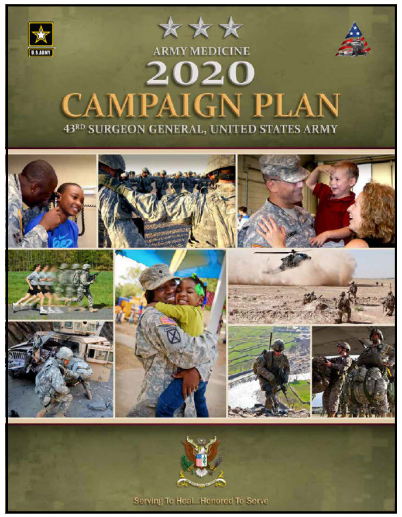
Army Medicine must always remain ready to support Army Decisive Action and is responsible for providing ready medical personnel to meet Combatant Commander and Service requirements. Supported units include task organized, Combat Support Hospitals and Forward Surgical Teams in Joint Task Force, Corps and Divisions, and Brigades.

To achieve this, MEDCOM implemented a Sustainability Strategy. The MEDCOM Sustainability Strategy establishes the framework through which the Army Medical Department will ensure its forces remain ready to meet current and emerging mission requirements.

The Sustainability Strategy details the way ahead for MEDCOM to continue the mission of providing top-notch healthcare while also being good stewards of the environment and tax payer dollars, and provides a roadmap for partnering with the community and ensuring the future availability of the earth's resources.

MEDCOM Sustainability Strategic Themes & Results:

- ✓ ***Enhance Health***
  Leverage sustainability to improve patient care environment and to provide a healthy workplace for MEDCOM personnel.
- ✓ ***Enhance the Environment***
  Reduce environmental impact of operating MEDCOM facilities.
- ✓ ***Enhance our Communities***
  Improve on-post and off-post communities through implementation of MEDCOM sustainability initiatives.



Purpose

The Army Medicine 2020 Campaign Plan operationalizes the vision and strategic imperatives to ensure that the Army leads the nation in health. It focuses on outcomes to improve readiness, save lives, and advance health in support of the Total Force.

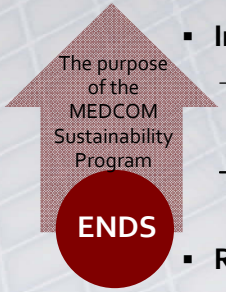
The MEDCOM Sustainability Strategy supports the three Army Medicine Campaign Lines of Effort (LOE) outlined in the Army Medicine 2020 Campaign Plan.

- **LOE 1 - Create Capacity:** Sustainability cost savings directly support Objective 1-2: Accountable, Reliable, and Effective Health Systems by providing effective cost management (1-2.1, Cost Management). Formation of sustainability teams directly aligns with 1-2.6: Team Building and Training.
- **LOE 2 - Enhance Diplomacy:** Formation of sustainability teams at all MTFs supports Objective 2-2: Build and Prepare the Team, and 2-2.2: Team Development and Organization.
- **LOE 3 - Improve Stamina:** As the MEDCOM Sustainability Strategy is implemented across the Command, Objective 3-2: Develop Healthy Communities and Environments will be met, and Programs 3-2.1: Develop Infrastructure for Health, 3-2.2: Manage Occupational & Environmental Health Threats, and 3-2.4: Leader and Organizational Development will be strengthened.

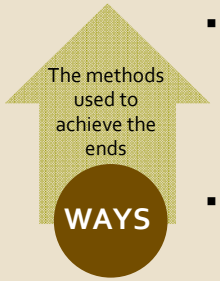
"Over the past decade, Army Medicine has led the joint health effort …"

– LTG Patricia D. Horoho, The Surgeon General and Commanding General, U.S. Army Medical Command

MEDCOM SUSTAINABILITY GOALS



- **Improve Facility Environment**
  - Improve the patient care and staff environments through sustainability initiatives.
  - Secure a healthy workplace for our military and civilian workers.
- **Reduce Environmental Impact**
  - Reduce environmental impact of operating MEDCOM facilities.
- **Improved Community Relations**
  - Improve on-post and off-post relationships through MEDCOM sustainability initiatives and education.
- **Sustainable Facilities**
  - Reduce the life cycle impact of operating high performance and sustainable MEDCOM facilities (impact = costs + consumption).



- **Improve Energy Conservation**
  - Reduce energy consumption at MEDCOM facilities.
    - Replace inefficient light bulbs with energy efficient light bulbs.
- **Improve Water Conservation**
  - Reduce water usage at MEDCOM facilities.
    - Reduce potable water consumption.
    - Reduce non-potable water (industrial, landscaping, and agricultural water) consumption.
- **Improve Responsible Purchasing**
  - Enhance purchases of environmentally preferable products and services.
    - Include green purchasing requirements in contracts.
    - Increase purchase of green product alternatives from DoD eMall and other Federal supply sources.
- **Decrease Waste Streams**
  - Reduce solid, regulated medical, and hazardous waste generation at MEDCOM facilities.
  - Increase recycling.
- **Improve Sustainability Knowledge Transfer**
  - Improve sustainability awareness of patients, employees, Commanders, and communities through education and communication tools.
  - Improve MEDCOM operations by implementing sustainability initiatives.
  - Identify and report MTF sustainability best management practices to HQ MEDCOM, and participate in sustainability best management practice transfer amongst MTFs.
- **Design, Build, and Operate Sustainable Facilities**
  - Build and operate MEDCOM facilities sustainably and to a minimum of LEED® Silver standards.
  - Divert construction and demolition debris from the waste stream.

- **Optimize Resource Stewardship**
  - Continuously improve operational efficiency to optimize resource stewardship.
- **Improve Knowledge Management**
  - Capture, share, reuse, and exchange knowledge to facilitate organizational learning, improve decision-making, and positively affect the mission with regards to sustainability.
- **Enhance Staff Training and Development**
  - Provide staff training and development to support greening MEDCOM operations.
- **Promote a Culture of Sustainability**
  - Promote a greener MEDCOM by recognizing and rewarding sustainable practices.

The MEDCOM Strategy

The Army is building a culture that recognizes the value of sustainability measured not just in terms of financial benefits, but benefits to maintaining mission capability, quality of life, relationships with local communities, and the preservation of options for the Army's future.

Sustainability is the capacity to endure. A decision-making framework, sustainability is a way of assessing impacts to the community, the environment, and the bottom line — often referred to as the "triple bottom line." Sustainability is about more than being "green" — although doing right by the environment is certainly part of it. Instead, sustainability is much broader and recognizes the need for an organization to accomplish its mission and be financially responsible while contributing to the community in which it operates.

The Purpose of Sustainability in Healthcare

The purpose of a MEDCOM sustainability strategy is to consistently protect, sustain, and enhance the well being of the patients we serve, our work-force, and surrounding communities and natural resources. The end state is fulfilling our mission into the future by continuing to provide exemplary healthcare while being good stewards of the environment, the taxpayer's dollars, and the communities in which operations occur.

Concept of Operations

The MEDCOM sustainability strategy will:

- Establish Sustainability Action Officers at the Regional level
- Appoint enduring Sustainability points of contact (POCs) at all MEDCOM MTFs
- Ensure formation of cross-functional sustainability teams at all MEDCOM MTFs

An overarching sustainability policy was issued by the MEDCOM Chief of Staff on 13 February 2009. This policy broadcast top-level support for sustainability to the entire MEDCOM community and established the guiding principles for development of the MEDCOM Sustainability Strategy.

Low-Hanging Fruit

Comprehensive Recycling: Recycling reduces waste disposal costs, saves energy and water, and protects natural resources from pollution. A comprehensive recycling program should include as many materials as possible to achieve significant environmental and economic benefits.

Polystyrene Foam Elimination: Disposable polystyrene foam products, commonly used as to-go containers for food, may leach toxic chemicals when damp or heated and do not break down or decompose when disposed in landfills. This proposed policy protects patients, visitors, and personnel from exposure to toxic chemicals while reducing the amount of waste sent for disposal in landfills.

Duplex Copying/Printing: Single-sided printing and copying increases paper purchasing costs and increases the amount of waste paper generated. Duplex, or double-sided, printing and copying significantly reduces paper purchasing costs. Utilizing both sides of paper also reduces the amount of waste paper generated and, correspondingly, reduces waste disposal costs.

Reusable Sharps Containers: Single-use sharps containers are disposed in the same manner as the contents of the container, although the containers themselves are not inherently RMW. Reusable sharps containers remove the container material from the RMW waste stream, decreasing total RMW disposal costs.

Single-Use Medical Device Collection: A single-use medical device (SUD) is sold by manufacturers for one-time, one-patient use. After this single use, the SUD is typically disposed as RMW. The U.S. Food and Drug Administration (FDA) regulates the reprocessing of these devices to meet original manufacturer specifications. Collection of SUDs for reprocessing by a licensed FDA vendor yields significant waste disposal cost savings. While MEDCOM facilities are encouraged to purchase these devices, expanding the policy to require the collection and diversion of applicable devices will provide the command a significant savings in disposal costs.

WESTERN REGIONAL MEDICAL COMMAND
Sustainability Campaign Plan

Given the fiscal constraints of FY13, the Western Regional Medical Command (WRMC) believed it imperative to leverage the savings potential of sustainable healthcare. In May 2013, WRMC developed the "Look West to Success" Sustainability Campaign Plan, leveraging the MEDCOM G9 Sustainability Program.

WRMC launched the "Look West to Success" campaign to identify, measure, and track cost savings from sustainability throughout the enterprise using the documented sustainability savings achieved by Evans Army Community Hospital (ACH) as a pilot study. The goal of the Campaign Plan is to ensure limited resources are effectively utilized to support patient care operations.

Key to the WRMC Sustainability Campaign Plan is activation of cross-functional Sustainability Teams at all MTFs to establish metric-driven/LEAN-based sustainability programs grounded in continual improvement. All staff, patients, and visitors must be educated on the importance of sustainability to the mission and provided ways to actively participate in sustainability. Leadership must communicate progress and results to reinforce the culture shift necessary for WRMC to become truly sustainable.

To provide additional program support to MTFs in the Western Region, WRMC established a Sustainability Program Manager position in June 2013.

Sustainability Area	Initiative	Annualized Savings at Evans ACH (pilot program)	Savings Basis
Green Housekeeping	Microfiber cleaning	$340,000	✓ Reduced labor cost ✓ Reduced waste ✓ Reduced water use
	Switched to green cleaning products; reduced number of cleaners used	$34,000	✓ Reduced purchase cost
Biomedical Service Agreements	Reduced coverage from full-service to cooperative vendor service agreements while enhancing Soldier skills	$228,000	✓ Reduced labor cost
Energy & Water Conservation	Installed energy-efficient lighting	$69,700	✓ Reduced energy use
	Installed tankless water heating system; modified HVAC system to operate at variable speeds	$16,100	✓ Reduced energy use
	Installed water-efficient fixtures	$65,000	✓ Reduced water use
	Computers powered down automatically after overnight security updates are installed	$92,400	✓ Reduced energy use
Waste Reduction	Collected single-use medical devices for reprocessing by vendor; reprocessed devices purchased at reduced cost	$90,000	✓ Reduced purchase cost ✓ Reduced waste
	Mandatory double-sided printing and copying in appropriate departments	$20,000	✓ Reduced purchase cost ✓ Reduced waste
	Comprehensive waste reduction program to decrease waste streams and increase recycling	$20,000	✓ Reduced waste
	Waste pulper in dining facility separates liquid and solid wastes, reducing solid waste sent to the landfill	$25,000	✓ Reduced labor cost ✓ Reduced waste
		Total Savings	***$1,000,200***

MEDCOM Sustainability Data

Streamlined Data Gathering

In 2009, to gather baseline sustainability data, MEDCOM fielded the original sustainability data call to 28 MTFs in the United States.

Additionally, benchmark data was gathered from four national leaders in sustainable healthcare to establish best in field standards and allow comparison of MEDCOM to these industry leaders. Benchmark data was gathered from:

- Dell Children's Hospital , Austin, TX, which is the first hospital to receive LEED Platinum certification;
- The Veterans Affairs Medical Center, San Francisco, CA, which has a robust, long-standing recycling program;
- Boulder Community Hospital, Boulder, CO, the first hospital to become LEED certified; and
- Naval Hospital Bremerton, Bremerton, WA, one of the earliest DoD hospitals to adopt green building standards.

After all data was entered into the survey, four of the MTFs and three of the benchmark facilities were visited in person for quality control purposes and to gather best practice narratives.

Accurately measuring, tracking, and benchmarking sustainability performance data are key to establishing and improving Sustainability Programs. Without accurate data, sustainability goals cannot be set, progress towards the goals cannot be determined, and opportunities for process improvements or cost savings cannot be identified.

The MEDCOM Sustainability Program is metric driven. The foundations of the program are a strong baseline data set and Federal, DoD, and Army sustainability program guidelines. The first phase of developing the MEDCOM Sustainability Strategy involved establishing the baseline condition of MEDCOM sustainability practices and determining healthcare industry standard benchmarks for sustainability practices and procedures in the following areas:

- **Waste**
  - ✓ Solid waste
  - ✓ Hazardous waste
  - ✓ Regulated medical waste
  - ✓ Waste diversion
  - ✓ Composting
  - ✓ Recycling
- **Energy**
  - ✓ Conservation/efficiency efforts
  - ✓ Usage
  - ✓ Participation in the Energy Star program
- **Nutrition Care**
  - ✓ Food options available
  - ✓ Amount of food served daily
  - ✓ Use of disposable to-go containers
  - ✓ Handling of waste food and grease
- **Water**
  - ✓ Conservation/efficiency efforts
  - ✓ Usage
- **Building Design and Construction**
  - ✓ Use of sustainable materials
  - ✓ Roof choices
  - ✓ LEED™ certification
- **Transportation**
- **Housekeeping**
  - ✓ Types of cleaning products used
  - ✓ Cleaning methodology used
- **Environmentally Preferable Purchasing**
  - ✓ Mercury-containing products
  - ✓ Recycled content products
  - ✓ Latex-containing products
  - ✓ PVC and BPA plastics
- **Materials and Equipment**
  - ✓ Record keeping procedures
  - ✓ Fluid management in the operating room
  - ✓ Chemical reprocessing
  - ✓ Laboratory procedures
- **Existing Sustainability Program**
  - ✓ Composition of MTF Sustainability Team
  - ✓ Existing sustainability goals
  - ✓ Progress on goals
- **Education, Outreach, and Partnering**
  - ✓ Personnel education on sustainability
  - ✓ Internal recognition programs
  - ✓ Partnership with host installation
  - ✓ Partnership with non-Army community
  - ✓ Sustainability outreach events

BASELINE SUSTAINABILITY DATA

Data from 28 MTFs, including Medical Centers, Health Clinics, and Community Hospitals, was analyzed for broad trends and used by the HQ MEDCOM Sustainability Team to develop concrete sustainability objectives within the MEDCOM Sustainability BSC.

The baseline data showed that all MTFs surveyed had implemented some type of sustainability initiative, although most MTFs did not use the term "sustainability."

At the time of the baseline data gathering in 2009, only one MTF had an established Sustainability Team. In comparison, all four benchmark facilities had formal Sustainability Programs led by a Sustainability Coordinator.

Furthermore, the data showed that MTFs performing well in one area of sustainability were more likely to perform well in other areas; likewise, MTFs performing poorly in one area were more likely to perform poorly in other areas. Other findings of the baseline and benchmark data gathering included the following:

- New construction and major renovations at MEDCOM MTFs are required to conform to Leadership in Energy and Environmental Design (LEED™) Silver standards; two of the four benchmark facilities are LEED certified.
- No MTF reported using renewable energy; one benchmark facility uses renewable sources of energy (solar and wind).
- 94% of MTFs reported having water-saving fixtures installed; 75% of the benchmark facilities reported having these fixtures installed.
- 23% of MTFs reported using food from local sources procured through their prime; 75% of the benchmark facilities reported using food from local sources.
- 32% of MTFs reported that they compost some part of the waste stream (either onsite or offsite); 50% of benchmark facilities have composting programs.
- 26% of MTFs reported using green cleaners; 75% of benchmark facilities reported the use of these products.
- One MTF reported mandatory double-sided printing; 25% of benchmark facilities mandate double-sided printing.
- 41% of MTFs reported having landscaping that includes xeriscaped lands; 75% of benchmark facilities xeriscape.
- 57% of MTFs track the actual amount of solid waste they produce; 75% of benchmark facilities track the actual amount of solid waste produced.
- 94% of MTFs have a recycling program, although the scale and materials recycled varied greatly. All benchmark facilities have comprehensive recycling programs.

Data Collection Drives Continual Improvement

The MEDCOM Sustainability Program is metric driven. Recognizing that there are a myriad of actions that could be taken, yet with limited resources available for implementation, MEDCOM leveraged the sustainability data gathered to develop a timeline that organizes sustainability priorities into three categories (short-, medium-, and long-term initiatives), based on cost, payback period, and degree of support for the triple-bottom-line of sustainability stewardship. Short-term initiatives are the "low-hanging fruit," providing the fastest and easiest wins and designed to build engagement in the MEDCOM Sustainability Program.

Every MEDCOM MTF differs in regards to types of treatment, patient population, and geography – no two hospitals are alike. The Sustainability Program at each MTF must support each unique mission specific goal. Therefore, similar sustainability projects employed at different hospitals may yield different returns.

Short-Term Initiatives	Estimated Cost		Estimated Payback	
	Large Hospital	Small Hospital	Large Hospital	Small Hospital
Blue Wrap Recycling	$ 4,320	$ 3,120	1 month	4.5 years
Cafeteria Grease Recycling	$ 440	$ 480	1.5 years	8 months
Plastic Wrap Recycling	$ 80	$ 15	10 months	6 years
Vial Crusher	$ 23,700	$ 20,500	1.5 years	10 years
Food Waste Composting	$ 70,000	$ 30,000	4 years	3 years
Occupancy Sensors	$ 30,500	$ 23,000	6 months	10 months
Formalin Reprocessing	$ 15,000	$ 15,000	5 months	1.5 years
Double-Sided Printing and Copying	$350,000	$ 38,500	2 years	6 months
Faucet Aerators	$ 2,350	$ 900	1.5 years	9 months

Large hospital ~ 1 million square feet and ~ 740,000 patients/year
Small hospital ~ 420,000 square feet and ~ 500,000 patients/year

Medium-Term Initiatives	Long-Term Initiatives
Lighting Control Systems	Chiller Upgrades
Energy Efficient Lighting	Renewable Energy
Solar Screens / Solar Films	Funding Mechanisms
Continuous Commissioning	Parasitic Wind Turbines
Roof Coverings	Solar Water Heating
On-Demand Water Heating	Reclaimed Water Use
Plumbing Fixture Upgrades	Irrigation Delivery Mechanisms
Rainwater Harvesting	Xeriscaping
Reusable Sharps Containers	RMW-to-Solid-Waste Conversion
Reusable Hard Cases (Blue Wrap Alternative)	
HIPAA Document Recycling	
Waste Pulper	

Medium- and long-term initiatives require attention from the entire MEDCOM Sustainability Community of Practice. **Medium-term** initiatives include those currently researched by other MEDCOM departments, along with those initiatives requiring additional short-term research prior to implementation. **Long-term** initiatives require longer planning and are typically more challenging to implement than other initiatives. Initiatives requiring additional research prior to implementation, or those requiring a maturing of technology prior to implementation, are also categorized as long-term.

SUSTAINABILITY PAYS

Demonstrated Sustainability Savings

Not every MTF will tackle every MEDCOM sustainability goal. Some MTFs are already well along on their sustainability journey, while others are focused on beginning with the "low-hanging fruit." However, when taken in aggregate, implementation of these goals throughout the MTFs will result in achievement of overall MEDCOM sustainability goals, and thereby achievement of the goals set forth in the Executive Orders.

MEDCOM Sustainability Program Savings

Category	2011	2012	2013
RMW Reduction	$ 1,119,581	$ 1,385,658	$ 1,504,758
Hazardous Waste Reduction	$ 89,000	$ 82,592	$ 82,592
Solid Waste Reduction	$ 367,929	$ 390,640	$ 419,640
Pharmaceutical Waste Reduction	$ 10,000	$ 1,107,218	$ 1,107,218
Green Cleaning	$ 383,028	$ 383,028	$ 383,028
Material Management & Environmentally Preferable Purchasing	$ 47,500	$ 781,500	$ 421,500
Energy Conservation	$ 3,021,936	$ 3,602,645	$ 4,259,697
Water Conservation	$ 51,216	$ 51,216	$ 70,629
Total:	**$ 5,090,190**	**$ 7,784,497**	**$ 8,249,062**

The result: In 3 years, with implementation at only 12 of 23 MTFs, sustainability has already resulted in a documented savings of over $21,100,000.

"Sustainability provides a tremendous opportunity to achieve cost savings — savings that can then be used for patient care. Sustainability will enable MEDCOM to achieve a more secure future while conserving critical funds for direct patient care."

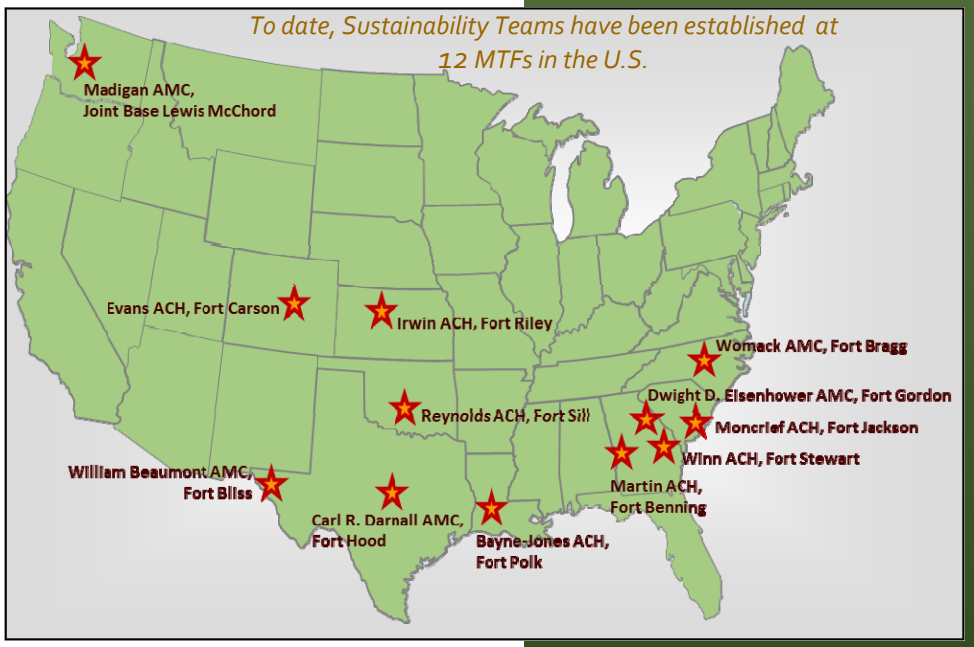
– LTC David Zajac, Chief, Logistics, Evans Army Community Hospital

Sustainability Teams

MEDCOM Sustainability Workshops Build Strong MTF Teams

Ongoing education and engagement of MEDCOM personnel are essential to driving the cultural shift necessary to ensure the long-term success of MEDCOM's Sustainability Program.

To promote this shift at the MTF level, MEDCOM leads sustainability workshops to develop cross-functional, active, and engaged Sustainability Teams. MTF Sustainability Teams then work to implement the MEDCOM Sustainability Strategy and educate other MTF personnel on the benefits that sustainability brings to MEDCOM.



Prior to each workshop, a site assistance visit is performed at the MTF to ground-truth existing data and identify best practices, challenges, and ongoing initiatives not previously identified. These site visits are not inspections; instead, they serve as an informal introduction to sustainability, and help build MTF staff engagement in the workshop through discussions in an informal setting.

MEDCOM facilities are located on Army and Joint-Base installations. As a tenant organization, MEDCOM facilities are required to operate within the parameters of the installation regulatory permits and in support of installation sustainability goals. It is imperative that personnel from the host installation Sustainability Team, Department of Public Works, and/or Environmental Office be an active participant in MEDCOM sustainability programs.

In addition to standing up the MTF sustainability teams, MEDCOM also successfully connects MTF sustainability proponents with the sustainability counterparts of host installations. Given that MTFs are typically the most resource-intensive facility on an installation, these MTF Sustainability Teams become key contributors to both MEDCOM and overall Army sustainability.

"I give of my time to help other MTFs become more sustainable, because they probably feel like I did when I started on this road, completely lost. Helping others as well as ourselves is what sustainability is all about."

– Ms. Reneá Boutte, Chief, Environmental Services, Bayne-Jones Army Community Hospital

MTF Sustainability Team Formation

A Field Tested Method

Prior to each workshop, a site visit is performed at the MTF to ground-truth existing data and identify best practices, challenges, and ongoing initiatives not previously identified. The site visits also serve to build MTF staff engagement in the workshop through discussions in an informal setting.

Sustainability teams work best when they are cross-functional and include representatives from organizations throughout the hospital. Departments represented on the teams typically include Logistics, Environmental Health, Safety, Environmental Services, Facilities Management, Materiel, Infection Control, Nutrition Care, Clinical, Pathology, and Strategic Communications. Representatives from Dental Command and Veterinary Command are also invited to participate.

The workshop to stand up the Winn ACH Sustainability team took place in May 2010.

During each workshop, the newly formed MTF Sustainability Team is connected with the MEDCOM Sustainability Community of Practice, allowing immediate access to knowledgeable personnel at both the host installation and with their peers at established Sustainability Teams at other MTFs. For example, some MTF sustainability workshops have included discussions with Mr. Michael Kyser, Environmental Protection Specialist and Sustainability Coordinator at Madigan Army Medical Center (AMC); LTC David Zajac, Chief of Logistics and Sustainability Team Leader at Evans ACH; CPT Mary Ayres, Operating Room Nurse at Madigan AMC, leader of the effort to green Madigan's operating rooms; and Ms. Reneá Boutte, Chief of Environmental Services at Bayne-Jones Army ACH. Once established, MTF sustainability teams are called on to present their programs successes and challenges as part of future team formation workshops.

The Evans ACH Sustainability Team formed in April 2011.

"As a nurse, my job is not just to take care of that one patient, but to look at the big picture and do my part to improve sustainability in my operating room, my hospital, and my country. As a nurse, I have the tools, resources, and the voice to make a change that will impact more than just that one patient."

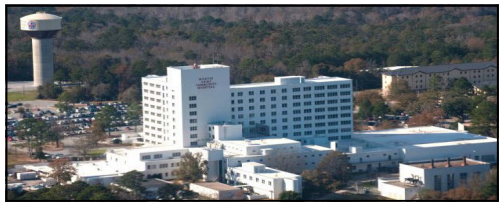
— CPT Mary Ayres, AN, BSN, CNOR, Department of Anesthesia & Operative Services, Madigan Army Medical Center

MANY PATHS, ONE DESTINATION

One Size Does Not Fit All

During the MEDCOM sustainability workshops, the newly formed Sustainability Teams develop MTF-specific, metric-driven Sustainability Action Plans that align with EO 13514, the DoD SSPP, ASCP, and the MEDCOM Sustainability Strategy. These MTF Sustainability Action Plans provide a framework for continual improvement of MTF sustainability.

Martin ACH, Fort Benning, GA

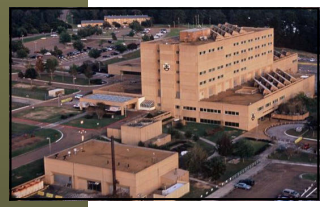


In their initial Sustainability Action Plan, Martin ACH focused on waste reduction through means such as increased recycling of solid waste components, recycling of solvents in the laboratory, recycling empty pill bottles in the Pharmacy, and reducing the amount of polystyrene used in the Dining Facility.

Womack AMC, Fort Bragg, NC

Womack AMC has focused sustainability efforts on reduction of RMW through a very effective SUDs collection program. By diverting used SUDs from the RMW waste stream to collection for reprocessing by an FDA-licensed vendor, Womack AMC saved over $505,000 and diverted 8,989 pounds of RMW in FY2012. Womack has also eliminated use of polystyrene food containers in the Dining Facility, reducing the amount of solid waste generated in the dining facility (DFAC). Going forward, Womack is focusing on improving energy and water conservation.

Bayne-Jones ACH, Fort Polk, LA



Fort Polk is an Army Net Zero Waste pilot installation with a goal of sending no waste to the landfill by 2020. To help the installation achieve this goal, Bayne-Jones ACH is focusing on waste reduction through recycling and waste diversion through repair and reuse of materials.

William Beaumont AMC, Fort Bliss, TX

Situated in the water-constrained west Texas desert, water conservation is the focus of the William Beaumont AMC Sustainability Action Plan. Water conservation initiatives include revising the policy to allow a 3-minute flush time for eyewash stations, high efficiency dishwashers for the DFAC, and capturing steam condensate for return to the boilers.

Madigan AMC, Joint Base Lewis-McChord, WA

The first MTF Sustainability Team established within MEDCOM, Madigan recently implemented a Greening the Operating Room (OR) initiative to reduce the amount of waste generated in the operating rooms. Furthermore, the Madigan Neonatal Intensive Care Unit has eliminated products containing DEHP and bisphenol A (BPA) plastics.

SUSTAINABILITY BRANDING

A key part of each MTF Sustainability Team formation is development of a unique sustainability brand. The MTF sustainability brand must be more than a logo and a slogan; it must effectively convey purpose and impart meaning.

To be meaningful, a brand must convey what an organization stands for. A brand is an implied promise to stakeholders. A sustainability brand must avoid greenwashing. Instead, the sustainability message must be truthful and supported by action.

Sustainability initiatives from every department within the MTF are included under the umbrella of the sustainability brand. Wherever the logo and tagline are used, and whatever the logo and tagline are used for, will be associated with the MTF sustainability effort.

Some MTFs have chosen to build upon a unit crest associated with the host installation, such as Winn ACH at Fort Stewart, which included the diagonal blue and white stripes of the 3D Infantry Division crest in their sustainability brand. Other MTFs, including Martin ACH and Carl R. Darnall AMC, expand the MTF crest to include sustainability concepts such as balance and continual improvement. Dwight D. Eisenhower AMC at Fort Gordon, GA, chose to include the green cross hedge, a symbolic part of their MTF, in their sustainability brand. Evans ACH opted to expand the sustainability brand established by Fort Carson, overlaying the MEDCOM red cross and caduceus on the installation sustainability logo.

Members of the Reynolds ACH Green Team and sustainability mascot Buffy the Buffalo.

Ultimately, the MTF sustainability brand must become a part of daily life for all Sustainability Team members. It must be a true representation of the MTF sustainability mission and not seen as just a marketing ploy.

CRDAMC
Sustainability

A brand can be many things — a promise, an assurance of consistency, an experience, or a delivery vehicle for a benefit to a user. In essence, a brand works as a frame of reference for things such as experience, value, affinity, and identity. Good brands are like stories — they include dimensions such as memories, feelings, beliefs, communities, actions, and values.

Buffy Says:
Mooove Beyond Logos

The Fort Sill Qualified Recycling Program (QRP) actively collects stuffed toys for donation to a variety of local charities. When the Reynolds ACH Green Team developed their sustainability brand, Buffy the Buffalo was the unanimous winner. The Fort Sill QRP Manager rushed out and returned with a large toy buffalo, which was quickly named "Buffy." Reynolds ACH then launched the "Buffy Says" campaign, where Buffy provides a variety of helpful sustainability tips.

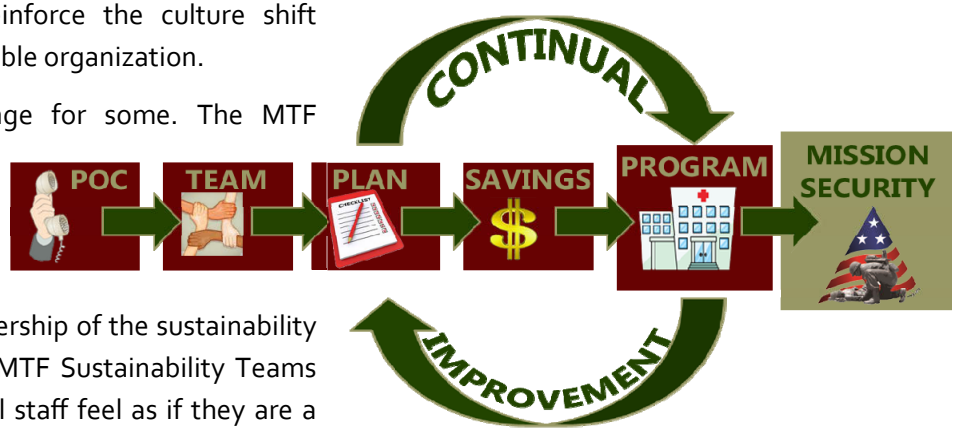
CHANGE MANAGEMENT

Engineered changes, such as installing low-flow water fixtures to reduce water use or installing energy efficient lighting to reduce use of electricity, are only the starting point for MTFs wishing to become more sustainable. To achieve the maximum benefit possible from sustainability, social and individual changes implemented through decisive Leadership are needed to drive a true culture shift.

Individual changes, such as turning off the lights when leaving a room or placing empty soda cans in recycling bins, will drive social change.

Social change will be reflected in the attitudes of groups at the MTFs, such as a department-based effort to collect and segregate recyclable materials in the operating room or MTF-wide participation in a sustainability awareness and education event.

To achieve lasting improvements from sustainability, cross-functional Sustainability Teams must be activated at all MTFs to establish metric-driven sustainability programs grounded in continual improvement. All staff, patients, and visitors must be educated on the importance of sustainability to the mission and provided ways to actively participate in sustainability. Leadership must communicate progress and results to reinforce the culture shift necessary for MEDCOM to become a truly sustainable organization.



The shift to sustainability will be a big change for some. The MTF Sustainability Teams should be ready to help lead this change by explaining why change is needed and why sustainability is important to the mission of MEDCOM, addressing doubts, and giving the staff something to do to build ownership of the sustainability program within the entire hospital community. MTF Sustainability Teams should strive to make all members of the hospital staff feel as if they are a key part of the Sustainability Team. Some hospital staff may initially resist sustainability efforts because they are accustomed to previously-established habits. Therefore, it is the responsibility of the Sustainability Team to show the importance of sustainability and convince the hospital staff that sustainability is necessary to continue providing care to Soldiers and their families into the future without interruption. Through culture change, sustainability will become an urgent matter to all MEDCOM personnel.

"We have one Earth, which we have an environmental and fiscal responsibility as healthcare professionals to protect in order to support people's health. If we have a sick environment, then it correlates to people's health. Fiscally, we need to be good stewards of the organization's resources. If everyone contributes, we can make a positive difference."

— MAJ Tami Gazerro, AN, Clinical Nurse OIC, OR/CMS, Evans Army Community Hospital

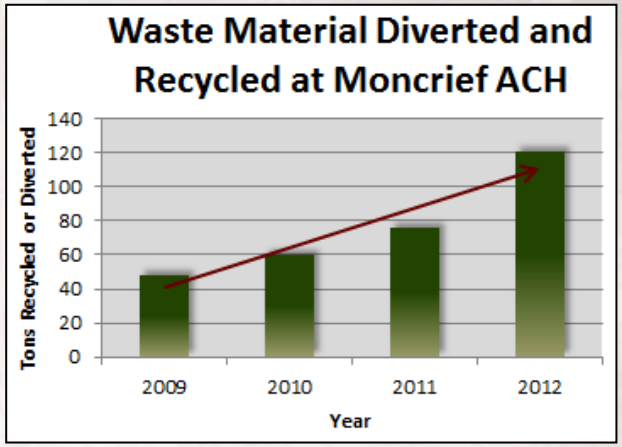
WASTE REDUCTION

MTFs generate a large quantity of waste in a complex variety of waste streams. However, the environmental impact of such waste can be reduced through waste minimization, waste diversion, and recycling. Many opportunities exist for waste reduction, waste diversion, and recycling for each type of waste stream.

Identifying opportunities for MTF waste reduction begins by measuring and tracking existing waste streams. Tracking all waste is imperative to achieving maximum waste reduction; tracking all forms of waste by department or area helps an MTF easily identify and target "low-hanging fruit."

Demonstrated Growth in Moncrief ACH Comprehensive Recycling Programs

MTFs are continuing to expand their waste diversion and recycling programs both in quantity of material diverted from the waste stream as well as types of materials collected.



Demonstrated growth in tons of material diverted or recycled at Moncrief ACH from 2009 to 2012.

Moncrief ACH continues to expand their recycling program since the formation of their Sustainability Team in 2009. Over the past 4 years, the recycling program has grown in both quantity of material diverted from the waste stream, as well as material types collected, with notable increases in aluminum and plastics collection. Moncrief ACH has increased their waste diversion from 48 tons of material recycled or diverted in 2009 to 120 tons of material recycled or diverted in 2012.

Interior recycling containers (above) and unserviceable crutches collected for recycling (below) at Moncrief ACH.

Moncrief ACH realized a significant increase in plastics and aluminum recycling following the placement of additional recycling containers throughout the facility in 2011. The Moncrief ACH housekeeping contract is written to include recycling collection and transportation to the installation recycling center, making recycling program implementation easier for the MTF. Housekeeping staff return with weight tickets that are turned into Environmental Services for tracking purposes.

"Our recycling programs are the foundation of our Sustainability Program; it starts with staff education, leads to a change in mindset for everyone involved in the process, and results in a culture of excellence with a commitment."

– Mr. Bert Crowell, Chief, Environmental Services, Moncrief ACH

WASTE REDUCTION: RECYCLING

MTFs demonstrating significant success in waste reduction consider both clinical and non-clinical waste sources. Clinical sources include patient care rooms, operating rooms, and labs. Non-clinical sources include wastes from the DFAC, warehouse, building maintenance activities, construction/renovation projects, and administrative areas.

Madigan AMC Comprehensive Recycling Program

Madigan AMC has maintained a successful, comprehensive recycling program since 2003. Receptacles for recycling are available in all areas of the hospital. The amount of solid waste generated by each department within the MTF is documented at Madigan AMC. Housekeeping personnel weigh all collected recyclables before the recyclables are picked up by the waste disposal contractor. When developing their recycling program, Madigan AMC included both clinical and non-clinical waste sources.

In FY11The comprehensive recycling program at Madigan AMC saved $55,429 and diverted 346 tons of waste. In FY12, the Madigan AMC recycling program expanded, yielding savings of $72,640.

Typically, MTFs are one of the largest producers of solid waste on their host installation. A strong partnership with Joint Base Lewis McChord (JBLM) has helped Madigan AMC achieve successes in waste reduction and recycling. JBLM has a strong Sustainability Program, and Madigan AMC is an active partner in helping JBLM achieve installation sustainability goals. Madigan AMC sustainability goals are aligned with JBLM sustainability and zero waste goals, and are tracked and reported on a quarterly basis to JBLM.

Labels on recycling collection bins at Madigan AMC help maximize the solid waste diversion rate.

Educational signage helps Madigan AMC staff maximize recycling.

Large receptacles are readily available at Madigan AMC to accommodate high volumes of recyclables.

Madigan AMC currently recycles:

- Paper
- Plastics (including shrink wrap and OR plastics)
- Aluminum
- Batteries
- Metals
- Cardboard
- Printer cartridges
- Wood
- Fluorescent lamps
- Glass
- Blue wrap

WASTE REDUCTION: RECYCLING

The diverse operations of an MTF generate a wide variety of materials that can be recycled. Recycling saves natural resources by replacing virgin materials with reclaimed materials in the manufacturing process and stimulates the development of more environmentally friendly products. The release of greenhouse gases and other pollutants arising from the extraction, movement, and processing of raw materials is also greatly reduced.

Implementing a comprehensive recycling program that includes as many items as possible is a major step towards waste reduction and can significantly reduce waste disposal costs while promoting environmental health.

Recycling collection in the Carl R. Darnall AMC dining facility (right)

Medical plastics collected for recycling at Carl R. Darnall AMC (left)

Cardboard collected for recycling at Carl R. Darnall AMC (right)

Recycling Program Expansion at Carl R. Darnall AMC

Carl R. Darnall AMC works closely with the Fort Hood QRP to maximize the amount and types of materials recycled by the hospital. By participating in the Fort Hood QRP, Carl R. Darnall AMC helps benefit Soldiers through the post Morale, Welfare, and Recreation (MWR) Program. Carl R. Darnall AMC has achieved a recycling rate of 52%, diverting over 263 tons of solid waste per year.

When developing their recycling program, Carl R. Darnall AMC included both clinical and non-clinical waste sources. In FY12, Carl R. Darnall AMC worked diligently to include both new materials, such as medical plastics, crutches, overwraps, and saline bottles from the operating room and new areas, such as break rooms and elevator waiting areas. Carl R. Darnall AMC has increased the volume of cans, plastics, and paper recycled from FY11 to FY12 by 60%.

Receptacles for recycling are available in all areas of the hospital and are accessible to patients, visitors, and staff. Receptacles are located in all break rooms, vending areas, all administrative areas, and the dining facility. Clinical areas where recyclable materials such as medical plastics are collected include operating rooms, Medical Records, and the Sterile Processing department. Recycling receptacles are also located outside all entrances of Carl R. Darnall AMC and on both loading docks.

Types of waste diverted through recycling at Carl R. Darnall AMC include:

- Paper
- Plastics
- Aluminum
- Batteries
- Metals
- Cardboard
- Toner cartridges
- Wood pallets
- Brace shavings
- Books
- Glass
- Fluorescent lamps

WASTE REDUCTION: RECYCLING

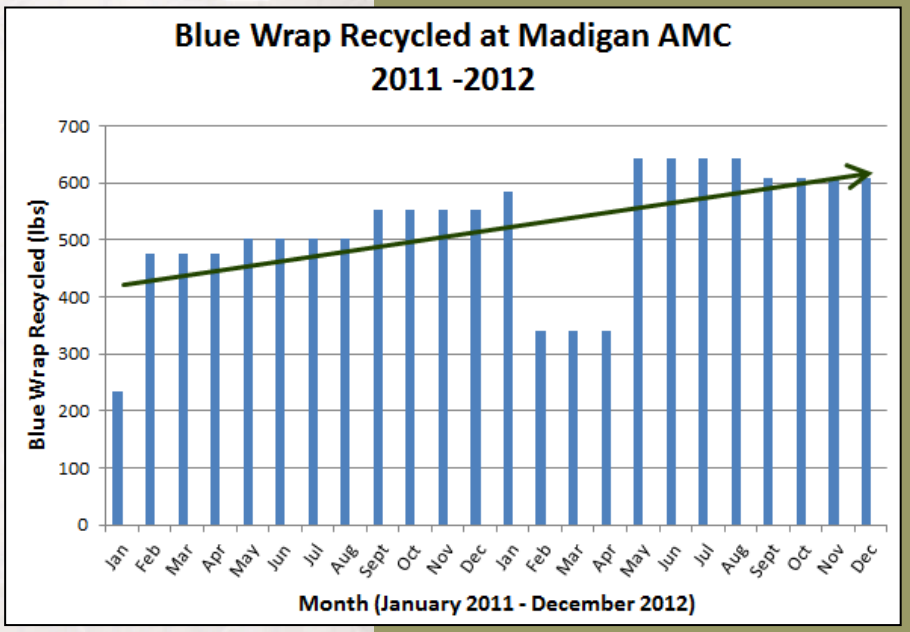
Blue Wrap Recycling

Blue wrap is used to cover instruments for sterilization and cannot be reused for its original purpose due to the nature of the sterilization process. While soiled blue wrap is disposed of as RMW, clean used blue wrap can be collected for recycling. Blue wrap is made from polypropylene #5 plastic, is recyclable, and is a highly sought after commodity in many markets.

Blue wrap collection point in the Madigan AMC OR.

Madigan AMC continues to grow their successful program to recycle clean, used blue wrap from the OR and additional areas within the MTF. From 2011 to 2012, Madigan AMC diverted almost 6 tons of blue wrap from the solid waste stream. The Madigan AMC OR and housekeeping staff work together to recycle approximately 29-35 lbs of blue wrap every day. Madigan AMC housekeeping periodically removes, weighs, and deposits the collected blue wrap in a secure 40-foot container on the loading dock. While the Madigan AMC Sustainability Team established the path by revising the housekeeping contract to cover the new method of handling blue wrap waste, ultimately nurses, contractors, and administrative staff are all important to the success of the program.

Moncrief ACH began recycling blue wrap from the OR in 2012 and diverted over 1 ton of material from the landfill in the first three months of the program. Moncrief ACH staff held special meetings to plan actions supporting the initiative and streamline the collection process. Staff included the Installation QRP in planning discussions, and the QRP helped identify a buyer for the collected material. Collected blue wrap is now diverted to the Installation Recycling Center twice weekly.



Madigan AMC has achieved dramatic blue wrap recycling results, with almost 6 tons recycled since 2011, and their program continues to grow.

WASTE REDUCTION: RECYCLING

HIPAA Document Recycling

The Health Insurance Portability and Accountability Act (HIPAA) privacy regulations require healthcare providers and their business associates to develop and follow procedures that ensure the confidentiality and security of protected health information (PHI). A HIPAA document destruction program incorporating recycling meets all legal requirements while diverting landfill waste, reducing pollutant emissions, and reducing waste disposal costs.

Established, sustainable management practices for paper containing PHI at **Madigan AMC** helped the MTF continue to maximize recycling efforts and minimize solid waste even with increases in patient population. The Madigan AMC recycling program for paper containing PHI increased from 169 tons in FY11 to 258.3 tons in FY12. HIPAA documents are collected for shredding by a contractor, who then recycles the shredded paper. The contractor is certified to handle HIPAA documents and provides quarterly reports documenting the waste diversion to Madigan AMC.

The **Carl R. Darnall AMC** HIPAA document destruction program incorporating recycling reduced the MTF's solid waste stream by 84 tons in 2012. Through a partnership with the Installation QRP, a dedicated Fort Hood Recycling Center employee staffs a recycling trailer adjacent to the MTF loading dock. The QRP employee is certified to handle HIPAA documents, allowing for collection and shredding of all paper on-site, including PHI. All shredded paper is then picked up for recycling by the installation.

Ms. Dorothy Smith, Chief, Environmental Services Branch, and Ms. Jeanine Clark, a Fort Hood Recycling Center employee, relax on shredded paper from Carl R. Darnall AMC slated for recycling.

Workers place roof extension beams for a renovation project at Evans ACH.

Construction and Demolition Waste Recycling at Evans ACH

Green deconstruction is the selective and careful dismantling of buildings to allow materials to be recycled, incorporated in other construction projects, or reused in other capacities. Green deconstruction reduces waste disposal costs, supports resource conservation, decreases landfill demand, and can promote partnerships with both the host installation and surrounding community.

Renovation and expansion at Evans ACH resulted in 500 tons of construction and demolition waste in 2012. Evans ACH not only diverted over 66% of their construction and demolition waste for recycling but also reported that handling and disposal costs per pound for construction and demolition wastes diverted to recycling were half the cost per pound for material disposed as solid waste.

WASTE REDUCTION: REGULATED MEDICAL WASTE

While the primary objective of RMW management is to minimize the risk of disease transmission, MTFs have opportunities to reduce both risk and cost by reducing the amount of RMW generated through improved collection and segregation of RMW. It is important to eliminate items improperly disposed as RMW without inhibiting the ability of hospital staff to dispose of RMW correctly.

A comprehensive RMW reduction program reduces both risk to employees who perform RMW segregation and overall waste disposal costs for the facility. The cost to dispose of RMW can be as much as 10 times more than the cost to dispose of solid waste.

Sustainability initiatives for reducing the volume of RMW generated may include analysis of sources within the hospital, composition inspection, and evaluating the number and placement of RMW receptacles in the hospital.

RMW Reduction at Martin ACH

Martin ACH has transitioned from disposable RMW collections containers to reusable containers, decreasing the total volume of RMW disposed and associated disposal costs. Disposable RMW containers, typically made of cardboard, are disposed as RMW along with the contents of the container, although the containers themselves are not inherently RMW. The reusable plastic RMW containers at Martin ACH are collected by a vendor for proper disposal of contents, sterilized by the vendor at an offsite facility, and returned to the hospital for reuse. Another benefit of reusable RMW containers is reduced worker health and safety risks due to the durability of the reusable containers.

The large sharps containers used in the Martin ACH blood bank are made from recycled plastic.

To allow for high volume collection while also supporting staff safety and reducing RMW disposal costs, large sharps containers are used in the Martin ACH blood bank. While the sharps containers are not reusable, utilization of the large containers reduces upfront costs associated with multiple small volume containers and total disposal costs.

Reusable RMW totes and educational signage help reduce RMW generation at Madigan AMC.

RMW Source Analysis at Madigan AMC

Initiatives to reduce the volume of RMW sent for disposal include RMW source analysis within the hospital, inspection of the composition of RMW sent for disposal, and evaluation of the location and quantity of RMW receptacles in the hospital. Training staff on what is appropriate to place into red bags and sharps containers is another key step to reducing the volume of RMW sent for disposal. Madigan AMC saved $79,848 in 2011 and $15,000 in 2012 in RMW disposal costs through policy review and staff training. Madigan AMC reinforced the training by placing posters near medical waste containers depicting what is and is not required to be disposed of in red bags.

WASTE REDUCTION: Regulated Medical Waste

Bayne-Jones ACH Medical Waste Reduction Initiative

Bayne-Jones ACH has significantly reduced the amount of RMW they generate. Through a combination of MTF policy revision to align with Army and state polices, staff education, new equipment, and improved waste disposal tracking practices, Bayne-Jones ACH reduced RMW disposal by 37% in 1 year (from an average of 5,231 lbs per month in FY10 to 3,484 lbs per month in FY11), resulting in a cost savings of $20,000.

Bayne-Jones ACH Environmental Health and Infection Control departments worked together to revise the Bayne-Jones ACH policy from disposing all patient-related waste as RMW to placing only true RMW in red bags. Staff from Bayne-Jones ACH Infection Control regularly inspect the waste disposal containers to ensure continued understanding of and compliance with waste disposal procedures. Bayne-Jones ACH also coordinated with U.S. Army Public Health Command (USAPHC) for advice and assistance.

In the OR, Bayne-Jones ACH is decreasing RMW volumes through the "white bag" waste segregation program. White bags are used to collect solid waste in the OR, thus diverting non-RMW from the red bags and reducing RMW disposal costs for the MTF. RMW data collected by Bayne-Jones ACH housekeeping staff, allows the MTF to track and document the positive changes in RMW disposal practices.

Red bags are used for collecting RMW, while white bags are designated for collecting solid waste in Bayne-Jones ACH operating rooms.

Reusable Plastic RMW Containers at Dwight D. Eisenhower AMC

To decrease the total weight of RMW sent for disposal, Dwight D. Eisenhower AMC has replaced disposable RMW collection containers with reusable plastic containers. Previously, RMW containers made of cardboard were disposed as RMW along with the contents of the container, although the containers themselves are not inherently RMW. Now, the reusable plastic RMW containers at Dwight D. Eisenhower AMC are collected by a vendor for proper disposal of contents, sterilized by the vendor at an offsite facility, and returned to the hospital for reuse. Another benefit of reusable RMW containers is reduced worker health and safety risks due to the durability of the reusable containers.

Reusable plastic RMW tote utilized at Dwight D. Eisenhower AMC.

WASTE REDUCTION: Regulated Medical Waste

Single Use Device Collection and Remanufacturing

Carl R. Darnall AMC has collected SUDs for remanufacturing by a contractor since 2007. Nearly all applicable areas of Carl R. Darnall AMC collect SUDs for shipment to the contractor to remanufacture. Devices being collected include arthroscopic shavers, suture passers, sequential compression device sleeves, and pulse oximeters. In 2012, SUD remanufacturing saved Carl R. Darnall AMC $344,097 from diverted waste costs and repurchasing the less expensive reprocessed devices instead of brand new devices. The SUD program reduced the Carl R. Darnall AMC medical waste stream by 6,435 lbs in the same timeframe.

The **Evans ACH** SUD program launched in April 2012 and yielded $80,900 in waste diversion and procurement savings for FY12. Concurrently, Evans ACH reduced the volume of RMW by over 60%. The partnership between Clinical Services, Nursing, and Logistics was key to increasing the staff support needed to grow the program and overcoming challenges such as appropriate placement of SUD collection bins. Evans ACH continues to improve and expand their program, and they are on track to meet their goal of $200,000 in savings for FY13.

Womack AMC began collecting SUDs and purchasing remanufactured SUDs for use in the MTF in 2008. In 2012, Womack AMC recycled or diverted 8,046 lbs of SUDs for reprocessing and achieved $505,989 in savings from a combination of waste diversion savings and reduced procurement costs. Thus far in 2013, Womack AMC has recycled or diverted 3,412 lbs of materials for reprocessing and has saved $225,868 from a combination of waste diversion savings and savings from purchasing the reprocessed devices instead of new ones. Since FY08, the Womack AMC SUD program has diverted 31,379 pounds of materials, saving $1,490,939.

Womack AMC collects more SUDs for reprocessing than any other DoD hospital. Since FY08, the Womack AMC SUD program has diverted over 15.5 tons of waste. *Photo courtesy of CPT Jeku Arce, AN, Clinical Instructor, Womack AMC*

Collecting SUDs to be remanufactured is a sustainability best practice that dramatically lowers the cost of RMW disposal by reducing the amount of RMW sent for disposal while freeing up significant resources for the hospital – all without capital investment. The SUD remanufacturing contractor provides, at no cost to the hospital, all materials needed to collect and ship the SUDs for remanufacturing. The contractor then visits the participating MTF regularly to collect, label, package, and ship the collected SUDs to their facility. Collected devices are then remanufactured at the contractor's facility under strict regulation by the FDA. All remanufactured SUDs are certified to be "substantially equivalent" to the original equipment device. Devices that cannot be remanufactured are disassembled by the contractor down to their component parts and recycled.

WASTE REDUCTION: HAZARDOUS WASTE

Hazardous waste is generated by a variety of MTF activities and requires resources for proper handling, storage, recordkeeping, disposal, tracking, and reporting. MTFs are working to minimize hazardous waste generation through identification of best management practices, less toxic options, non-hazardous alternatives, and methods for managing hazardous materials to reduce waste generation.

Laboratory Chemical Recycling

MTFs have the ability to reprocess hazardous chemicals for reuse by utilizing laboratory chemical recycling units, creating cost savings through both reduced purchasing and reduced disposal costs of the spent chemicals. Reusing chemicals also reduces the potential for exposure and emissions arising from discarded chemicals. The primary chemicals for which reprocessing is an option are: formalin and xylene, used to preserve tissue samples in hospital laboratories; and alcohol, used for sterilization and disinfection.

The chemical recycler units for alcohol and xylene at **Carl R. Darnall AMC** save the MTF approximately $30,000 per year in purchasing and disposal avoidance while reducing potential exposure to and emissions from storing used chemicals prior to disposal.

Solvent recycling unit at Tripler AMC.

Tripler AMC distills and reuses 435 gallons of solvents annually, including xylene, alcohol, and formalin. The solvent recycling system provides the MTF with an annual savings of $14,000 from reduced purchase costs and $182,826 from reduced disposal costs.

At **Madigan AMC**, chemical ethanol, formalin, and xylene are recycled in the labs. The alcohol/xylene recycling unit uses a distillation process that produces alcohol that is 97% pure after being processed. Madigan realizes an average annual savings in excess of $53,000 from reprocessing formalin, xylene, and ethanol.

Formalin recycler at Madigan AMC.

Alcohol and xylene are also recycled at **Dwight D. Eisenhower AMC**. Prior to acquisition of their chemical recycling unit, Dwight D. Eisenhower AMC was generating 5 gallons of waste xylene per week; now they generate only 5 gallons of waste xylene every 3 to 4 months.

Alcohol and xylene recyclers in the Carl R. Darnall AMC lab.

WASTE REDUCTION: HAZARDOUS WASTE

Vial Crusher Systems

Vial crushers and slide crushers reduce the amount of hazardous waste disposed, reduce waste disposal costs, reduce labor hours needed to process and dispose of used vials or slides, and increase ease of compliance with HIPAA requirements and environmental laws.

Madigan AMC, **Bayne-Jones ACH**, and **Tripler AMC** use vial crusher systems to destroy vials and diagnostic specimen containers, automatically separating the hazardous liquid contents from the solid waste. The liquid remains in the hazardous waste stream, while the crushed vials or slides are routed to the solid waste or recycling stream.

Utilization of the vial crusher allows Clinical Laboratory Technicians to focus their time on laboratory procedures rather than manually destroying patient information, as patient information is destroyed along with the vial. A vial/slide crusher also greatly reduces concerns about employee ergonomic issues and hazardous material exposure associated with manually opening each vial to pour out the contents.

Vial crusher system at Madigan AMC.

Automated laboratory equipment at William Beaumont AMC.

Automated Laboratory Equipment at William Beaumont AMC

The William Beaumont AMC laboratory has a fully automated chemistry section. The mostly hands-free, automated system helps optimize chemical use while reducing exposure risk for staff. In addition, the automated system significantly reduces paper consumption and reduces laboratory staffing requirements by two full-time employees.

WASTE REDUCTION: HAZARDOUS WASTE

Hydrogen Peroxide Disinfection Systems at Martin ACH

Martin ACH utilizes portable hydrogen peroxide units for high-level disinfection of ultrasound transducers, eliminating the need for orthophthaldehyde. The hydrogen peroxide disinfection units effectively reduce the risk of hospital-acquired infections and improve staff safety while reducing hazardous waste generation and operating costs.

Eight hydrogen peroxide disinfection units are utilized throughout Martin ACH.

The hydrogen peroxide disinfection units also increase staff efficiency by reducing the time required to disinfect each transducer. Prior to acquisition of the hydrogen peroxide disinfection units, staff at Martin ACH had to immerse the transducers in hazardous, high-level disinfection chemicals for 20 minutes. The hydrogen peroxide units dramatically speed up disinfection time to only 7 minutes per transducer, expediting patient care.

Hydrogen peroxide disinfection saves Martin ACH staff time and reduces exposure risks by eliminating the need to manually mix and test the hazardous orthophthaldehyde solution under fume hoods prior to disinfecting the transducers. This eases compliance with Joint Commission records requirements and reduces the potential for user error. Following the transition to hydrogen peroxide disinfection for transducers, hazardous chemical purchasing at Martin ACH has declined, saving money. Following the transition, Martin ACH staff feedback on the hydrogen peroxide disinfection units has been overwhelmingly positive, especially from staff with chemical sensitivities or respiratory problems.

The only waste by-products of hydrogen peroxide disinfection are water and oxygen, which eliminates the need for chemical by-product neutralization and staff risks associated with by-product disposal. Hydrogen peroxide disinfection also reduces the need for personal protective equipment (PPE), lowering cost per case expenditures.

The hydrogen peroxide disinfection units are fully enclosed and portable, reducing ventilation requirements while maximizing operational space. These features also allow the units to be placed in treatment rooms with the ultrasound machine and the patient; orthophthaldehyde disinfection systems require a separate disinfection room due to the hazardous chemicals used.

Over time, hydrogen peroxide disinfection may actually increase the lifespan and durability of the ultrasound probes. Orthophthaldehyde liquid disinfectants can stain or even damage the transducer membrane, increasing the potential for malfunction or breakage.

U.S. Army Public Health Command RMW and Hazardous Waste Site Assistance Visits

U. S. Army Public Health Command (USAPHC) offers RMW and hazardous waste site assistance visits (SAVs) to MTFs. This management assistance is typically provided when a new or acting Environmental Science Officer (ESEO) is assigned to an MTF or as otherwise requested by the MTF. During the SAV, USAPHC personnel identify opportunities to reduce waste generation and waste disposal. Following the SAV, USAPHC issues a report to the MTF detailing identified opportunities along with estimated cost savings. USAPHC waste reduction recommendations, such as laboratory chemical recycling and single-use device collection, align with and support the MEDCOM Sustainability program goals.

The properties that make pharmaceuticals useful are the same properties that make them hazardous. Disposal of pharmaceuticals can present both occupational and environmental hazards.

Pharmaceutical waste is not one single waste stream but several distinct waste streams, including hazardous waste, creating a waste management challenge.

Many MTFs are decreasing the amount of pharmaceuticals in their hazardous waste streams through use of reverse distribution systems or guaranteed returns program for unused or expired pharmaceuticals. Utilizing a reverse distribution program for appropriate pharmaceuticals can significantly reduce hazardous waste streams and disposal costs.

Pharmaceutical Waste Reduction and Increased Efficiency at Tripler AMC

The Tripler AMC project to reduce disposal costs associated with excess bulk pharmaceuticals resulted in both pharmaceutical waste reduction and significant increases to staff efficiency, saving the MTF $711,700 in 2012.

Tripler AMC applied LEAN Six Sigma principles during the review process of existing bulk pharmaceutical ordering and distribution practices. The project goal was to reduce their pharmaceutical disposal costs by $34,709 per year through reductions in the volume of excess or expired bulk pharmaceutical medications returned and removed from bulk drug orders.

The practice review process enabled Tripler AMC to align the correct staff to perform the evaluated tasks. Nursing staff from various outpatient clinics were replaced with Pharmaceutical Technician staff to conduct the associated tasks, such as picking up medications, conducting inventory, and checking inventory for expired medications. Project evaluation results indicated that Outpatient Nursing Staff took an average of 59.613 minutes to pick up medications, while a single Pharmaceutical Technician took approximately 5.785 minutes. This staff realignment also helped Outpatient Nursing Staff spend more of their time providing direct patient care.

By reducing the pharmaceutical medications returned and removed from bulk drug orders, the Tripler AMC evaluation exceeded the original savings goal by more than 20 fold. The project also reduced the amount of time it takes to restock items in the Pharmacy of by over 34 minutes, for a cost avoidance of $2,700 per year.

Tripler AMC pharmacists fill and refill an average of 2,000 prescriptions a day for all service members, retirees and family members on Oahu. *Photo by Les Ozawa, Tripler AMC Public Affairs*

GREENING MEDCOM OPERATING ROOMS

When implementing sustainable healthcare, the logical place to start is with the departments that have the largest environmental footprints, i.e., the highest costs, greatest inefficiencies, and/or largest volumes of waste. The OR is one of the largest users of supplies within the hospital as well as one of the largest producers of waste.

Consider the following:

- Approximately 80% of waste from an operation is generated before the patient ever enters the room.
- Nearly 30% of OR waste is plastic packaging, and many products are double wrapped in plastic.
- 19% of surgical waste is clean, used blue wrap. The blue wrap used to cover instruments for sterilization cannot be reused due to the nature of the sterilization process. Made of polypropylene #5, blue wrap is a highly sought after commodity for recycling.
- Up to 85% of nonhazardous hospital waste is disposed as RMW.

Thus, the OR is a prime target for greening efforts. Greening the OR reduces waste and optimizes resource use, while safeguarding hospital staff.

Moncrief Army Community Hospital

In late 2012, Moncrief ACH began greening their operating rooms. Their efforts focus on recycling blue wrap; recycling medial plastics, including overwraps and saline bottles; utilizing occupancy sensors for lighting to reduce energy use in unoccupied ORs; and switching to reusable surgical gowns and towels. Although their OR experienced a complete turnover of personnel, Moncrief recycled more than 1 ton of blue wrap from the ORs in the first year of their Green OR campaign.

Womack Army Medical Center

A reusable surgical pack at Womack AMC.
Photo courtesy of CPT Jeku Arce, AN, Clinical Instructor, Womack AMC.

To green their OR, Womack relies on reusable surgical packs, recycling, and collecting SUDs for remanufacturing.

Prepackaged surgical packs often contain items that are not used; eliminating unnecessary, unused items reduces the cost of the pack and the cost of disposing of these items. In reusable surgical packs, many traditionally disposable items are replaced with items that are approved for reprocessing through an FDA-certified contractor. Reusable surgical packs reduce the amount of RMW and solid waste sent for disposal and thus provides cost savings. To further reduce waste, reusable surgical packs are delivered to Womack in reusable and easily recognizable green plastic containers instead of in cardboard containers that must also be disposed of.

The Womack OR is also recycling cardboard and medical plastics (rigid trays and saline bottles).

Switching to reusable surgical packs has resulted in a total cost savings of $95,276 from January 2012 through June 2013. Because the reusable surgical packs are delivered in reusable containers, cardboard avoidance amounted to more than 7 tons during this time period.

GREENING MEDCOM OPERATING ROOMS

Surgical Waste Management

Several MTFs, including Bayne-Jones ACH, Dwight D. Eisenhower AMC, Madigan AMC, William Beaumont AMC, and Womack AMC, utilize surgical waste management systems. The fully closed all-in-one unit collects and disposes of surgical waste without operator assistance. This system minimizes risk to the OR staff, preventing contact with infectious fluids and minimizing surgical plumes while eliminating the need for canister disposal.

Madigan AMC began utilizing a surgical waste management system in December 2009 and has since reduced their RMW volume by 3,120 gallons annually, saving approximately $13,700 per year. Madigan AMC also reports increased operational efficiency as well as product cost avoidance by eliminating the need to replenish canister lids.

Surgical waste management system utilized in the Bayne-Jones ACH OR.

Medical Plastics Recycling

A significant component of greening MEDCOM operating rooms is recycling medical plastics. Medical plastics found in the OR include overwraps, pour bottles, plastic trays, and packaging. Most medical plastics never come into direct contact with patients and therefore can be diverted from the solid waste or RMW stream to be recycled. Although considered specialty material within the MTF, medical plastics can be recycled as readily as traditional recyclable plastics such as milk jugs and water bottles.

Segregating recyclable waste within the OR and establishing recycling collection points for pickup by housekeeping, such as in decontamination rooms, helps maximize the recycling initiative. Posting detailed educational signage helps ensure proper segregation of recyclables and staff compliance with the recycling program. Support from the OR staff and housekeeping staff is needed to succeed in recycling medical plastics from the OR. Once established, a medical plastics recycling program will reduce OR waste volume and waste disposal costs.

Carl R. Darnall AMC, Madigan AMC, and Evans ACH all recycle medical plastics from the OR.

GREENING MEDCOM OPERATING ROOMS

A focused program to green the OR can have a significant impact on the MTF's overall Sustainability Program and result in considerable cost savings. The OR is a large user of materials and also a large generator of waste; initiatives to green the OR support waste reduction and resource optimization, while safeguarding hospital staff.

Greening the OR at Madigan AMC

Madigan AMC has implemented multiple initiatives in the OR supporting waste reduction, environmentally preferable purchasing, staff safety, and cost savings. The OR Chief, Environmental Health Services, and the Sustainability Team worked together to review existing internal policies and identify RMW reduction opportunities. Through this partnership, policies were revised to allow clear bags in the OR suites to capture solid waste and recycling.

Right-sized bins fit the limited space available, enabling recycling in Madigan AMC operating rooms.

Madigan AMC ensures that all OR set-up and pre-incision, non-hazardous waste goes into either a solid waste or recycling container, and that non-infectious waste is segregated from infectious waste during and after surgical procedures. To measure program success, Madigan AMC tracks all waste and recycling originating in the OR. Green OR savings at Madigan AMC reduced the amount of RMW sent for disposal by 151,546 lbs over three years and saved almost $80,000. During this same period, 7,521 lbs of operating room plastics and 6,460 lbs of blue wrap were recycled.

In the OR, Madigan AMC recycles blue wrap, plastics, and cardboard. Medical plastics recycled in the OR include overwraps, rigid trays, saline bottles, tissue sealing devices, staplers, and plasma wands. Recycling containers are located in all decontamination rooms for collection of plastics and cardboard; blue wrap is collected in the case cart room.

Madigan AMC has replaced disposable items with reusable items in OR kits where it has been demonstrated safe and economically viable. Madigan AMC utilizes reusable surgical gowns, surgical towels, basins, and patient warming devices. Reusable surgical textiles are cleaned off-site by a contractor, and repair and sterilization of those same textiles is completed at Madigan AMC. To decrease blue wrap waste, Madigan AMC has purchased reusable hard cases. Reusable metal instrument trays and reusable tote cartons are utilized to decrease waste and increase product durability.

Educational signage helps Madigan AMC staff understand what to recycle in the OR.

Prepackaged surgical packs often contain items that are not used; eliminating unnecessary, unused items reduces the cost of the pack and the cost of disposing of these items. Madigan AMC OR staff have worked with surgical pack suppliers to customize and reformulate the packs to meet the requirements of surgical procedures while eliminating unnecessary materials and, ultimately, waste. Blue hand towels not utilized from the packs are now diverted from solid waste. In 2011, 4,120 lbs of towels were laundered and reused within the facility for projects such as painting, machinery repair, and medical equipment repair.

The Madigan AMC Sustainability Team made significant advances in greening the OR by obtaining leadership support and working with multiple MTF departments. All clinical staff are engaged in the Madigan AMC Sustainability Program through leadership, training, and education. To encourage program support, the Madigan AMC Sustainability Team regularly communicates information on waste reduction and cost savings from OR greening initiatives to all OR staff.

WATER CONSERVATION

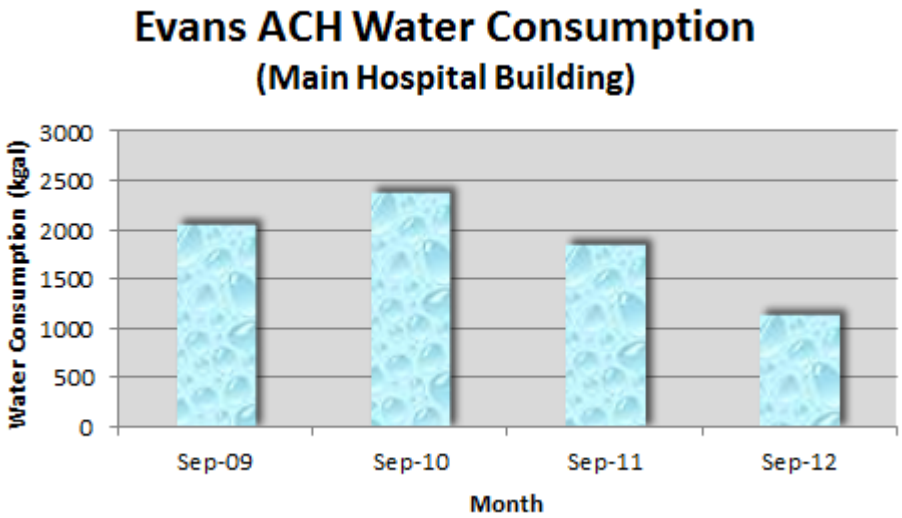
Water conservation at MTFs helps manage, optimize, and ultimately reduce water usage and operational costs while conserving a critical resource need that is scarce in many areas. Furthermore, water conservation efforts will yield cost savings from reduced sanitary sewer fees.

Water metering and data tracking allow an MTF to better analyze and react to its water use by implementing appropriate water conservation initiatives. It is imperative for MTFs to have accurate water tracking data to identify underperforming areas, verify the results of conservation measures, and prioritize investment opportunities.

Water Fixture Upgrades at Evans ACH

Evans ACH realized significant cost and water savings by replacing standard plumbing fixtures with water efficient fixtures. Evans ACH retrofitted various water fixtures throughout the MTF in 2010, including lavatories, faucets, urinals, and showers. The fixture upgrade reduced annual water consumption by the MTF by 8,441,940 gallons annually, equating to a total savings of $91,174 in water and sewerage costs for 2011 - 2012.

Through the fixture upgrade, Evans ACH was able to not only reduce water and sewerage costs but also conserve resources during a time of severe area drought. The MTF also surpassed their water use reduction goal by over 7%, with a 40% reduction in water use documented by Fort Carson DPW from 2010 to 2012. The MTF projects to save $65,000 in 2013 through reduced water consumption and additional water use best management practices.



Water use data comparison for Evans ACH for the same month over four consecutive years demonstrates the trend of decreased water consumption at the MTF following upgrades to low-flow fixtures in 2010.

U.S. Army Public Health Command Water Conservation Site Assistance Visits

USAPHC offers water conservation site assistance visits (SAVs) to MTFs. The purpose of the SAV is to reduce water consumption without compromising public health and safety or the performance of equipment and fixtures.

The assistance is typically provided when the MTF has at least one year of water use data, or as requested by the MTF. During the SAV, baseline water use is evaluated and opportunities for reducing potable water consumption are identified.

Following the SAV, USAPHC issues a report to the MTF detailing water consumption opportunities as well as estimated cost savings for the recommended projects. USAPHC water use reduction recommendations, such as water efficient fixtures, landscaping, and equipment, align with and support MEDCOM Sustainability program goals.

WATER CONSERVATION

Fixture Upgrades at Moncrief ACH

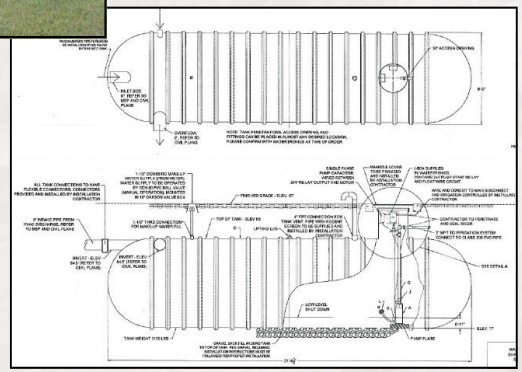
Moncrief ACH has reduced water consumption, water usage fees, and sewerage fees through targeted fixture replacements, repairs, and upgrades. The MTF replaced the water-sealed waste anesthetic gas disposal pumps for a savings of 73,000 gallons annually. Moncrief ACH has also upgraded existing toilets with low-flow fixtures as repairs and replacements are needed, saving 126,000 gallons annually.

Low-flow faucets have helped Moncrief ACH conserve water.

Irrigation Water Conservation at Winn ACH

In 2013, Winn ACH installed several shallow wells around facility grounds to supply nonpotable water for landscape irrigation. This water conservation effort eliminated the need to use any potable water supplied by Fort Stewart for irrigating the MTF landscape.

With the installation of nonpotable water wells, Winn ACH no longer uses potable water for landscape irrigation.



Future water conservation plans at Winn ACH include capturing HVAC system condensate and adding this water to the water used for irrigation.

WATER CONSERVATION

Water Efficiency at MTFs

- Womack AMC has an automated washer-disinfector system for instrument disinfection, designed to automate and improve throughput of multiple soiled washer-disinfectors. In addition to optimizing process water use, this system also conserves floor space and minimizes the need for staff intervention.
- In the Reynolds ACH DFAC, the food tray cleaning trough has a foot pedal installed to provide running water only when needed for cleaning. Utilizing the foot pedal eliminates running water when DFAC staff are not actively cleaning trays.
- Winn ACH is installing aerators in sinks throughout the facility, which will result in an estimated savings of $5,000 per year.
- Over 75% of the toilets, urinals, faucets, and showerheads installed at William Beaumont AMC are water-efficient.

Automated washer-disinfector system for instrument disinfection at Womack AMC.

Innovative Water Conservation at Madigan AMC

Madigan AMC has developed an innovative, holistic solution to water conservation that is integrated into the hospital landscape. Non-potable well water is used by the cooling towers and later reused for irrigation applications.

The Madigan AMC cooling towers use non-potable water, taken from the discharge of a groundwater pump and treat system being operated on a U.S. EPA National Priority List site located on Joint-Base Lewis-McChord.

The water is taken from the discharge of a groundwater pump-and-treat system being operated on a U.S. Environmental Protection Agency National Priority List site located on Joint Base Lewis-McChord. This water is 55°F when it enters the hospital cooling towers, and is 85°F when discharged to an onsite detention pond. Aerator fountains in the pond are used to lower the temperature of the collected system discharge water.

The detention pond ultimately discharges to a nearby creek. Algae growth, which was an ongoing maintenance issue caused by the warm temperature of the discharge water, has been mitigated by adding fish to the pond. This innovative approach to water management is saving Madigan AMC the cost of using potable water in the hospital cooling towers while contributing to the aesthetics of the hospital grounds.

ENERGY CONSERVATION

As energy prices rise, reducing energy use becomes increasingly important. Investments in energy efficiency and renewable energy support the energy reliability necessary to sustain round-the-clock care. Energy saving measures also reduce utility costs and may extend equipment life, which reduce MEDCOM's operational costs.

Energy Conservation at Bayne-Jones ACH

Bayne-Jones ACH completed a facility-wide upgrade to energy-efficient T8 lighting in 2012 to reduce lighting power density and energy costs. Lighting ballasts were also replaced as needed throughout the MTF as part of the upgrade, and low-mercury lamps were installed. Used lamps are recycled through a partnership with the Fort Polk QRP.

A 25-watt T8 consumes almost 27% less energy than a 34-watt T12 bulb. The light output of T8 bulbs fades more slowly over time than that of T12 bulbs. Furthermore, T8 bulbs contain less mercury than T12 bulbs.

To further reduce energy consumption, occupancy sensors were installed in appropriate areas of the hospital in 2012, including bathrooms and administrative areas. Lighting in the MTF parking lot is solar-powered, and many of the vending machines at Bayne-Jones ACH are equipped with motion sensors.

The Bayne-Jones ACH Facilities department recently conducted a heating, ventilation, and air conditioning (HVAC) air flow monitoring study with outcomes used to optimize the schedule for filter replacement, reducing the amount of used filters disposed as waste and funds spent to replace filters. The MTF's next step will be to install flow monitors at filter points in non-critical areas to support filter replacements on an as-needed basis.

Behavior-Based Energy Conservation at Madigan AMC

In 2012, Madigan AMC initiated a behavior-based program to conserve energy hospital-wide by appointing staff as energy monitors in all clinical and non-clinical areas. The energy monitors' responsibility is to ensure lights and other non-utilized sources of energy consumption, such as televisions, are shut off at the end of the work day. This program is enforced by use of a standardized security checklist and is monitored during Environment of Care tours through the hospital.

ENERGY CONSERVATION

Energy conservation efforts at MEDCOM include an advanced metering initiative, renewable energy master plans, and the Continuous Commissioning (CCx) program. The MEDCOM Sustainability Program supports the energy use reduction goals of Executive Orders 13423 and 13514.

MTFs Conserve Energy

- Since 2002, **Womack AMC** Facility staff track energy use with the EnergyStar Portfolio Manager program. Currently, Womack AMC has a ranking of 73%. Womack AMC realizes savings of $143,000 per year from lighting system upgrades and $106,000 per year from variable speed drive retrofits. Timers installed on the lighting in the interstitial spaces at Womack AMC yield additional energy savings.
- **Dwight D. Eisenhower AMC** has installed a tankless, or instantaneous, water heater that heats water directly instead of storing hot water in a tank. This saves water by eliminating the need to run cold water until hot water reaches the faucet from the storage tank. The system also saves energy by eliminating the standby heat losses of a traditional storage water heater.
- Solar shades are installed in the main entryway at **Reynolds ACH** to reduce heat gain inside the MTF and thus reduces energy usage and the load on the air conditioning systems.
- Night setbacks are used at **Irwin ACH** and **Dwight D. Eisenhower AMC**, adjusting room temperatures in appropriate areas to reduce heating and cooling demands.
- **Bayne-Jones ACH** utilizes energy-efficient vending machines equipped with motion sensors.

Solar shades at Reynolds ACH.

Energy-efficient vending machine at Bayne-Jones ACH.

"Recycling and turning off the lights are so easy, we should want to do this; it's no more than what we would do at home."

– Ms. Dorothy Smith, Chief, Environmental Services and Sustainability Team Leader, Carl R. Darnall AMC

Energy Conservation

Winn Army Community Hospital

Winn ACH, located on Fort Stewart, GA, has set a goal of being a net zero energy medical treatment facility by 2020.

Metering & Sub-Metering

Like many MTFs, Winn ACH at Fort Stewart, Georgia, used to pay for electricity based on total square footage. In an effort to reduce energy consumption by the hospital and clinics, the MTF has focused on installation of electricity meters and sub-meters. The meters and sub-meters have provided solid baseline data on energy use within the MTF. Prior to installation of the meters, facility managers at Winn did not know how much energy they were using, and had no way to judge if energy conservation initiatives were effective.

Meters and sub-meters were installed for the hospital and all clinics, allowing the Winn Facilities staff to document the amount of energy actually being used. The main meter provides data for the entire facility, while the sub-meters break down the energy use by departments. The sub-meters allow the Winn Facilities staff to focus on educating "energy hogs" to reduce energy consumption.

Based on metering reports and the cost per kilowatt hour of electricity, Winn could save a substantial amount of money by being billed for the actual amount of energy used, instead of being billed a flat rate based on the size of the facility.

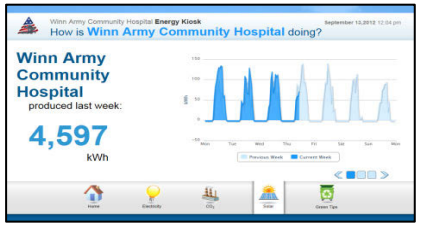
In the first month that the installation began charging Winn only for the electricity actually used, the savings was enough to pay for all the energy used in a month by a new 38,298 ft^2 clinic that had come online.

"By reducing the energy consumption of the facility, the Winn Sustainability Team has reduced total operating costs for Winn ACH, directly supporting mission readiness."

– Mr. Brent Rose, Facility Manager, Winn Army Community Hospital

Solar Power

In August 2011, Winn ACH completed the installation of a rooftop solar photovoltaic (PV) system. To date, the PV system at Winn has yielded a savings of $26,555, equivalent to about a 2% annual energy reduction. The PV system generates enough energy to run the lighting load of the outpatient clinics attached to the hospital. Based on the success of the existing PV system, Winn is planning to install a 100 kilowatt PV system on the roof of the Eye Clinic. The new PV system should provide enough energy to allow the Eye Clinic to also be run off the grid.



The solar module system includes a dashboard that displays patterns of energy consumption at Winn ACH, which will help the facility target areas for further energy conservation efforts.

Other energy conservation measures at Winn include LED exterior lighting, motion sensors, daylight sensors, and individual thermostats in rooms.

Winn ACH has also installed occupancy sensors in over 80% of the appropriate areas of the MTF, including operating rooms and patient examination rooms. Occupancy sensors in the OR alone are estimated to save over $9,000 per year.

ENERGY CONSERVATION

Madigan AMC

To reduce energy use, Madigan AMC has installed energy efficiency lighting throughout the MTF and also has implemented energy efficiency retrofits, energy-saving techniques, and building envelope improvements. In 2007, Madigan AMC was the first MEDCOM facility to earn the Energy Star Award. Madigan AMC currently has an Energy Star rating of 90%.

A one-time facility-wide bulb and ballast replacement from T12 to T8 lighting has saved Madigan AMC 2,432,388 kilowatt hours per year since completion, translating to over $97,000 in energy cost savings per year. Madigan AMC resets space temperatures based on occupancy and integrates daylighting strategies to decrease building energy demand.

The installation of high-efficiency motors on the variable speed drives saves 1,076,653 kilowatt hours per year, reducing energy costs by over $43,000 per year.

Madigan AMC has installed occupancy sensors for lighting in the operating rooms and has reprogrammed the HVAC system to reduce the number of air exchanges when the ORs are unoccupied. Madigan AMC also utilizes light-emitting diode (LED) surgical lighting to reduce energy use and increase thermal comfort.

Evans ACH

The Evans ACH Facilities department has championed multiple initiatives supporting energy use reduction at the MTF. A comprehensive retrofit of service level lighting to high efficiency lighting resulted in an annual electrical energy cost savings of $69,048. Hot water tanks have been replaced with instantaneous, or on-demand, water heaters, netting Evans ACH an annual natural gas savings of $16,165. Additionally, occupancy sensors for lighting are installed in appropriate areas of the MTF, saving $2,787 per year.

Variable frequency drives at Evans ACH.

Variable frequency drives for the Evans ACH heating, ventilation, and air conditioning (HVAC) system adjust the fan and pump applications of the system to operate at a variable-speed (vs. fixed-speed), resulting in energy use reduction.

In total, Evans ACH has realized an energy savings of $88,000 per year.

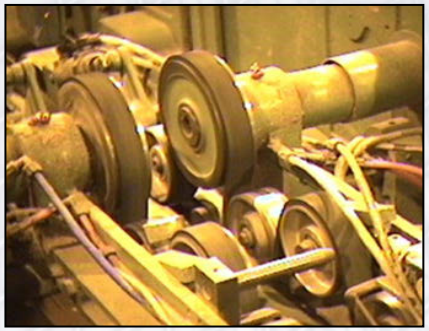
On-demand water heating system at Evans ACH.

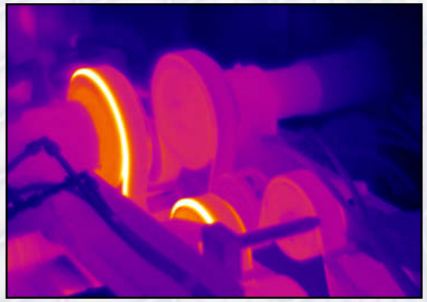
"It's an exciting challenge to see what can be done with facilities to make them more sustainable, and even more exciting to see sustainable changes come to fruition."

– Mr. Rashad Rajab, Chief, Facility Management, Evans ACH

ENERGY CONSERVATION

Reliability Centered Maintenance at Martin ACH





RCM processes, procedures, and practices help identify mechanical and electrical equipment issues before failures occur, such as pulley misalignment detected through an infrared camera.

Martin ACH has implemented Reliability Centered Maintenance (RCM) to support optimal availability for all mechanical and electrical equipment and to minimize system failures. RCM utilizes non-intrusive condition-based monitoring techniques, such as ultrasound, vibration analysis, and infrared cameras, to identify defects as early as possible to enable planned repairs. Through preventative maintenance, the RCM program provides systems maintenance cost savings while improving equipment performance, prolonging equipment lifespans, and minimizing the impact of systems maintenance to patient care.

Martin ACH Facilities Management Branch staff are trained on a variety of equipment testing techniques. Instead of relying only on traditional time-based maintenance schedules, equipment repairs and replacements at Martin ACH are made only when an operational defect is found, reducing costs. RCM also helps Martin ACH identify when equipment has been improperly installed, allowing the equipment to be repaired while it is still under warranty and at no cost to the hospital.

Early detection of non-optimal equipment performance and potential equipment malfunctions at Martin ACH has allowed system downtime and repairs to be scheduled in advance of equipment failure, avoiding increased costs associated with emergency maintenance. New parts are ordered prior to failure of the old parts, saving money on expedited shipping and increasing available storage space. Maintenance is also scheduled during off hours, reducing impact to patient care at Martin ACH.

By implementing RCM, Martin ACH has realized significant savings by ensuring that all equipment is running defect-free. Savings resulting from the RCM program at Martin ACH is estimated at $150,000 to $250,000 in one year. Since the RCM program was initiated at Martin ACH in February 2012, there have been no unscheduled failures of electrical or mechanical equipment, and an estimated 15 to 20 critical equipment failures have been avoided.

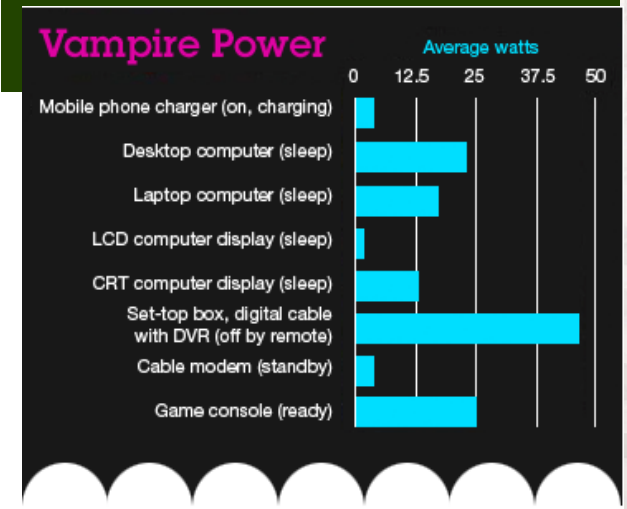
"Sustainability is an untapped gold mine. With the budget constraints we're facing, sustainability provides us with a real opportunity to do more with less and shed bad habits as we prepare for transition to our new hospital facility."

— Mr. Chris Flowers, Chief, Facility Management Branch, Martin Army Community Hospital

ENERGY CONSERVATION

Personal Appliance Consolidation at Martin ACH

Martin ACH Facility Management Branch is implementing a policy to consolidate small appliances and is conducting an ongoing survey for "vampire" power sources to reduce energy consumption. Reducing the overall number of personal electrical devices, such as coffee pots, printers, and personal refrigerators, and consolidating devices where appropriate will reduce energy use and energy costs.



Source: Standby Power, Lawrence Berkeley National Laboratory, International Energy Agency (IEA)

Energy Conservation at Moncrief ACH

Moncrief ACH has implemented multiple energy conservation projects supporting energy use reduction, optimized system performance, and preventative system maintenance.

A Continuous Commissioning program was implemented at Moncrief ACH in 2008. The program involves perpetual monitoring of the building's energy systems and includes periodic equipment checks during the life of the building to ensure continued optimum performance. The MTF also installed steam to hot water heat exchangers in 2008. The MTF replaced pneumatic variable air volume (VAV) controls with electronic controls and also implemented night setbacks on selected VAV boxes in 2010.

From May 2008 to June 2012, energy conservation initiatives saved Moncrief ACH 4,795,168 kWh of electricity and 9,900 MCF of natural gas with a total cost savings of $307,745. The MTF has recently installed occupancy sensors for lighting to reduce energy use in unoccupied operating rooms and is evaluating other potential areas of the facility where the sensors will provide additional benefit.

Pacific Northwest National Laboratory data shows that smart strips installed and used correctly at workstations reduce energy consumption by 30%. Smart strips installed on copiers reduce energy consumption by 55%.

Plugged-in appliances and electronics use energy even if they're turned off. Smart strips help stop the idle current drawn from outlets when electronics aren't in use. This saves you money by reducing your electricity consumption and conserves energy.

Smart Strips at Womack AMC

Womack AMC is managing a pilot program to install 100 smart strips throughout hospital administrative areas. Designed to replace traditional power strips, the smart strips are programmed to power down at night, eliminating energy consumption caused by devices continuing to draw power when in standby mode. Items not required to stay powered overnight, such as copy machines, can be plugged into the designated outlets and are powered down automatically, reducing energy costs for the MTF.

The smart strips are being installed in partnership with Fort Bragg DPW. All smart strips locations were approved by Womack AMC's Safety department, and the plugs align with the established color-coded outlet identification system. Smart plugs are not installed in patient care areas.

WASTE TO ENERGY

Waste to Energy at Tripler AMC

The waste management practices at Tripler AMC waste divert both solid waste and pharmaceutical waste from on-island landfills to a final destination at the Hawaiian Electric Company's Waste Energy Recovery Plant, supporting an Oahu waste-to-energy initiative. The waste-to-energy plant has been in operation since 1990 and processes over 600,000 tons of waste annually to produce 7% of the island's electricity.

Solid wastes that are not disposed of or managed on Oahu must be shipped off the island, significantly increasing waste disposal costs. Tripler AMC generated 1,417 tons of solid waste offered for the on-island waste-to-energy initiative in 2012, supporting the community's waste diversion program and diverting the waste from on-island landfills.

In 2012, Tripler AMC partnered with the Department of Logistics Agency, Hawaii District Headquarters, and the City and County of Honolulu to identify opportunities to eliminate risks associated with transport and treatment of non-hazardous pharmaceutical waste overseas to the continental United States. The clinical and pharmacy staff at Tripler AMC worked together to establish pharmaceutical waste segregation practices supporting the initiative. This partnership led to the diversion of 6.5 tons of pharmaceutical waste in 2012 for conversion to energy, providing additional community benefit while also reducing pharmaceutical waste shipping and handling costs for the MTF.

Waste management at Tripler AMC supports the Oahu waste-to-energy initiative.

According to the U.S. Environmental Protection Agency, about one third of solid waste generated in the United States is recycled annually. While not producing this waste in the first place is best, recycling is preferred over any method of disposal. The majority of solid waste that is not recycled is typically sent to landfills for disposal.

As an alternative, solid waste can be directly combusted in waste-to-energy facilities to generate electricity. Because no new fuel sources are used other than the waste that would otherwise be sent to landfills, solid waste is often considered a renewable power source. Although solid waste consists mainly of renewable resources such as food, paper, and wood products, it also includes nonrenewable materials derived from fossil fuels, such as tires and plastics.

At the waste-to-energy plant, the solid waste is unloaded from collection trucks and shredded or processed to ease handling. Recyclable materials are separated out, and the remaining waste is fed into a combustion chamber to be burned. The heat released from burning the solid waste is used to produce steam, which turns a steam turbine to generate electricity.

There are about 87 waste-to-energy plants currently operating in the U.S., generating approximately 2,500 megawatts, or about 0.3 percent of total national power generation.

http://www.epa.gov/cleanenergy/energy-and-you/affect/municipal-sw.html

BUILT ENVIRONMENT

Hospital physical environments are incredibly resource intensive and also can create stress for patients, their families, and hospital staff due to noise, poor signage, and confusing building layout. Due to growing knowledge and awareness of these issues, hospital buildings are increasingly influenced by research linking the physical environment to patient outcomes and patient and staff safety. Healing environments require an integration of a healthy building structure and continuous improvement of sustainable operations within that space.

BUILDING TO LEED STANDARDS

Although Leadership in Energy and Environmental Design (LEED™) certification is not necessarily being pursued by MEDCOM MTFs, Army regulations mandate all new construction and building renovation projects be completed to a minimum of LEED Silver standards.

Healing Gardens and Views of Nature

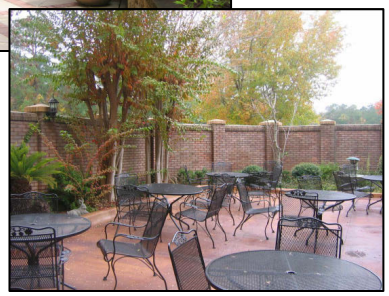
Green roofs, also known as garden roofs or vegetated roofs, use plants as a roof covering. Green roofs reduce heating and cooling needs for the facility, reduce storm-water runoff, improve aesthetics, and contribute to the healing process through natural views and/or the healing garden atmosphere.

Accessible green roof areas are installed at Madigan AMC. Accessible green roof areas designed as places of respite or healing gardens support patient, visitor, and staff well being.

Womack AMC has five green roof coverings, with some areas designed as healing gardens that are accessible to patients, visitors, and staff. The healing garden near the Womack AMC Labor & Delivery suite is equipped with benches.

The DFACs at Womack AMC and Bayne-Jones ACH offer attractive outdoor dining options for patrons seeking a side of fresh air with their meals.

Green roof space is accessible to patients, staff, and visitors at Madigan AMC.



The DFACs at Womack AMC (above left) and Bayne-Jones ACH (above right) provide patrons with access to nature.

"Womack Army Medical Center is committed to promoting sustainable healthcare by reducing our impact on the environment. It is important that we all do our part in leading the way to a more sustainable healthcare environment."

– Ms. Brandy Mitchell, RN, Clinical Analyst and Sustainability Team Leader, Womack AMC

Accessible rooftop garden at Womack AMC.
Photo courtesy of CPT Jeku Arce, AN, Clinical Instructor, Womack AMC.

BUILT ENVIRONMENT

Rubber Flooring at Womack AMC

Rubber floors are installed in Building C at Womack AMC. Rubber flooring has lower maintenance requirements than typical vinyl flooring materials and does not require periodic waxing and stripping. This in turn avoids clogs previously caused by disposing of rinse water containing wax and mop strings in the plumbing system.

The reduced need for chemical cleaners to maintain the rubber floors also reduces the exposure of staff to harsh fumes. Currently, staff are notified 30 days in advance of floor stripping and waxing activities planned for the old vinyl floors so that those with allergies can temporarily relocate until the floor stripping and waxing is complete and the fumes have diminished.

Womack AMC has plans to install rubber floors in Buildings A and B. This will reduce labor hours for cleaning and eliminate the need for 12 drums of wax and 160 bottles of scrubber previously used for cleaning vinyl flooring in the three buildings.

Pipe blocked with wax and mop strings, a result of stripping and waxing vinyl floors at Womack AMC.

Sustainable Renovations at Bayne-Jones ACH

Bayne-Jones ACH completed multiple major renovation projects in 2012 and 2013 designed to LEED Silver standards, including the Behavioral Health floor, the Physical Therapy & Occupational Therapy wing, and the Patient Administrative Division. The renovations incorporate high-efficiency HVAC systems and building controls, low-flow fixtures, sustainable wall coverings, paints and finishes with low levels of volatile organic compounds (VOCs), low-emissivity glass for windows, and evidence-based design art. In 2012, Bayne-Jones ACH recycled 270 tons of construction and demolition waste from the renovations.

For all renovation projects, Bayne-Jones ACH staff are tracking and documenting all applicable information supporting future LEED certification, with a long term goal to have the main hospital building qualify for LEED certification.

The results of the Bayne-Jones renovations are sustainably-built open, inviting spaces.

Evidence-Based Design Artwork

Evidence-based design (EBD) artwork at **Bayne-Jones ACH** (immediate right), **Evans ACH** (center right), and **Madigan AMC** (far right) consists of regional naturescapes. EBD art helps provide a tranquil and soothing patient-care environment while providing a connection to the outdoors in lieu of actual window views. EBD artwork can even provide a connection to nature in a windowless room, such as the basement breakroom at **Womack AMC** (left).

Resiliency Rooms

New resiliency rooms at **Bayne-Jones ACH** (Fort Polk) and **Martin ACH** (Fort Benning) offer healthcare providers a place to escape the stress of work. The resiliency rooms feature massage chairs, soft music and lighting, fountains, and evidence-based design artwork.

The goal of resiliency rooms is to alleviate stress and fatigue and to help prevent healthcare provider burnout. It's common for providers to put their patients' health above their own. These resiliency rooms offer a chance for a quick break to relax and recharge.

At **Bayne-Jones ACH**, the Care Provider Support Program also offers relaxation exercises in the clinics and a one-hour self-care course twice a week. The purpose is to: help providers assess their mental, physical, social, emotional, and spiritual states; identify stressors; and find ways to relieve that stress. One of the most popular stress relievers is "Popcorn Wednesdays," where bags of popcorn with positive messages taped to them are available outside the Pharmacy.

Photo courtesy of the Fort Polk Guardian

MEDCOM conducts week-long "Care Provider Resident" classes at Joint Base San Antonio. This training educates providers on stress and relaxation responses. The goal is for providers to leave the training with a better focus on self care in what can be a very intense work setting.

Medical Library Consolidation for Expansion of Clinical Area at Moncrief ACH

Moncrief ACH consolidated and downsized their medical library, resulting in the recycling of 19 tons of paper and the repurposing of valuable MTF space for clinical area expansion. The 2,000 ft^2 space held years worth of old journals, newspapers, and magazines.

Moncrief ACH staff met the challenge to downsize the medical library over a targeted two-day period. Staff procured 4x4 holding boxes and coordinated with the Post Recycling Center to make continual trips to deliver the material.

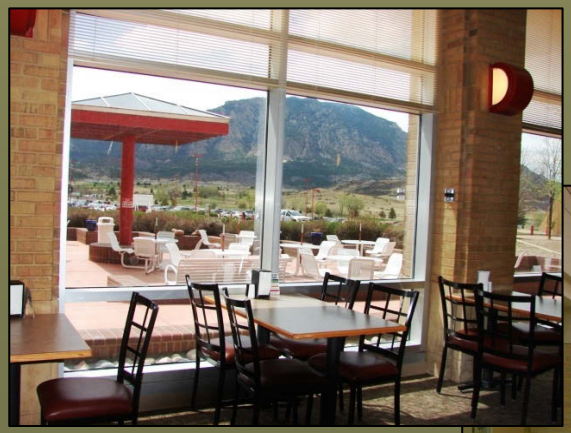
The consolidation initiative not only diverted 19 tons of paper from the solid waste stream but also reclaimed 1,600 ft^2 of space that was subsequently included in the renovation of the Women's Health Clinic.

BUILT ENVIRONMENT

Color utilized for wayfinding in Evans ACH also provides a pleasing hallway aesthetic.

Colorful, daylit breakroom for Evans ACH staff.

"…The better you feel, in some minor way weighs into how you are able to provide care to someone else." — Evans ACH employee *



Daylighting and views of nature in the Evans ACH dining facility.

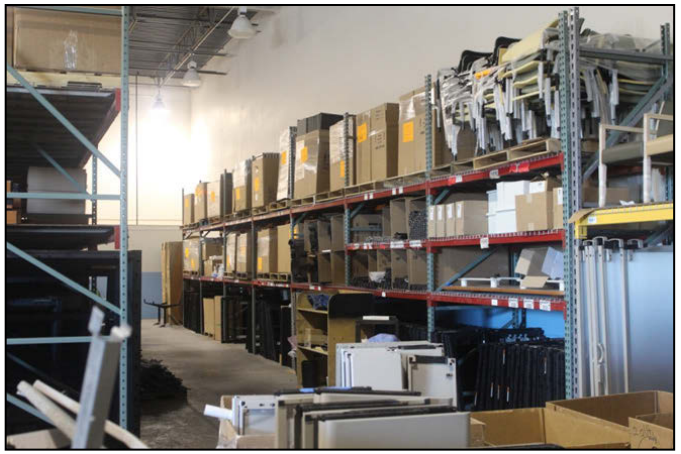
Areas of the Evans ACH interior are designed to support direct and ambient natural light penetration.

* Zajac, David J. 2008. *Healthcare Strategic Sustainability: Key Factors Affecting the Triple Bottom Line in Converting Inpatient to Outpatient Facilities.* M.S. Thesis. Cornell University , Ithaca, New York.

Evans Army Community Hospital

Furniture Repurposing at Evans ACH

In 2012, faced with multiple construction projects throughout the facility and a lack of on-post warehouse space, Evans ACH invested in a short-term, off-post warehousing initiative. This off-post warehouse provided storage space for used modular furniture that was during the construction. Combining the temporary storage initiative with an Inventory Management System, Evans ACH significantly reduced furniture purchasing requirements due to numerous realignment efforts while also reducing resource needs. The furniture repurposing investment provided a rapid payback period of only three months, and the hospital saved over $360,000 through reduced furniture purchasing needs.



Temporary storage of existing Evans ACH furniture off-post provided a rapid three-month return on investment while saving resources.

"You just feel calmer. It just gives you a nicer feeling." — Evans ACH employee *

ENVIRONMENTALLY PREFERABLE PURCHASING

Buying products with reduced environmental and human health impacts is vital to sustainable healthcare. Environmentally Preferable Purchasing (EPP), also known as green purchasing, is the practice of identifying and purchasing products and services with reduced environmental impacts, enabling a mindful, sustainable approach to purchasing.

EPP is not only about what items are made from, but also how items are used and what additional resources they save. From eliminating unnecessary packaging, to seeking substitutes for mercury- and PVC-containing products, purchasing decisions can have a major impact in providing sustainable healthcare. Environmentally preferable products are generally:

- Less toxic;
- Minimally polluting;
- More energy efficient;
- Safer and healthier for patients, workers, and the environment;
- Have high recycled content; and
- Have less packaging.

MTFs are managing materials sustainably throughout the product lifecycle, from the composition or type of material purchased, how the material is used, and how the material is disposed or repurposed.

Reusable Blood Locks at Martin ACH

Reusable blood lock at Martin ACH.

Martin ACH utilizes reusable blood locks in the blood bank to reduce waste while also reducing the potential for transfusion errors. Instead of the standard one lock per bag of blood, each reusable blood lock has a unique patient code and can be used for multiple transfusions for the same patient, which reduces waste.

DEHP and BPA Elimination

Disposal of plastic waste, including plastics used in the delivery of healthcare, can have adverse effects on the environment. Most RMW in America is incinerated. Dioxin is released when medical devices made from PVC plastic, which contains DEHP, are incinerated.

Staff in the **Madigan AMC** Neonatal Intensive Care Unit (NICU) have worked to remove all DEHP- and BPA-containing plastics from its inventory. Through product review, the Madigan AMC NICU staff have identified and procured products free of DEHP and BPA.

In addition to eliminating harmful plastics, the Madigan AMC NICU staff is currently developing a comprehensive product review committee for all supplies.

Carl R. Darnall AMC purchases BPA-free baby bottles and PVC-free and DEHP-free IV bags on the OB/GYN and Labor & Delivery floors.

ENVIRONMENTALLY PREFERABLE PURCHASING

Benefits of environmentally preferable purchasing:

- *Improved ability to meet environmental goals*
- *Improved worker safety and health*
- *Reduced liabilities*
- *Reduced health and disposal costs*
- *Increased availability of environmentally preferable products in the marketplace*

Reusable Towels in Madigan AMC Surgical Packs

Reusable hand towels are a recent addition to the surgical packs used in Madigan AMC operating rooms. Towels that are not utilized during surgery are now reused elsewhere in the MTF.

In 2011, Madigan AMC laundered and reused 4,120 pounds of towels for a variety of projects around the facility such as painting, machinery repair, and medical equipment repair.

Material Reuse at Martin ACH Warehouse

Packing materials, such as foam boxes, coolers, and cold packs, are collected in the Martin ACH warehouse and stored for reuse. For the past seven years, Martin ACH has relied solely on reuse of coolers and has not needed to purchase any new coolers.

In addition to packing materials, Martin ACH returns pallets to vendors and reuses boxes to transport supplies between the warehouse and hospital.

Plastic Bottles → Scraper Mats

Evans ACH at Fort Carson has installed scraper mats for all outside entrances to the MTF to help keep dirt and dust from being tracked into the facility. Constructed of 100% recycled post-consumer recycled plastic, every square foot of the mats eliminates four 1/2-liter plastic bottles from the landfill. A 3X5 mat is constructed of approximately 60 of these plastic bottles.

Bayne-Jones ACH at Fort Polk recently purchased these mats for one of their Dental Clinics. Because the mats were made from 100% post-consumer plastic, they received LEED credit for them.

Double-Sided Printing and Copying at Bayne-Jones ACH

Double-sided printing and copying, where appropriate, significantly reduces paper purchasing costs throughout the MTF while simultaneously reducing the amount of waste paper generated and waste disposal costs.

Bayne-Jones purchases only printers and copiers with double-sided printing capability and ensures the machines are set to default to double-sided printing whenever possible. Furthermore, Bayne-Jones is working to remove personal printers and connect all staff to network printers.

ENVIRONMENTALLY PREFERABLE PURCHASING

An environmentally preferable designation can apply to any phase of the product lifecycle: raw materials, manufacturing, packaging, distribution, use, operation, maintenance, reuse, and disposal. In addition to saving energy and conserving resources, EPP supports U.S. recycling industries and agriculture, creates new markets and jobs for developing new technologies or products, and reduces dependence on foreign oil.

Reusable Hard Cases

Durable, reusable hard cases can replace disposable blue wrap for instrument sterilization. These hard cases provide extra protection for delicate instruments. The containers can be reused for sterilization and instrument storage numerous times. Replacing blue wrap with reusable hard cases reduces the amount of blue wrap disposed as either solid waste or RMW, depending on current MTF procedures.

Although reusable hard cases require an upfront investment, MTFs have realized savings by eliminating the need to purchase and dispose of blue wrap. Depending on the disposal method for used blue wrap, switching to reusable hard cases can also reduce atmospheric pollutants generated from landfilling or incineration, supporting both environmental and community health.

Carl R. Darnall AMC uses hard cases in lieu of blue wrap for 80% of the items sterilized. Bayne-Jones ACH uses hard cases in lieu of blue wrap for 40% of the items sterilized. Madigan AMC reports a savings of $270,000 per year through the utilization of reusable hard cases for sterilizing surgical instruments.

Reusable hard cases at Carl R. Darnall AMC.

Biodegradable Bedpan System at Madigan AMC

A biodegradable bedpan system, utilizing single-use bedpans made from recycled paper pulp, can reduce both the volume of solid waste produced and waste disposal costs associated with single-use plastic bedpans.

Once used, the paper bedpans and their contents are placed in a disposal station, where a macerator breaks them into small, biodegradable particles which can then be disposed via the sanitary sewer system.

In addition to reducing waste, a biodegradable bedpan system also reduces the risk of hospital-acquired infections since used biodegradable bedpans are placed in the disposal station and do not require manual emptying and cleaning. The biodegradable bedpan system eliminates the need for a bedpan washing system, reducing water usage and risk of splashbacks from cleaning.

MTF Green Purchasing

EPP initiatives championed by MTFs include:

- Evans ACH, Irwin ACH, and Womack AMC use 100% recycled content paper products.
- Soiled microfiber cleaning cloths and mop heads are collected in reusable bags at Dwight D. Eisenhower AMC. Collection bags for soiled linens dissolve during laundering, eliminating waste.
- Bayne-Jones ACH purchases printers and copiers with double-sided printing capability and sets the machines to default to double-sided printing, reducing paper purchasing costs and paper waste.
- Linens at Madigan AMC are repaired in-house to prolong the life of all linens, saving up to $45,000 per year.
- Irwin ACH purchases latex-free, biodegradable emesis bags.
- Reynolds ACH purchases coreless toilet tissue rolls, reducing waste.

HOUSEKEEPING & GREEN CLEANING

Green cleaning products and methods yields lower cleaning costs while protecting the health of staff, patients, and the surrounding community. The compounds in many traditional cleaning products have been linked to chronic conditions, including asthma. In green cleaning, traditional cleaning chemicals are replaced with sustainable alternatives; many green cleaning compounds are non-toxic, biodegradable, and made from renewable resources. Green cleaning reduces occupational exposure to nurses and housekeeping staff and may improve staff satisfaction and retention by reducing asthma incidents.

Evans ACH

Evans ACH has reduced the number of cleaning chemicals used at the hospital by 24% and now includes 10 cleaners that are Green Seal certified, saving $32,000 annually. Additionally, many patients and staff have reported a reduction in asthma symptoms after the switch to the greener cleaning products. Evans ACH uses an automated dispensing system for these cleaning chemicals, so no measuring or mixing is required.

Environmental Services has also worked to increase the use of microfiber cleaning in the hospital. Prior to contract renegotiation and increased microfiber program rollout, Evans ACH performed time trials to evaluate microfiber cleaning versus wet mopping. Cleaning time, volume of water used in cleaning, and the overall quality of the cleaning were analyzed. Through the time trials, Evans ACH determined that microfiber cleaning reduced the time needed to clean and the volume of water necessary when compared to wet mopping.

The increased use of microfiber mopping resulted in a 39% reduction in the amount of chemicals needed for cleaning, yielding both cost savings and a healthier environment for Evans ACH patients and staff. Furthermore, microfiber use has led to more efficient housekeeping practices, which reduced overall labor hours by 10% annually. Based on the results of the microfiber cleaning time trials, Evans ACH renegotiated the contract for housekeeping services, resulting in a cost reduction of nearly $400,000.

Microfiber pads are lighter and have a longer lifespan than traditional mop heads, require less cleaning solution per cleaning event, and reduce cross-contamination risk because microfiber pads are changed after cleaning each room. Microfiber pads can be laundered and reused multiple times, and microfiber lasts longer than traditional cleaning materials, reducing waste and driving costs down even more.

Moncrief ACH

Moncrief ACH recently began the switch from traditional cleaning to green cleaning. The new housekeeping contract specifies that green cleaning products will be used whenever possible. Currently, approximately 80% of the cleaners used in the hospital are green products and 100% of the paper products used are made from recycled material. Green cleaning products used in Moncrief ACH include general purpose (hard surface) cleaners, glass cleaners, carpet and upholstery cleaners, metal polish, and hand soap.

Environmental Services and Industrial Hygiene must review and approve potential products prior to a new green cleaner being used in the MTF. Furthermore, the Infection Control Committee worked to ensure that the level of cleaning matched the area and identified areas where the use of high-level disinfectants could be minimized or eliminated.

Housekeeping has switched to microfiber mopping, which provides a more thorough cleaning than traditional string mop and bucket cleaning. A dilution control system has been installed, with stations inside every janitorial closet to automatically control the amount of concentrated cleaning product mixed and dispensed, reducing waste.

Moncrief ACH is already reaping cost savings from reduced cleaning supply purchase costs and reduced labor needed for cleaning.

"Our housekeepers love the microfiber mops. They provide a much cleaner floor service, and the mops are lightweight and much more ergonomic."

– Mr. Bert Crowell, Chief, Environmental Services Branch, Moncrief ACH

GREEN HOUSEKEEPING

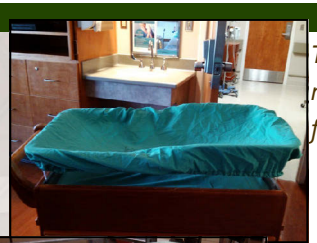
Linen Reuse Program at Bayne-Jones ACH

Bayne-Jones ACH has sustainably managed linens since 1999. Bayne-Jones owns all their linens, and uses no disposable linens or scrubs. Minor holes in linens and scrubs are mended in-house to prolong the life of the products. Clean, laundered linens are delivered in covered carts, eliminating the need to cover incoming clean laundry in plastic wrap.

In 2013, Bayne-Jones ACH expanded their linen repurposing program to include making 50 crib covers in house from old, un-repairable bed sheets.

The Bayne-Jones linens team also made cart covers for Central Materiel Service (CMS) out of old hospital shower curtains. During hospital renovations, the Bayne-Jones CMS has had to relocate to an ancillary building. Concurrent with these renovations, the hospital has removed all PVC shower curtains from the facility. To cover the CMS carts as they move between the temporary CMS location and the main hospital building, the shower curtains have been repurposed and sewn into custom cart covers. The Bayne-Jones linens team coordinated with Infection Control to ensure the CMS cart covers met all infection control guidelines.

When white towels become stained, the Bayne-Jones linen team dyes the towels brown. These brown towels are then used in Physical Therapy, Occupational Therapy, Family Practice, and Radiology. This innovation extends the life of the towels while reducing the cost of buying new towels. Brown towels that become too worn to be repaired are donated to the Fork Polk Veterinary Clinic and the installation's stray facility. Other unserviceable items such as baby blankets, hand towels, patient blankets, and lab coats are also sent to the Veterinary Clinic for use in the kennels.



Torn flat green sheets are refashioned into crib covers for Labor and Delivery.

Repurposed vinyl shower curtains were made into covers for CMS carts to be used during the renovation of the Bayne-Jones ACH CMS.

A mixture of blue wrap and reusable hard cases is utilized at Bayne-Jones ACH.

Reusable Hard Cases for Instrument Sterilization

Blue wrap, typically used for instrument sterilization, can be replaced with durable, reusable hard cases. Following instrument sterilization, the hard cases can also provide secure, sterile storage for surgical instruments until they are needed in the operating room. Although reusable hard cases require an upfront investment, hospitals realize savings by eliminating the need to purchase and dispose of blue wrap.

Carl R. Darnall AMC uses hard cases in lieu of blue wrap for 80% of the items sterilized. **Bayne-Jones ACH** uses hard cases in lieu of blue wrap for 40% of the items sterilized. **Irwin ACH** and **Reynolds ACH** also utilize a mixture of blue wrap and reusable hard cases. **Madigan AMC** reports a savings of $270,000 per year through the utilization of reusable hard cases for sterilizing surgical instruments.

"In developing programs to cut costs, we are able to put more of our money into providing the best patient care possible for well-deserving Soldiers and their families."

— Ms. Reneá Boutte, Chief, Environmental Services, Bayne-Jones Army Community Hospital

NUTRITION & DINING

As places of healing, MTFs have a natural incentive to provide food that is healthy for people and the environment in which we live. Food service operations are expensive and have a large carbon footprint due to high energy consumption, high water consumption, and generation of food and packaging wastes.

Sustainable food services minimize waste while maximizing nutrition benefits provided to patients and DFAC patrons. MTF food service operations provides many opportunities to conserve energy and water and to engage in environmentally preferable purchasing.

Single item dispensers for disposable cutlery (above) are used in the Martin ACH DFAC, reducing both waste and cost.

Nutrition Care Division (NCD) staff at Martin ACH developed an interactive display (below) for National Nutrition Month and have partnered with the Fort Benning child development centers to provide nutrition classes.

"Go For Green" Nutrition Awareness Program

The "Go For Green" program is the Army's nutrition education program and food labeling system supporting the Army's Soldier Fueling Initiative. Many MTFs are participating in the "Go For Green" program, where red, amber, and green food nutrition labels make it easy to identify food nutrition values.

The program helps increase awareness of food choices for all patrons of the DFAC and contributes to the Surgeon General's goal of moving the Army medical system from a healthcare system to a system for health.

Local Foods at Moncrief ACH

From the way food is grown, to the way it is packaged, shipped, prepared, and discarded, food purchasing decisions play an important role in health, both directly and indirectly. By purchasing local foods such as fruits, vegetables, bread, meat, and dairy through the prime vendor, MTFs promote health by providing a larger variety of fresh, good tasting, nutritious food choices for patients and staff. Purchasing food grown or raised locally promotes energy independence by reducing the amount of fuel required for transportation and also improves air quality, reduces greenhouse gas emissions, and supports the local economy.

The Nutrition Care Division at Moncrief ACH has begun to provide local food options during meals, kicking off the initiative with a Local Foods Education Week. Continuing program education includes placement of cards on food items to educate patients, staff, and visitors on the origin of their meal as well as the nutritional benefits. The MTF is also working to increase fruit and vegetable options and reduce sodium content in foods served in the DFAC.

NUTRITION & DINING

Polystyrene Foam Reduction

Disposable polystyrene foam to-go containers are a major component of the MTF DFAC waste stream and negatively impact both the environment and human health. Polystyrene foam does not break down or decompose when disposed in landfills and can leach toxic chemicals when wet or heated. Furthermore, petrochemicals used to manufacture polystyrene foam negatively impact the atmosphere and are detrimental to the ozone layer.

Polystyrene foam has been completely eliminated from the **Evans ACH** dining facility; all dishware is reusable, recyclable, or compostable. Discontinuing use of polystyrene foam eliminated 50-60 bags of trash per day with a cost savings of $2,500 per year in garbage bag purchasing costs. Evans ACH has also eliminated polystyrene foam from patient food services, picnics, and catering.

Bayne-Jones ACH has successfully reduced polystyrene foam products in the dining facility by replacing polystyrene foam clamshell to-go containers with plastic containers. The MTF intends to include these containers in the future plastics recycling program to be implemented throughout the hospital.

Because each MTF is different, options must be evaluated to find the best fit for replacing polystyrene foam. For example, utilization of compostable to-go containers instead of reusable dishware may be a better choice for a DFAC with access to a composting program in a water constrained area.

Food Waste Composting at Madigan AMC

MTF DFACs regularly dispose of unsold, unneeded, excess food that is suitable for human consumption as well as post-consumer food waste that is suitable for composting. An effective and more sustainable disposal method is composting, where organic matter is decomposed into nutrient-rich fertilizer. Composting can eliminate large quantities of material from the waste stream, reducing waste disposal costs. Composting also reduces the amount of waste diverted to landfills, which generates intangible benefits such as reduced contaminant production.

To reduce the amount of food waste sent to the landfill, Madigan AMC has implemented a pre-consumer food waste composting program. Pre-consumer food waste at Madigan AMC is collected in the DFAC for composting at the installation composting facility. A dedicated dumpster for food waste is located on the loading dock and is emptied daily by the installation. Through food waste composting, Madigan AMC diverted 46.8 tons from the DFAC solid waste stream in 1 year.

Green compostable bags are used to capture pre-consumer food waste for composting at Madigan AMC.

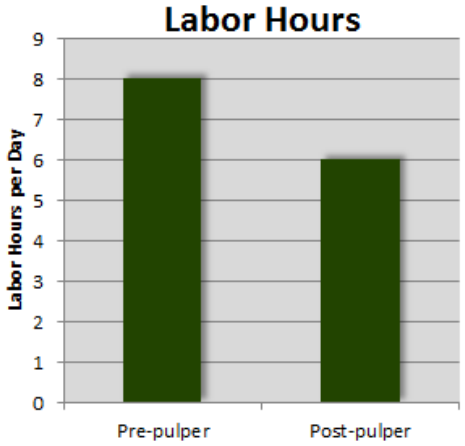
NUTRITION & DINING

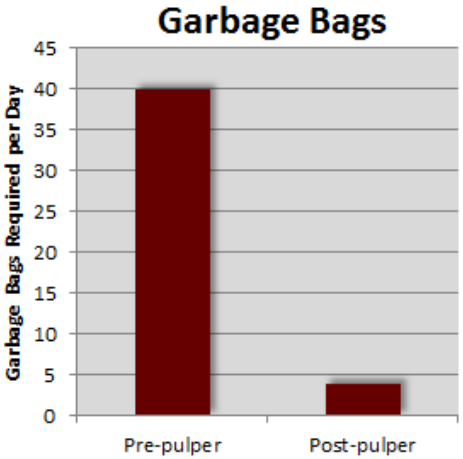
Waste Pulper at Evans ACH

Waste pulpers process a variety of solid wastes originating in DFACs, including food and paper products. Waste pulpers add water to the waste mixture, grind the mixture, and then extract the water to produce dried waste pulp. The water is recycled through the system and drained to the sanitary sewer, leaving a significantly smaller waste volume for disposal.

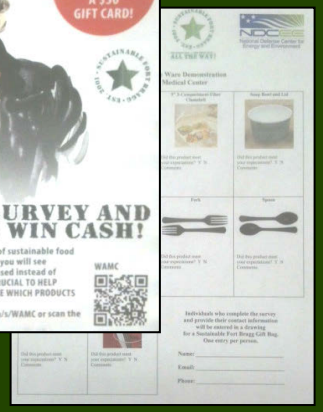
Waste pulper at Evans ACH.

Acquisition of a waste pulper at Evans ACH provided a return on investment in 16 months and has resulted in a $25,000 annual savings in the DFAC through a combination of labor reduction, waste reduction, and plastic waste bag purchase cost avoidance.





Documented daily labor hour and garbage bag reductions at Evans ACH from utilization of a waste pulper in the DFAC.



Signage and survey for bio-based container and cutlery test at Womack AMC

Bio-Based Containers and Cutlery at Womack AMC

The Womack AMC DFAC recently tested bio-based containers and cutlery in partnership with Sustainable Fort Bragg. DFAC patrons tested to-go containers, cups, and utensils manufactured from paper, corn, potatoes, and other biodegradable fibers and provided feedback to the installation. The transition to bio-based products at Womack AMC will support waste reduction at Fort Bragg as the installation works to establish a composting program.

Grease Recycling

Grease recycling removes used cooking oils from the waste stream, reducing total solid waste disposed; limiting the amount of fats, oils, and greases that can clog sewer systems; conserving landfill space; and promoting energy independence and security. Used cooking grease is a desired commodity that can be repurposed into biodiesel. MTFs participating in grease recycling programs include Bayne-Jones ACH, Brooke AMC, Dwight D. Eisenhower AMC, Irwin ACH, Madigan AMC, Reynolds ACH, Winn ACH, and Womack AMC.

A grease caddy helps staff transport containers of used cooking oil to the loading dock for collection at Madigan AMC.

In 2012, **Madigan AMC** recycled 35.88 tons of grease trap waste from the dining facility. This waste grease was ultimately used for energy recovery.

SUSTAINABLE TRANSPORTATION

MTFs are expanding sustainable transportation options by incorporating hybrids and alternative fueled vehicles into fleets and encouraging more sustainable employee commutes. Sustainable transportation, or alternative transportation, includes biking, walking, public transportation, carpools, and alternative-fueled vehicles. Sustainable transportation reduces both traffic congestion and environmental impact.

Sustainable Fleet at Womack AMC

Womack AMC has worked to modernize and "right-size" their transportation fleet to reduce gasoline consumption and associated air pollution. Currently, Womack AMC leases 105 vehicles through the General Services Administration. The leased vehicles include hybrid vehicles; ethanol blend fuel (E85) vehicles; biodiesel vehicles; and ultra low sulfur diesel vehicles, 19 of which are ambulances. Womack AMC also owns three electric-powered golf carts for patient transport. Womack added five electric vehicles to the fleet in FY13.

Madigan AMC Commutes Sustainably

Madigan AMC has achieved a 14% reduction in commute trips to the hospital through staff participation in rideshare commute options (i.e., vanpools, carpools, telecommuting, walking, public transportation, or biking). Approximately 1,300 Madigan employees are currently involved in various rideshare commute options. Madigan AMC currently operates 19 vanpools with 170 registered vanpool riders. Employees are educated on the various rideshare opportunities initially during New Employee Orientation. Bike racks are installed at the MTF, and locker rooms and shower facilities are available. Madigan AMC also encourages carpooling to off-site meetings and teleconferencing or videoconferencing when possible.

Sustainable Transportation at Evans ACH

Evans ACH is actively working with the Fort Carson Department of Public Works to support an electric vehicle fleet at Evans ACH along with vehicle charging stations.

Evans ACH has also "right-sized" and increased the fuel economy of their transportation fleet to reduce gasoline consumption and associated air pollution.

Evans personnel participate in the Fort Carson "Share A Ride" program, providing free online carpool and vanpool coordination to and from post. Riders are matched based upon their origination and destination points as well as days and times of travel. Users indicate whether they are offering a ride, need a ride, and if they will share driving duties.

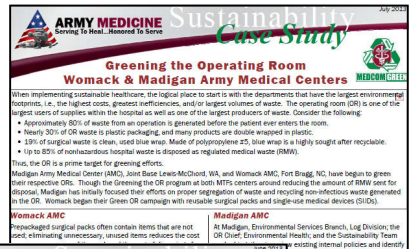
Moncrief ACH uses solar-powered patient courtesy shuttles to ferry patients to and from the parking lot.

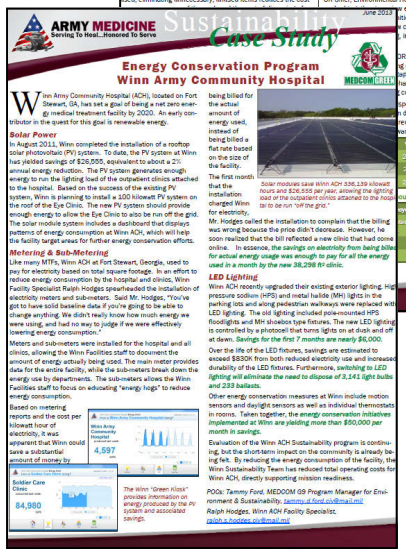
EDUCATION & OUTREACH

One commonality to successful sustainability programs is effective engagement of stakeholders. Getting stakeholders on the same page about the purpose, scope, and expected results of a sustainability strategy will generate organizational alignment. This alignment builds enthusiasm and commitment among personnel and is a hallmark of successful Sustainability Programs.

Effective use of strategic communications tools can help achieve alignment of vision, strategy, structure, and metrics between EO 13514, the DoD SSPP, the ASCP, the MEDCOM Sustainability Strategy, and MEDCOM MTF Sustainability Action Plans. The result: streamlined, effective implementation of sustainability throughout the Command.

Guidance Documents





Case Studies MEDCOM publishes case studies to provide data, methodology, and focused information on a particular topic relating to sustainable healthcare. To date, 11 case studies have been published on topics including renewable energy, sustainable nutrition care, green cleaning, greening the OR, single-use medical devices, reliability centered maintenance, RMW reduction, and green disinfection systems.

Resource Guide In 2013, MEDCOM published a detailed resource guide to provide information and points of contact for a variety of sustainability initiatives currently implemented at MTFs throughout the Command.

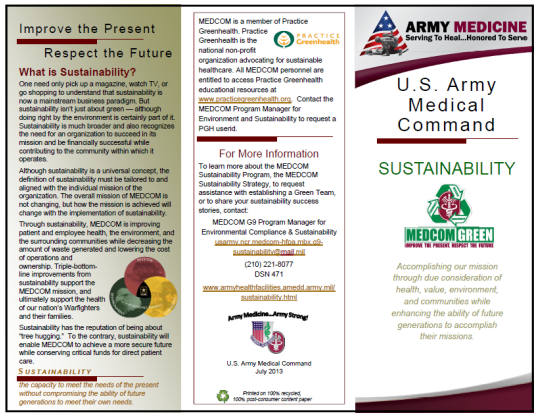
MTF Specific Analyses MEDCOM also conducts research for individual MTFs on topics such as analysis of waste diversion options in a particular geographic market or area recyclers interested in recycling clean, used blue wrap from the OR.

Newsletters

To provide ongoing best practice transfer, MEDCOM launched the MEDCOM *Sustainability Focus* newsletter in June 2011.

The *Sustainability Focus* newsletter disseminates sustainability success stories, lessons learned, and education opportunities throughout the Command and to all MTF personnel.

In 2013, MEDCOM published the third in a series of brochures to educate personnel on the benefits sustainability brings to the practice of Army healthcare.

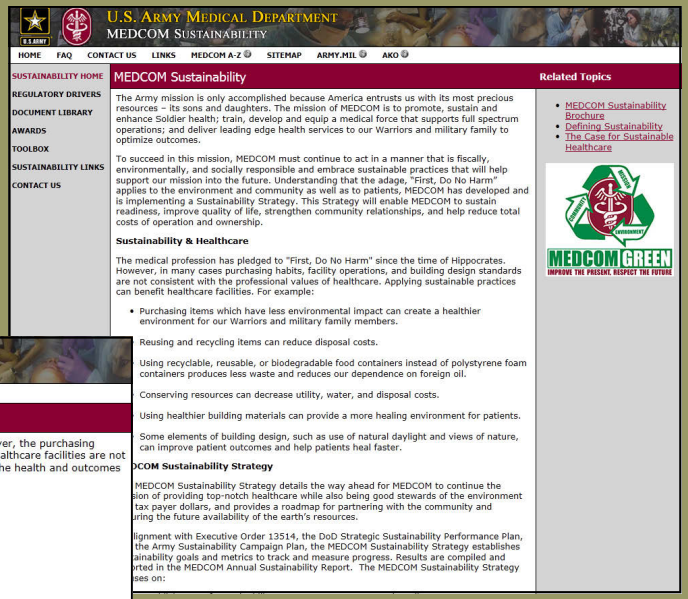


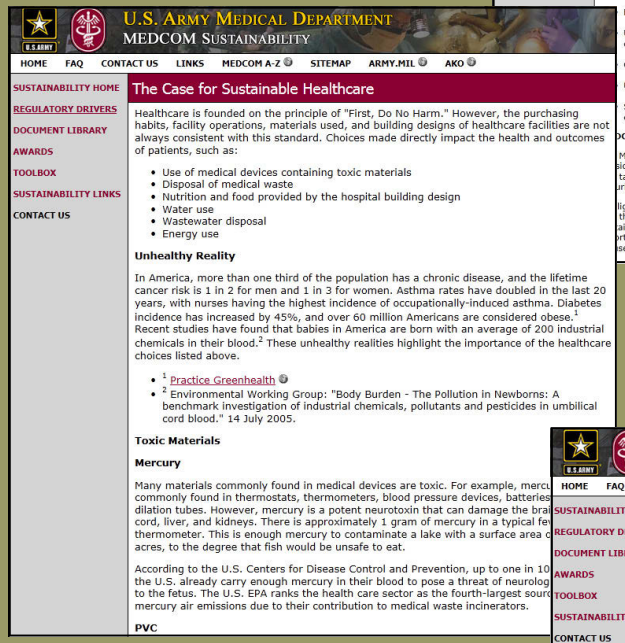
EDUCATION & OUTREACH

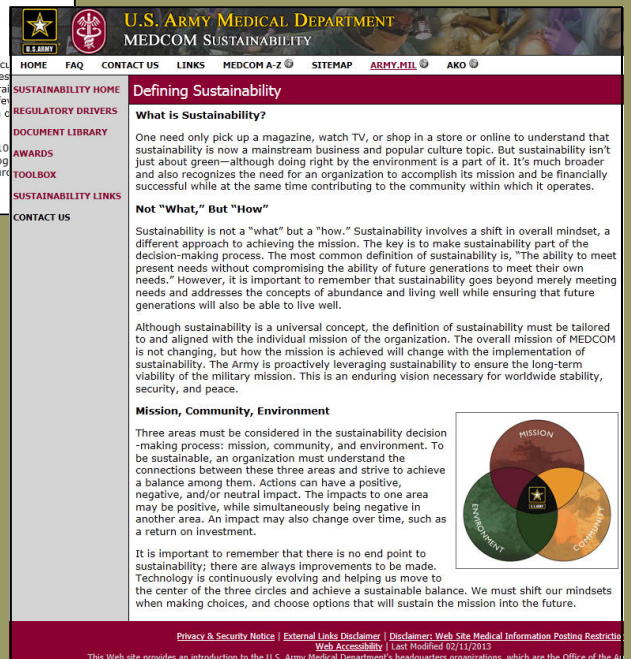
SUSTAINABILITY WEBSITE

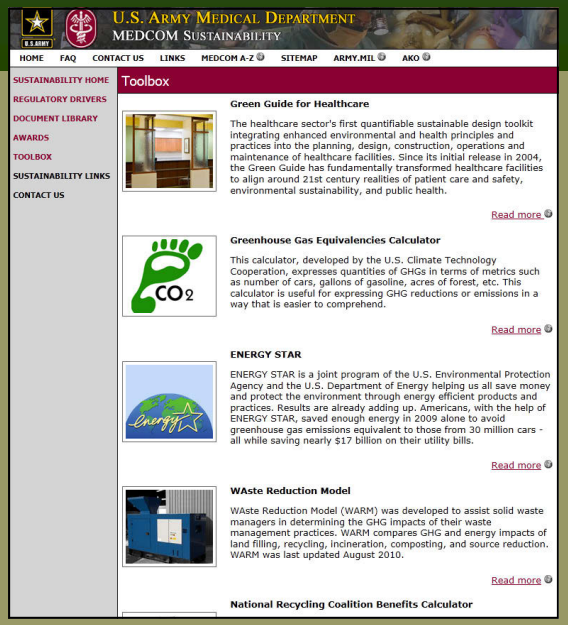
The MEDCOM sustainability website launched in spring 2013. Designed to provide both an external face for the MEDCOM Sustainability Program as well as an internal knowledge base for MEDCOM personnel, the MEDCOM sustainability website contains information on the MEDCOM sustainability program, regulatory drivers, details on award and recognition opportunities, and a variety of useful links.

www.armyhealthfacilities.amedd.army.mil/sustainability.html









EDUCATION & OUTREACH

Conference Presentations

The MEDCOM Sustainability Program works to develop awareness of the practice of sustainable Army healthcare through participation in conferences. In the face of budget constraints, MEDCOM and the MTFs have developed electronic poster presentations. These electronic posters allow the MEDCOM sustainability message to reach a broad audience without incurring travel expenses.

Results

Madigan Army Medical Center

- RMW decreased 151,546 lbs. over 3 years, saving **$79,848.61**

Madigan RMW Savings

Year	Total RMW	Cost
2009	314,626 lbs.	$169,987.06
2010	310,925 lbs.	$168,339.73
2011	163,080 lbs.	$90,138.45

Madigan OR Recycling

Year	OR Plastics Recycled	Blue Wrap Recycled
2009	0 lbs.	0 lbs.
2010	1,045 lbs.	Blue wrap donated to local animal shelters
2011	7,521 lbs.	6,460 lbs.

Womack Army Medical Center

- RMW: (Feb – Aug 2012)
  - **$7,900** RMW disposal savings
  - Medical waste stream reduced by **25,500 lbs.**
  - Product transportation waste reduced by **6,330 lbs.**
- FY12 Single-Use Devices:
  - **8,468 lbs.** diverted for reprocessing
  - **$463,903** saved through waste diversion and purchasing reprocessed devices

2013 MILITARY HEALTH SYSTEM CONFERENCE

At a time when the Army is looking for areas to cut operating costs, Army Medicine's "Greening the Operating Room" program is generating considerable savings by reducing waste streams.

Conclusion

Green Operating Rooms:

- Easy to implement
- Easily replicable
- Millions in savings if implemented across the Military Health System

There are difficult challenges ahead, but our mission remains unchanged: Maintain the readiness and health of our military. Sustainable medicine safeguards our mission and the health and wellbeing of our Soldiers.

For More Information:
Tammy Ford - MEDCOM Sustainability Coordinator

Conflict of Interest Disclosure: All speakers have no real or apparent conflicts of interest to report.

2013 MILITARY HEALTH SYSTEM CONFERENCE

Within a military treatment facility, the OR is one of the largest users of supplies and one of the largest producers of waste. This provides a great opportunity for savings through sustainability.

MHS Healthcare Innovation Program

The Military Health System (MHS) has implemented many innovative programs to improve the access, cost, and quality of healthcare while enhancing the medical readiness of our Armed Forces. Many times, however, one facility does not know what another has accomplished. That's where the Healthcare Innovations Program (HIP) can help. Healthcare innovations are new ideas, methods, or devices introduced to achieve mission performance gains. Innovations improve quality of care and access to care, increase satisfaction of patients and staff, and decrease health care delivery costs.

The Office of the Chief Medical Officer at TRICARE Management Activity sponsors the HIP Award and Virtual Presentation exhibit in conjunction with the annual Military Health System Conference. The HIP program showcases MHS innovations from both the direct care and purchased care systems, in direct support of the MHS Strategic Plan, and links people with ideas.

Both MEDCOM and Evans ACH were selected to present virtual posters for the 2013 HIP program. The Military Health System, Department of Defense, and external organizations offer awards programs that are open to MHS innovations, employees, and/or teams.

EDUCATION & OUTREACH

Conference Presentations

Evans ACH presented e-posters for both the 2013 MHS Healthcare Innovation Program and the 2013 CleanMed conference.

$ustaining the $urge: More Bang for Your Buck

Sustaining and improving the hard fought advances for hospitals is a never-ending challenge. Evans ACH demonstrated how they have continued the march toward a more sustainable system of care and explored the similarities between military and civilian healthcare systems.

PRACTICE Greenhealth

Practice Greenhealth

MEDCOM is a member of Practice Greenhealth, a national non-profit organization advocating for sustainable healthcare.

Membership in this organization provides all MEDCOM personnel with ready access to educational opportunities, the ability to network with their peers to facilitate information transfer, and opportunities for awards and recognition.

Healthcare Innovations Program: A Sustainable Healthcare Model is Not Green, But Black!

The Evans ACH poster for the 2013 MHS Healthcare Innovation Program demonstrated the dramatic results they have reaped from sustainable healthcare within the first 18 months of Green Team formation. Evans ACH sustainability focus areas include green cleaning, optimization initiatives, energy and water conservation, green nutrition care, and waste reduction.

Since April 2011, sustainability has saved Evans ACH over $1.9 million. A majority of these savings are easily transferable to other MTFs within the MHS. If these initiatives were implemented for the entire MHS, annual savings would exceed $60M, or $300M over five years.

The Evans MHS presentation can be found here: http://www.tricare.mil/tma/ocmo/hip/PH.aspx

Education & Outreach

Conference Presentations

CleanMed
Creating Healing Environments

CleanMed is the national conference for healthcare sustainability. CleanMed provides MEDCOM and MTFs with an opportunity to network with peers in non-Army hospitals, learn, and present the MEDCOM sustainability story.

MEDCOM and the MTFs have presented posters and led discussion sessions at CleanMed in 2011, 2012, and 2013.

Madigan AMC and MEDCOM presented posters at CleanMed 2011

MEDCOM presented an electronic poster on green Army ORs at CleanMed 2013.

Tammy Ford, MEDCOM Environmental Compliance - Sustainability Program Manager; CPT Mary Ayres, Madigan AMC; and MAJ David Zajac, Evans ACH, discuss the MEDCOM poster presentation at the CleanMed 2012 conference.

Photo courtesy of Practice Greenhealth

Sustainability Track at 2011 MEDCOM Training Symposium

In 2011, MEDCOM hosted the first Sustainability Track at the MEDCOM Training Symposium (formerly AUSA). This brought together sustainability leaders from MEDCOM, the MTFs, and the U.S. Army Public Health Command to present, discuss, and answer questions on the entire spectrum of sustainable healthcare.

The Office of The Surgeon General and MEDCOM hosted the annual Army Medical Training Symposium 26 - 29 June 2011, in San Antonio, Texas. The sustainability track was opened by the MEDCOM Chief of Staff (CoS). Following remarks by the CoS, a roster of twelve guest speakers gave presentations on:

- Healthcare issues unique to sustainability,
- Evidence-based hospital design,
- Sustainability in hospital foodservice,
- Waste management and recycling ,
- Blue wrap recycling in the operating room,
- Development of successful hospital sustainability teams,
- Water and energy conservation,
- Renewable energy options for hospitals, and
- Green purchasing.

Mr. Herbert Coley, MEDCOM Chief of Staff in 2011, presented opening remarks at the first MEDCOM Training Symposium Sustainability Track.

EDUCATION & OUTREACH

Although developing a high-level strategy is the first challenge on the road to sustainability, implementation usually poses a larger challenge. One commonality to successful sustainability implementation efforts is effective engagement of stakeholders. Getting stakeholders on the same page about the purpose, scope, and expected results of a sustainability strategy will generate organizational alignment. This alignment builds enthusiasm and commitment among personnel and is a hallmark of successful Sustainability Programs.

Effective use of strategic communications tools can help achieve alignment of vision, strategy, structure, and metrics between EO 13514, the DoD SSPP, the ASCP, the HQ MEDCOM Sustainability Strategic Plan, and MEDCOM MTFs. The result: streamlined, effective implementation of sustainability throughout the Command.

MEDCOM publishes sustainability success stories in a variety of journals to ensure maximum reach. Articles have been published in *Public Works Digest*, *The Military Engineer*, and *Greenhealth Magazine*.

The Evans ACH Sustainability Team has worked to not only educate staff on sustainability, but also encourage all staff, patients, and visitors to actively participate in the Evans ACH Sustainability Program. The team has created awareness and engagement videos demonstrating Evans ACH sustainability initiatives such as recycling, sustainable transportation, and proper RMW segregation designed to both entertain and engage viewers. The videos have been shown during newcomer orientations as well as to other MTFs standing up Sustainability Teams.

Members of the Evans ACH Sustainability Team, including (L-R) Ms. Judy Darbyshire, Chief, Environmental Services, MAJ David Zajac, Chief, Logistics, and Mr. Rashad Rajab, Chief, Facilities Management, demonstrate that by working together all MTF staff can contribute to the Evans ACH Sustainability Program.

Evans ACH Sustainability Team members, (L-R) SGT Cassandra Montoya and SGT Benjamin Cobain, humorously educate staff on sustainability issues, including water conservation and

Detective Jill Tuesday, played by Ms. Judy Darbyshire, Chief of Environmental Services at Evans ACH, is on the case to reduce regulated medical waste. Busted culprit played by LT Michelle Spurgeon.

COMMUNITY OUTREACH

MTFs are having a positive impact on the communities in which they operate through sustainability. Sustainable projects and partnerships can impact an MTF beyond cost savings – some projects, whether a 1-day outreach event or a long term partnership, touch the entire community, from dedicated staff to transitory patient populations to people outside the MTF and installation borders.

Evans ACH Teaching Kitchen Supports Community Health

The newly renovated Evans ACH NCD has a theater-style teaching kitchen that is used to conduct nutrition training classes for Soldiers and their families, including classes for heart health, weight loss, and diabetes management. Class attendees observe first-hand that nutritious food can be easy to prepare and taste great. These classes are broadcast both on Fort Carson TV and on a local Colorado Springs cable channel. Classes are also recorded on DVD for sharing with other Army hospital Nutrition Care Departments.

The Evans ACH theater teaching kitchen hosts a variety of healthy cooking classes.

"We have some very ambitious [sustainability] goals here at WAMC and have the right pieces in place to achieve them."

— LTC Thomas Hundley, Womack AMC , Medical Service Corps Director of Logistics

Evans ACH & Goodwill Industries: Sustainability Partners

The new clean laundry storage at Evans ACH eliminated the need for wrapping clean linens in plastic wrap.

Every day, more than a ton of linens are used in Evans ACH. Like many MTFs, Evans ACH sends their linens off-site for laundering. However, Evans ACH has found an innovative way to benefit the local community while making their laundry more sustainable by reducing environmental impact and cost.

Several years ago, Evans ACH approached Goodwill Industries of Colorado Springs to inquire about laundry services. Although laundry services were not then offered, the business potential was apparent and Goodwill quickly developed a commercial laundry service. Today, Goodwill Industries of Colorado Springs maintains a 24,000 ft^2 full-service commercial laundry facility and processes over 4 million lbs of laundry annually for clients including the Air Force Academy, Peterson Air Force Base, and several local hotels.

Together, Evans ACH and Goodwill Industries are working to reduce the laundry operations energy use, water use, and waste generation. To reduce the amount of plastic wrap required to keep the MTF's clean laundry in compliance with Joint Commission regulations, Evans ACH has renovated their linen storage area to eliminate the need for individual plastic wrapping. In only 7 months, this initiative has prevented over 354,000 linear feet of plastic wrap from being disposed in the landfill and will save Evans ACH $12,000 per year.

Thanks to the initial inquiry by Ms. Judy Darbyshire, CHESP, Chief, Environmental Services, Logistics Division, the laundry needs of Evans ACH are met in a very cost-effective manner. Furthermore, the Goodwill Industries commercial laundry service now provides employment and independence for more than 50 special needs adults in the community, including Wounded Warriors and disabled Veterans.

CULTURE OF SUSTAINABILITY

Energizing a culture centered on sustainability is essential to the success of the MEDCOM Sustainability Program. At the MTF level, cross-functional Sustainability Teams are working not only to educate staff on sustainability, but also to encourage all staff, patients, and visitors to actively participate in their sustainability programs.

Communication of progress and results throughout the Command helps to reinforce the culture shift necessary for MEDCOM to become a truly sustainable organization.

Waste-Free Event at Madigan AMC

The Madigan AMC Sustainability Team conducted waste-free events concurrent with their Organizational Celebration Days in 2011 and 2012. In 2011, Madigan achieved a 79% waste diversion rate, and in 2012 the waste diversion rate climbed to 89%.

The team considered the events to be a great success and plans to apply lessons learned to achieve an even greater waste diversion rate at the next event.

MTFs Support National Prescription Drug Take-Back Days

MEDCOM MTFs participate in the Drug Enforcement Administration (DEA) semiannual National Prescription Drug Take-Back Days, typically occurring in the spring and fall. During the April 2012 national take-back day, 371 tons of unwanted or expired medications were collected at the 5,829 take-back sites available in all 50 U.S. states and territories. A total of more than 21,409 tons of prescription medications have been removed from circulation at all five national take-back day events.[1]

MEDCOM supports the DEA's National Take-Back Day and encourages participation for proper disposal of unused medications. These national take-back days have dramatically reduced the risk of prescription drug diversion and abuse and have also increased public awareness of this health issue.

1 U.S. Drug Enforcement Agency, http://www.justice.gov/dea/divisions/hq/2013/hq050213.shtml

Reusable tumblers made of BPA-free plastic were sold to Reynolds ACH staff. In exchange for purchasing the tumbler, the Reynolds DFAC offers reduced rate tumbler refills. The tumblers, branded with Reynolds ACH and MEDCOM insignia, were so popular with staff that more have been ordered to sell.

Evans ACH Promotes Sustainability

Bike-to-Work Contest

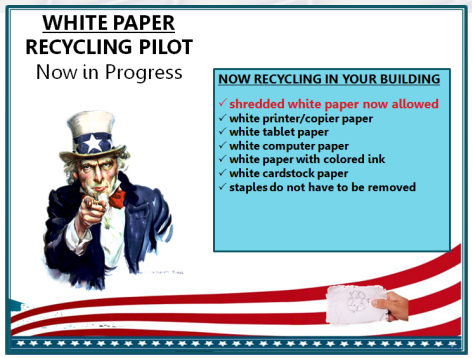
To improve employee health, the Evans ACH Sustainability team organized a bike competition to see who could bike the most miles on the most days to and from work at the hospital. There were six winners, resulting in a total of 1,895 miles biked to work over the course of the contest.

Badge Clips

Badge clips worn by Evans ACH Sustainability Team and distributed to MTF staff increase program visibility and demonstrate program support.

Sustainable Partner Patches

The Evans ACH "Sustainable Partner" patch worn by Environmental Services staff demonstrates that the contractor employees are a key part of the green cleaning initiative at Evans ACH.



Signage posted at Bayne-Jones ACH educates personnel on the newly expanded paper recycling program while also creating program awareness.

Sustainability Supports Communities

Sustainability Supports Babies

The Bayne-Jones ACH Layette Program provides "Welcome Baby Gift Bags" containing necessities such as clothing, diapers, formula, wipes, and cereal for babies delivered to qualified families of enlisted Soldiers. Gently used baby items are donated by Bayne-Jones ACH staff to the layette Program.

"Welcome Baby" gift bags provided by the Bayne-Jones ACH Layette Program.

Sustainability Supports Soldiers

Housekeeping staff at Carl R. Darnall AMC collect paper towel and toilet tissue tubes and donate them to therapeutic craft groups for inpatient Soldiers.

Sustainability Supports Patients

A dedicated collection container at Madigan AMC diverts books and magazines from the waste stream and redistributes the reading material to hospital patients.

Partnering with Host Installations

- Dwight D. Eisenhower AMC leases all linens used in the hospital. When linens are no longer usable, the linen contractor does not want the linens returned, and Dwight D. Eisenhower AMC provides them to the installation for use in weapons cleaning.
- Madigan AMC conducted their first waste free event concurrent with their Organizational Celebration Day on 12 August 2012. The Madigan AMC Sustainability Team considered it a big success with the event achieving a 79% waste diversion rate.
- At Irwin ACH, waste xylene is collected from the laboratory and is shipped to the Fort Riley auto shop for reuse in painting vehicles. Approximately 80 lbs/month of xylene is currently diverted from the hazardous waste stream.
- Madigan AMC participated in their community-wide Aluminum Can Recycling Challenge from 1 Aug - 31 Oct, 2011. Madigan AMC recycled over 900 lbs of cans and won first place in the installation-wide contest.

Evans ACH Sustainability Day

COL John McGrath, Evans ACH Commander, provided opening remarks, led by example through recycling, and received an Evans ACH sustainability coffee cup for his efforts.

To start the year on the right foot, the Evans ACH Sustainability Committee conducted a kick-off event to stimulate sustainability awareness and participation throughout the Medical Department Activity (MEDDAC). The kick-off event took place in the dining facility and included live entertainment, locally grown food, educational displays, and participatory events where attendees could win sustainably made coffee cups and water bottles emblazoned with the Evans ACH Sustainability logo.

The goal of the kick-off event was to provide Evans ACH staff with an opportunity during their lunch break to enjoy great music, eat delicious wholesome food, learn about sustainability efforts at Evans ACH, and begin actively participating in these efforts.

The Department of Nursing and Quality Support Division set up a static display of patient care items comprised of recycled and recyclable content. These groups also provided information and education on SUD collection and associated benefits.

Recycling Station drills were hosted by the Logistics Division and included two recycling centers where staff actively participated in recycling efforts stating the mantra "practice makes perfect" and were rewarded for their efforts with either a coffee cup or water bottle amplified with the Evans ACH sustainability logo.

Over 400 staff directly participated in the drills, which positively impacted Evans ACH recycling rates. The MEDDAC realized a 15% increase in recycling weights within the first 90 days following the event.

Mobile Music Project provided the music for the Evans ACH 2013 sustainability kick-off and was totally cycle-powered. Although the Department of Surgery and Physical Therapy graciously volunteered to keep the music playing, other fun loving staff actively participated by pedaling the bicycles.

CULTURE OF SUSTAINABILITY

Through sustainability, MTFs are having a positive impact on the communities in which they operate. Sustainable projects and partnerships can impact an MTF beyond cost savings – some projects, whether a one-day outreach event or a long term partnership, touch the entire community, from dedicated staff to transitory patient populations to people outside the MTF and installation borders.

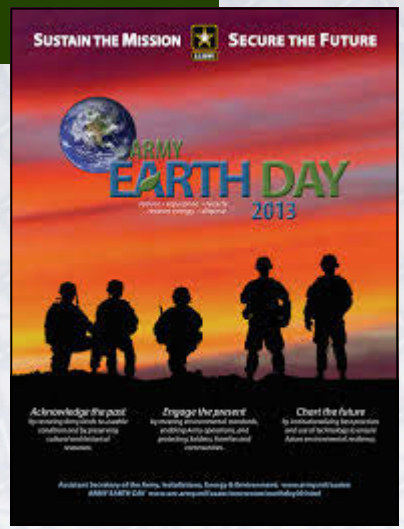
Bayne-Jones ACH Partnerships

Bayne-Jones ACH and the local Red Cross have an ongoing partnership to operate a book swap program. Used books are collected and swapped for a new selection of gently used books to be distributed to patients.

Bayne-Jones ACH partnered with the Fort Polk QRP and post elementary schools to see "Who Can Recycle Better Than a Fifth Grader." The friendly competition encouraged awareness of the newly established initiative to capture white paper at the MTF for recycling.

Posters advertised the Fort Polk white paper recycling contest at Bayne-Jones ACH.

Earth Day Event Partnership at Madigan AMC



In partnership with Joint Base Lewis-McChord (JBLM), the Madigan AMC Sustainability Team supported the post's the annual celebration of Army Earth Day. For Army Earth Day 2013, the Madigan Team helped:

- Plant a community garden containing over 100 raspberry plants,
- Gather 30 bags of trash during a cleanup at Solo Point Beach,
- Staff showings of "WALL-E" at the JBLM Carey Theater, and
- Provide information at educational booths at the JBLM Commissary and Post Exchange.

Madigan partnered with JBLM to celebrate Army Earth Day in a meaningful way.
Photo courtesy of Northwest Guardian

Evans ACH Partners with Memorial Hospital in Colorado Springs

Evans ACH conducted a hospital lunch and learn with University of Colorado Health System, Memorial Hospital in Colorado Springs to share sustainability successes, exchange lessons learned, and review the positive impact of sustainable business practices. The hospitals plan to meet periodically and continue the mutually-beneficial discussion sessions.

AWARDS & RECOGNITION

The Surgeon General Rewards MEDCOM Personnel for Service in Support of Sustainability

In 2013, LTG Patricia Horoho, MSN, MS, The Surgeon General and Commanding General of the United States Army Medical Command, awarded certificates of recognition to 23 MEDCOM personnel for their service in the development of MTF Sustainability Teams and for support of the MEDCOM Sustainability Program.

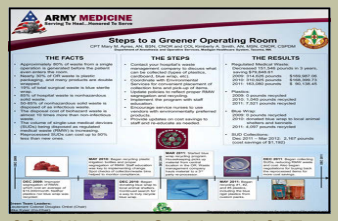
1. **COL Kimberly Smith, AN, MSN, CNOR, CSPDM**, Department of Anesthesia and Operative Services, Madigan Army Medical Center
2. **LTC Thomas Hundley**, Chief, Logistics, Womack Army Medical Center
3. **LTC Annie Cichocki**, Deputy Chief, Nutrition Care Division, Evans Army Community Hospital

The Evans ACH dining facility has eliminated polystyrene foam containers and now relies primarily on reusable dishware.

4. **LTC David Zajac**, Chief, Logistics, Evans Army Community Hospital
5. **MAJ David Glad**, Former Chief, Logistics, Moncrief Army Community Hospital
6. **CPT Mary Ayres, AN, BSN, CNOR**, Department of Anesthesia and Operative Services, Evans Army Community Hospital

MEDCOM winners of 2011 PGH awards. Pictured left to right: Ms. Tammy Ford, MEDCOM G9 Program Manager for Environmental Compliance & Sustainability; Ms. Linda Palmer, Madigan AMC; Mr. Michael Kyser, Madigan AMC; LTC Patrick Tavella, Moncrief ACH; MAJ David Glad, Moncrief ACH; Mr. Bert Crowell, Moncrief ACH.

7. **Ms. Tammy Ford**, MEDCOM G9 Program Manager for Environmental Compliance & Sustainability
8. **Chef Louis Borochaner**, Evans Army Community Hospital
9. **Ms. Reneá Boutte**, Chief, Environmental Services, Bayne-Jones Army Community Hospital
10. **Ms. Janice Burkes**, Linens Program, Bayne-Jones Army Community Hospital
11. **Mr. Jeff Cook**, CPN, NICU Wardmaster, Madigan Army Medical Center



COL Kimberly Smith and CPT Mary Ayres presented a poster on the Madigan AMC Green OR initiative at the 2012 CleanMed conference.

LTC David Zajac presented a poster on the Evans ACH sustainability program at the 2012 CleanMed conference.

12. **Mr. Bert Crowell**, Chief, Environmental Services, Moncrief Army Community Hospital
13. **Ms. Judy Darbyshire, CHESP**, Chief, Environmental Services, Evans Army Community Hospital (retired)
14. **Mr. Mike Eck**, Hazardous and Medical Waste Program, Environmental Health Engineering, U.S. Army Public Health Command
15. **Mr. Michael Kyser**, Environmental Protection Specialist, Madigan Army Medical Center
16. **Ms. Brandy Mitchell, RN**, DOL Clinical Analyst, Womack Army Medical Center
17. **Ms. Linda Palmer**, Chief, Environmental Services, Madigan Army Medical Center
18. **Mr. Rashad Rajab**, Chief, Facility Management, Evans Army Community Hospital
19. **Ms. Patricia Rippey**, Environmental Scientist, Institute of Public Health, U.S. Army Public Health Command
20. **Ms. Gilda Sanchez**, Linens Program, Bayne-Jones Army Community Hospital
21. **Mr. Vivek Singhal**, MEDCOM Energy Program Manager
22. **Ms. Dorothy Smith**, Chief, Environmental Services, Carl R. Darnall Army Medical Center
23. **Ms. Kathy Smith**, Chief, Environmental Services, Dwight D. Eisenhower Army Medical Center

COL Steven Brewster, Commander of Womack AMC, presents the TSG certificate to Ms. Brandy Mitchell.

AWARDS & RECOGNITION

Environmental Leadership Circle

Madigan Army Medical Center received the elite Environmental Leadership Circle Award in both 2012 and 2013, becoming the only Federal hospital to earn this award and the only Federal hospital to receive it in back-to-back years.

The Environmental Leadership Circle Award is America's premier award recognizing healthcare facilities that exemplify environmental excellence and are setting the highest standards for sustainability in healthcare.

Receiving the ELC Award for Madigan AMC (pictured left to right): Mr. Michael Kyser, Environmental Protection Specialist; CPT Mary Ayres, Department of Anesthesia and Operative Services; LTC Douglas Onkst, LOG Chief; and Ms. Linda Palmer, Environmental Services Chief.

The Surgeon General Recognizes MEDCOM PGH Award Winners

LTG Patricia Horoho, MSN, MS, The Surgeon General and Commanding General of the United States Army Medical Command, recorded messages congratulating the MTFs who received PGH awards.

"We applaud these facilities and their commitment to sustainable, eco-friendly practices that have made a difference in their communities. These awards validate the link between sustainable practice and the health of your patients, your teams, your communities, and our global environment.

Your work not only takes care of people, but it is key to energy and water conservation and waste reduction. We commend you on your accomplishments and for setting the green standard for others to follow.

These awards acknowledge great teamwork and compliance with standards, all key components of an Operating Company Model. We encourage you to keep up the good work and to continue to be good custodians of the environment and stewards of available resources."

Practice Greenhealth Awards

The Practice Greenhealth Environmental Excellence Awards recognize hospitals and healthcare systems that are working cohesively to gather data, set goals, benchmark, and share successes in environmental performance.

MEDCOM MTFs have earned PGH Environmental Excellence Awards for four years running, in recognition of outstanding efforts in medical sustainability.

2010	2011	2012	2013
Madigan AMC: Partner for Change With Distinction Award	**Madigan AMC:** Partner for Change with Distinction Award	**Madigan AMC:** Environmental Leadership Circle Award	**Madigan AMC:** Environmental Leadership Circle Award
Brooke AMC: Partner Recognition Award	**Moncrief ACH:** Partner for Change Award	**Blanchfield Army Community Hospital:** Partner Recognition Award	**Evans ACH:** Partner for Change Award with Distinction Award
Ireland ACH: Partner Recognition Award		**Darnall AMC:** Partner for Change Award	**Bayne-Jones ACH:** Partner for Change Award
Moncrief ACH: Partner Recognition Award		**Evans ACH:** Partner for Change Award	**Moncrief ACH:** Partner for Change Award
Kenner Army Health Clinic: Clinic Partner for Change Award		**Moncrief ACH:** Partner for Change Award	**Tripler AMC:** Partner for Change Award
		Winn ACH: Partner Recognition Award	**Womack AMC:** Partner Recognition Award

AWARDS & RECOGNITION

MEDCOM Green Glove Awards

In addition to participating in award competitions managed by other entities, MEDCOM established an internal sustainability recognition program, the Green Glove Award. Launched at the 2011 MEDCOM Training Symposium Sustainability Track, the MEDCOM Green Glove Award recognizes strides made by both personnel and MTFs in becoming more sustainable.

ARMY MEDICINE
Bringing Value...Inspiring Trust

HQ MEDCOM Sustainability
Green Glove Award

CERTIFICATE OF APPRECIATION

CPT JILL FOWLER-HAKES

29 June 2011

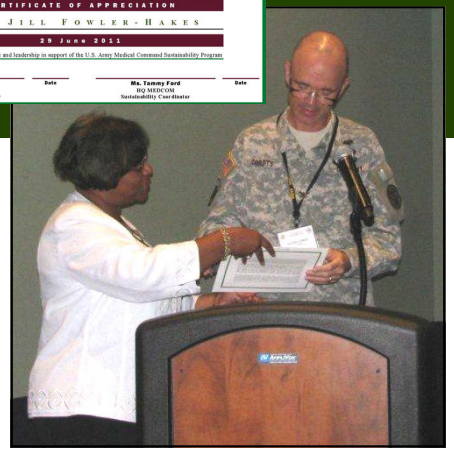
For exceptional service and leadership in support of the U.S. Army Medical Command Sustainability Program

COL George Dilly
HQ MEDCOM
Nutrition Program Manager

Date

Ms. Tammy Ford
HQ MEDCOM
Sustainability Coordinator

Date



In 2011, Ms. Tammy Ford, MEDCOM Environmental Compliance - Sustainability Program Manager, presented the inaugural Green Glove award to COL Paul Cordts, Commander of Winn ACH, to recognize the efforts of Winn to eliminate polystyrene foam from the dining facility. Shortly after receiving this award, COL Cordts became Commander of Blanchfield ACH.

Healthcare Without Harm Stephanie Davis Waste Reduction Award

In 2013 LTC David Zajac, Chief of Logistics for Evans Army Community Hospital received the Healthcare Without Harm Stephanie Davis Waste Reduction Award for documenting waste reduction opportunities and identifying innovative pollution prevention opportunities at Evans ACH. This award is competitive and given only to those truly making outstanding strides in hospital waste reduction.

Pictured left to right: MAJ Tami Gazerro, MS, RN, OIC OR CMS, Evans ACH; Gary Cohen, President, Healthcare Without Harm; LTC David Zajac, Chief, Logistics Division, Evans ACH. *Photo courtesy of Practice Greenhealth.*

Ms. Tammy Ford, MEDCOM Environmental Compliance - Sustainability Program Manager, received the inaugural SAME Sustainability Award for Education and Outreach in May 2012.

Society of American Military Engineers

Beyond the recognition from the Practice Greenhealth Awards, in 2012 the MEDCOM Sustainability Program won the inaugural Society of American Engineers (SAME) Sustainability Education and Outreach Award.

In a truly international competition, the SAME award recognized the MEDCOM Sustainability Program as having the best sustainability education and outreach program for meeting the goals of EO 13514.

AWARDS & RECOGNITION

MHS Healthcare Innovation Program: Cost Per Capita

The Military Health System (MHS) selected the MEDCOM Sustainability Program as the winner of the 2013 HIP award in the Per Capita Cost category for their entry titled "Greening the MEDCOM Operating Room."

The MHS Healthcare Innovation Program is a forum for introducing new ideas, methods, or devices that achieve mission performance gains. The primary focus of HIP is to share innovations that improve quality of care and access to care, increase satisfaction of patients and staff, and decrease healthcare delivery costs. The MHS HIP presents awards in the categories of Experience of Care, Per Capita Cost, Population Health, and Readiness, with one winner awarded per category.

http://health.mil/Military-Health-Topics/Innovation/Innovation-Awards

2013 marked the second year MEDCOM MTF sustainability initiatives were showcased by the MHS Healthcare Innovations Program. In 2012, two MEDCOM MTFs were selected to present virtual posters on their sustainability successes as part of the MHS HIP: Winn ACH at Fort Stewart, GA, presented a poster on its alternative energy program; and Evans ACH presented a poster on its green cleaning program.

"Greening MEDCOM Operating Rooms" won the 2013 MHS Healthcare Innovation Program Per Capita Cost award.

MEDCOM Sustainability demonstrated remarkable savings through efforts such as proper segregation of waste, recycling non-infectious waste, collecting single-use medical devices for reprocessing by an outside vendor, and transitioning to reusable surgical packs.

Operating rooms are one of the largest sources of waste in an MTF.

As Army MTFs begin implementing sustainability and looking for ways to reduce environmental impact, it makes sense to start with the departments that have the largest environmental footprints, i.e., the highest costs, greatest inefficiencies, and/or largest volumes of waste. The operating room is one of the largest users of supplies within the hospital as well as one of the largest producers of waste.

By supporting mission readiness through sustainability, MEDCOM is demonstrating that green medicine is not only practical and sustainable on a large scale but that it is also fiscally and socially beneficial to implement such practices.

Separating wastes appropriately and implementing recycling collection in the OR reduce disposal costs.

For More Information

To learn more about the benefits sustainability is bringing to Army Medicine, please contact:

MEDCOM G9
Program Manager for Sustainability
CDR USAMEDCOM
ATTN MCFA (G9)
2748 Worth Road
Fort Sam Houston, Texas 78234

Email:

usarmy.ncr.medcom-hfpa.mbx.g9-sustainability@mail.mil

Or, visit our web site at:
www.armyhealthfacilities.amedd.army.mil/sustainability.html

PATH FORWARD

MEDCOM Sustainability Looks To the Future

Today, MEDCOM is poised to accept the challenge to reduce energy and water consumption and reduce the generation of waste, both at home and abroad. Implementing sustainability initiatives is operationally necessary, financially prudent, and an essential key to maintaining a high level of operational proficiency.

To safeguard mission readiness, MEDCOM is implementing a Sustainability Strategy to improve quality of life for hospital staff and patients, strengthen community relationships, and reduce total costs of operation and ownership.

Initiating sustainability initiatives in healthcare operations will improve patient and employee health, protect and preserve the environment, support surrounding communities, decrease the amount of waste generated at MEDCOM facilities, and lower the cost of operations and ownership. Over the coming years, MEDCOM will continue to expand and improve the Sustainability Program, leading by example to demonstrate the successes possible through sustainable healthcare practices.

Triple-bottom-line improvements from sustainability support the MEDCOM mission and ultimately support the health of our nation's Warfighters and their families.

ACRONYM LIST

ACH	Army Community Hospital
AMC	Army Medical Center
ASCP	Army Sustainability Campaign Plan
BPA	bisphenol A
BSC	balanced scorecard
CCx	Continuous Commissioning
CMS	Central Materiel Supply
CoS	Chief of Staff
DEHP	bis(2-ethylhexyl) phthalate
DFAC	dining facility
DoD	Department of Defense
DPW	Department of Public Works
EBD	evidence based design
EO	Executive Order
EPA	Environmental Protection Agency
EPP	environmentally preferable purchasing
DEA	U.S. Drug Enforcement Agency
FDA	U.S. Food & Drug Administration
FY	fiscal year
HIP	**Healthcare Innovation Program**
HIPAA	Health Insurance Portability and Accountability Act
HQ	Headquarters
HQST	Headquarters Sustainability Team
HVAC	heating, ventilation, and air conditioning
JBLM	Joint Base Lewis-McChord
LEED	Leadership in Energy and Environmental Design
LOE	lines of effort
MEDCOM	U.S. Medical Command
MEDDAC	Medical Department Activity
MHS	Military Health Service
MTF	medical treatment facility
MWR	Morale, Welfare, and Recreation
OPORD	**operational order**
OR	Operating Room
PHI	protected health information
POC	point of contact
PV	photovoltaic
PVC	polyvinyl chloride
QRP	Qualified Recycle Program
RCM	reliability centered maintenance
RMW	regulated medical waste
SAME	Society of American Military Engineers
SAV	site assistance visit
SSPP	Strategic Sustainability Performance Plan
SUD	single use medical device
USAPHC	U.S. Army Public Health Command
VAV	variable air volume
VOC	volatile organic compound
WRMC	Western Regional Medical Command