Executive Summary:
All health care organizations have a responsibility to ensure the health care they provide is delivered in an environmentally responsible manner. This responsibility extends to all phases of the health care delivery spectrum including before, during, and after health care is provided. The desire to be environmentally responsible and to ensure compliance with all state and federal regulations led Tripler AMC to initiate a review of their disposal process for pharmaceutical supplies and regulated medical waste. The results of this review were nothing short of profound and led to systemic changes within the organization in terms of staff responsibilities and the processes in place to dispose of used, excess, and expired pharmaceutical supplies and regulated medical waste. Tripler AMC transitioned the responsibility for stocking medications in outpatient clinics from staff nurses to pharmacy technicians and implemented an algorithm to guide clinicians in the disposal of regulated medical waste. These changes resulted in combined cost savings and cost avoidances of $715,000 annually, as well as reduced the amount of regulated medical waste by 8.09 tons in the first year.
Objective of the Best Practice: Proper alignment of nursing and ancillary support staff enables outpatient clinics to increase the amount of time nursing staff spend performing patient care activities and reduces the amount of excess and expired pharmaceutical supplies generated by outpatient clinics. Implementing an algorithm to determine the proper disposal method for regulated medical waste reduces the amount of regulated medical waste disposed of in landfills and reduces the overall environmental impact of the organization. Implementing this best practice at Tripler AMC had the stated objective of reducing overall costs by $34,709 per year by reducing excess and expired pharmaceutical supplies returned and removed from bulk drug orders and improving the regulated medical waste disposition processes.

Background: In January 2011, excessive rainfall exceeded an Oahu landfill’s storm drain capacity leading to large amounts of landfill debris washing down the mountain-side and onto nearby beaches and eventually into the ocean. Among this debris was medical waste, some of which was attributed to Tripler AMC. While records indicated Tripler AMC had properly disposed of the waste, the event led to a thorough review of the regulated medical waste and expired pharmaceutical supply disposal process at the hospital. The process review resulted in two key findings: outpatient clinics were maintaining medications in their bulk drug orders which were no longer being used by staff and some regulated medical waste disposal processes were inefficient. In order to improve these aspects of the pharmaceutical and regulated medical waste management processes, a Lean Six Sigma project was initiated and championed by the department of preventive medicine.

Literature Review: Several articles have been published which indicate there will be an increase in the amount of legislation directed at further restricting options to dispose of excess or expired pharmaceutical supplies and regulated medical waste to limit future environmental impacts. An article published in 2010 indicated there are several courses of action health care facilities should pursue to avoid potential legal altercations including: prompt identification and removal of excess and expired medications, proper storage of medications pending disposal, and implementing disposition methods which conform to applicable state and federal laws and industry best practices (Senft). Another article published in 2010 highlighted steps the Environmental Protection Agency had initiated to identify procedures in place at health care facilities to prevent unused and excess medications from ending up in water supplies and causing potential contamination. The article indicated EPA findings that it had become commonplace in health care facilities to dispose of unused and excess medications by flushing them down toilets which greatly increased the risk of contamination in water supplies (Thompson, 2010). This study by the EPA led to a list of best practices which were published in the 76th volume of the Federal Register. The complete list of EPA best practices is included in table 1.

The proper disposition of regulated medical waste is also a vital component of achieving and maintaining Joint Commission accreditation. Specifically, two Joint Commission accreditation standards are affected by hospital policies and procedures for the management and disposition of regulated medical waste: Environment of Care (EC) standard 02.02.01, Element of Performance (EP) 8 and Medication Management (MM) standard 01.01.03, EPs 1-3. EC 02.02.01, EP 8 requires hospitals to minimize risks associated with hazardous waste disposition, while MM 01.01.03, EPs 1-3 require hospitals to document and implement processes to manage hazardous medications.
Implementation Methods: In January of 2012, Tripler AMC implemented an algorithm at five outpatient clinics designed to guide clinical staff in determining the appropriate disposition method for various forms of regulated medical waste. As seen in figure 1, Tripler’s algorithm process enabled clinicians to quickly assess, through a process of elimination, the most appropriate disposition method for regulated medical waste. Posting this algorithm in clinical areas served as a control to reverse the process of disposing of pharmaceutical waste in sharps containers. Additionally, Tripler AMC conducted a line-by-line review of bulk drug orders in the same five outpatient clinics to remove medications no longer used by staff and transitioned the responsibility for inventoring, restocking and removing expired medications from outpatient clinic nursing staff to pharmacy technicians. One pharmacy technician was capable of providing support to five outpatient clinics as opposed to each outpatient clinic utilizing one of their own nursing staff members to perform these duties.

Results: Implementation of these two process changes at Tripler AMC resulted in significant cost savings and cost avoidance through improved staff efficiency and reductions in the amount of pharmaceutical supplies returned and removed from clinic bulk drug orders on a bi-weekly basis. As seen in table 2, the total financial incentive over the course of eight years is $5.7 million when implemented at all Tripler AMC outpatient clinics. Additionally, the program reduced the amount of regulated medical waste generated annually from 88.62 tons in 2011 to 80.53 tons in 2012. In total, Tripler AMC reduced regulated medical waste by 8.09 tons or 9%.

Transitioning responsibility for restocking pharmaceutical supplies in outpatient clinics from one staff nurse per outpatient clinic to one pharmacy technician serving five outpatient clinics reduced the amount of man hours required per week to restock pharmaceutical supplies from 3.09 when performed by staff nurses to 1.17 hours when performed by a pharmacy technician. This change increases staff nurse availability for patient care and reduced the cost per hour to perform pharmaceutical supply restocking in outpatient clinics. The most significant cost savings and avoidance were realized through reductions in the amount of medications returned from outpatient clinics and the amount of medications removed from outpatient clinic bulk drug orders. Implementation of these processes at Tripler AMC reduced the amount of medications returned from each outpatient clinic by $1,179 every two weeks. Additionally, the procedural changes resulted in $1,134 of medications removed from bi-weekly outpatient clinic bulk drug orders.

As a result of saving approximately $350,000 per year, cost avoidance of an additional $365,000 per year, and reducing the amount of regulated medical waste placed in Oahu landfills by 8.09 tons, Tripler AMC’s pharmaceutical and regulated medical waste management process was recognized by Practice Greenhealth as a 2013 Partner for Change award recipient.

Conclusion: A comparison of the procedures implemented at Tripler AMC and EPA suggested best practices indicate Tripler AMC was able to incorporate EPA suggestions into a model that feasible for implementation at a large military medical center. This best practice is of significance to the health care community because it demonstrates that being environmentally responsible can also be financially rewarding. Utilizing subject matter experts to manage pharmaceutical supplies in outpatient clinics and developing a simple algorithm to dispose of regulated medical waste can reduce the impact on the environment and contribute to a healthier bottom line for the organization.
Conduct an inventory of pharmaceuticals and pharmaceutical waste to quantify the amount of medication the facility is disposing of.

Reduce pharmaceutical waste by reviewing purchasing practices, use limited dose or unit dose dispensing, replace pharmaceutical samples with vouchers, and perform on-going inventory control and stock rotation.

Reuse or donate unused pharmaceuticals when possible.

Segregate waste for disposal to ensure regulations are met.

Train staff in proper disposal methods.

Send unused pharmaceuticals to a reverse distributor for credit and proper disposal in accordance with the facility’s state environmental regulations.

Return unused pharmaceuticals to the pharmacy.

Properly identify and manage hazardous pharmaceutical wastes in accordance with federal and state regulations.

Use EPA recommended practices to dispose of non-hazardous pharmaceutical waste at the facility.

Table 1. EPA best practices for management of expired and excess pharmaceutical disposal. (Notice of Final 2010 Effluent Guidelines Program Plan, 2011).

Figure 1. Algorithm displayed in Tripler AMC clinical areas responsible for disposing of regulated pharmaceutical waste.
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Table 2. Annual costs savings and cost avoidance resulting from best practice implementation.

References

