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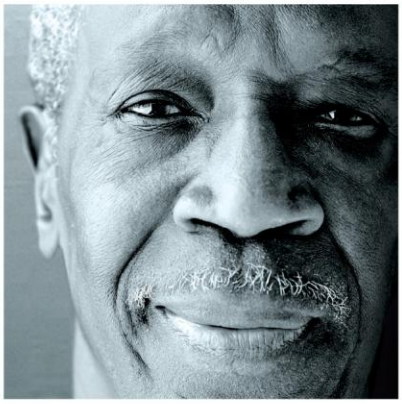

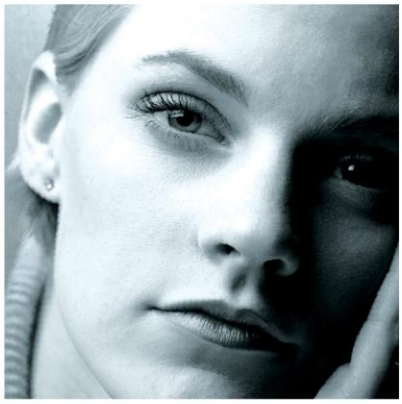

Dispensary of Hope Impact Report

December 1, 2012

DISPENSARY OF HOPE

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Established in 2003, the Dispensary of Hope (DoH) is a Nashville-based licensed medication distributor. Organized as a not-for-profit charity, the DoH is a unique national collaborative that recovers donated surplus medication from physician offices, hospital pharmacies, manufacturers, distributors, and other licensed healthcare providers. After receiving medication at its Nashville, Tennessee distribution center and tracking every pill through a state-of-the-art inventory management system, medication is then distributed among a national network of safety-net organizations. These organizations include: 1) licensed nonprofit free, charitable, and volunteer clinics, 2) nonprofit community-based clinics, 3) federally subsidized safety net clinics, and 2) licensed retail charitable pharmacies. The medication is given away for free to patients who lack healthcare insurance and are under 200% of the Federal Poverty Level.[i]

Credited to its thoughtful design, the Dispensary of Hope supports the primary care medical home model and improves the health of tens of thousands of patients at a very low cost. This report describes the environment in which low income, chronically ill, uninsured persons seek access to medications. It also provides a review of the health, financial, and environmental impacts of the Dispensary of Hope.

The Ecosystem: A description of the access environment

In 2011, 15.7% of all Americans (or 48.6 million people) lacked health insurance.[ii] A 2008 review of the National Health and Nutrition Examination Survey found that the uninsured population is less healthy than those with health insurance, with one third (or about 16 million) of all uninsured people suffering from at least one chronic illness. Many require medication to become or to stay healthy, medication which can be inaccessible for those lacking healthcare coverage. [iii] Twenty-four percent of all uninsured people report that they could not afford their prescription drugs, a number that is almost 5 times higher than that reported by people with private insurance.[iv]

Historically, there are safety net programs that provide some level of medication access to the uninsured. However, these programs leave various gaps, including the limited ability to strengthen safety net clinics and pharmacies with large inventories of branded medications. The Dispensary of Hope fills this need by providing an on-site supply of over $100,000 annually in branded and generic medication to safety net clinics, shipped weekly per the

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order of the clinic's Medical Director/Pharmacist, and in packaging and volumes appropriate to the clinic setting.[v] Medical Directors and executives serving the national network of dispensing sites have reported that an on-site supply of donated medication fills four troublesome gaps:

1. **Homeless Population** – Due to their transient living situation and low income, homeless people are not good candidates for manufacturer-donated medications or discount programs. As such, an immediately accessible inventory of medication supplied by the Dispensary of Hope to the clinic staff provides expanded solutions for clinics serving the homeless.

2. **Migrant and Undocumented Population** – Migrant populations, particularly patients who are undocumented, low income, and chronically ill do not qualify for the majority of manufacturer-donated medication programs. Dispensary of Hope inventories strengthen the ability of migrant and charity clinic staff to care for the undocumented poor with chronic disease.

3. **Noncompliant Patients and Those Needing Education** – Physicians who serve safety net facilities have reported valuing the opportunity to supply patients with medication, particularly when patients have been noncompliant, have limited health literacy, have repeatedly fallen off a prescription regimen, or who fail to comply with return visits (doctors use free Dispensary of Hope medication to incent regular return visits to the clinic).

4. **First Fill and Refill Gap Supply –** Manufacturer patient assistance program medications provide a useful way for clinics to provide access to branded medication. However, the supply typically takes two to six weeks to arrive. Clinics use the Dispensary of Hope on-site supply to provide a first fill of 1 to 2 months to patients who are awaiting their manufacturer-donated medication. Clinics also use medication inventory to resupply patients experiencing delay gaps in manufacture patient assistance program reapplications.

Financial Impacts and Return on Investment

The financial impact of the Dispensary of Hope should be measured in three ways: 1) the cost savings experienced by donor practices seeking to avoid medication destruction, 2) the financial benefit of medication distributed to each clinic (per-site return on investment), and 3) the overall financial impact of the Dispensary of Hope (organizational administrative percentage).

Cost Savings Experienced By Donor Physician Practices

The average physician practice sees 14% of its sample medications expire on its shelves, a total of about 534 pill bottles annually per practice.[vi] The destruction of expired medication can be extremely costly. The destruction process includes: monthly inventory of medication, written delogging of destruction stock (writing down chemical names, dosages, lot numbers, and number of tablets), opening and discarding the cotton and metal seals of each bottle, and discarding the pills in an absorbent medium such as coffee grounds or waste litter. For a health system that maintains 50 practices and 150 samples closets, the cost for destruction of medication is $358,200 annually.[vii]

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The Dispensary of Hope has made it easier, less expensive, and less risky to manage sample medication inventories.

Overall Administrative Percentage

The Dispensary of Hope represents an efficient infrastructure to provide medication access for the poor and reclaim surplus medication. In any given year, the Dispensary of Hope sources over 700 different drugs from its +1,000 member healthcare facility donor network of manufacturers, practices and pharmacies. The organization holds about 1,500 different drugs in inventory. The mix of these medications includes generic and branded medications, as well as OTC, glucometers, test strips, glucometer control fluid, and lancets. In the past 12 months, the Dispensary of Hope has acquired $10,268,201 in usable medication and at the same time has dispensed a total of $3,699,680 to 90 different safety net clinic and pharmacy sites in 15 states and held over $7,000,000 in inventory. **With an annual expense of $1,100,000, the Dispensary of Hope runs an administrative percentage of 29.3%, an efficient administrative percentage for a four-year old nonprofit business model. This currently provides a return of $3.36 for every dollar invested, an amount which becomes more efficient every month of operation.**[viii]

Per-site Return on Investment

The Dispensary of Hope saves safety net clinics money by providing medication at very low cost. There are two types of dispensing relationships that the Dispensary of Hope maintains with safety net clinics, each providing a strong return: 1) sites which order a small amount of specific medication a la carte, and 2) sites which enter into a subscription relationship with the Dispensary of Hope in order to receive a wide supply of donated medication. Of the 90 sites ordering medication, 29 currently have an a la carte relationship, and 61 have a full/shared subscription.

For clinics that have an a la carte relationship with the Dispensary of Hope, the annual order of medication averages $5,014 annually and has a return on investment of $10 for every dollar spent. For organizations that subscribe to the Dispensary of Hope, the average annual order is $100,713 in medication at a cost of $7,500. At the same time, charity pharmacies order and dispense an average of $155,516 in medication at a cost of $7,500.[ix] **With a set cost of $7,500 per site, access sites experience a return on investment between $13.43 to $20.74 per every dollar spent, a force multiplier for safety net organizations caring for the poor while struggling with limited direct service dollars.**

Health Impacts

Medication nonadherence is a $317 billion problem annually.[x] The Dispensary of Hope provides branded and generic medication to low income, chronically ill, uninsured patients, reducing medication nonadherence.

Medication nonadherence, or a reduced rate at which patients comply with medical advice in respect to taking medication at the proper time or the proper dose, is a serious barrier to improved health outcomes. Research as far back as the 1980s established that medication nonadherence resulted in 23% of all admissions into nursing homes and 10% of all hospital admissions. Exhaustive contemporary research has demonstrated the link between a patient's inability to afford or access medication, poor medication adherence, and poor health

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outcomes.[xi] Among those who cannot afford medications, strategies that provide affordable medication also improve medication adherence, improve patient health, increase patient quality of life, and lower healthcare costs.

It is known that 15% of the insured population is nonadherent to their medication regimen due to cost.[xii] Among the nation's 48.6 million uninsured, a population that suffers from increased barriers to medication adherence such as higher cost and deceased access, the rate of nonadherence is higher than that of the insured population. Peer reviewed evidence (described below) shows that providing low cost medication soon after the moment of prescription and continually though the course of treatment, improves adherence to a medication regimen. A myriad of peer reviewed evidence demonstrates for disease states such as hypertension, high cholesterol, asthma, and diabetes that increased medication adherence has a direct causal relationship to improved health outcomes. This results in increased employability, quality of life, taxable income for the community, and longevity.

Three areas of study demonstrate the relationship between medication access and levels of adherence, quantifying the immediate and long-term impacts of the Dispensary of Hope.

- The Study of Cost-Related Nonadherence (CRN) has discerned the relationship between medication cost, medication adherence, and health outcomes improvement. While there is no research available on the impact of CRN on the uninsured, robust research on CRN has established that higher medication costs, as well as changes in payment structures (cost sharing, co-pays, and dispensing fees) lead to both lowered medication adherence and decreased patient health outcomes. In one study, doubling an insured patient's copays for medicines, and impact of just a few dollars, negatively impacted medication adherence by 25 - 45%, resulting in higher emergency room visits and increased hospital stays.[xiii] While cost is not the only impact on adherence and while these studies looked at the impact of cost increases on insured populations, one can deduce that increases in costs among the poor will also result in lowered adherence health outcomes.[xiv]

- A second area of study has established that the uninsured are less healthy then the insured, and pay more for their healthcare (including prescriptions) than do the insured. In 2008, the uninsured incurred $1,686 in total health care costs, a higher percentage of income when compared to the insured.[xv] For reasons of increased cost, more than 25% of uninsured adults do not fill prescriptions.[xvi] Not only does cost impact adherence, the uninsured suffer from higher rates of chronic illness and experience higher healthcare costs than do the insured.

- It is therefore known that the uninsured are more likely to be chronically ill and pay more of their income on healthcare. It is also known that the cost of medication impacts adherence, and therefore health outcomes and quality of life. It would then be intuitive that increased access to medication results in increased adherence. While there is difficulty in moving large populations from uninsurance to healthcare coverage for the sake of research, a unique opportunity in Oregon in 2008 resulted in a randomized controlled design study tracking a population that

moved from uninsurance to Medicaid coverage and access to medication. In 2008, a group of uninsured low-income adults was selected by lottery to be given Oregon's Medicaid coverage. This lottery allowed researchers to gauge the effects of expanding access to public health insurance and medication access on the health care use, financial strain, and health of low-income adults. Once completed, the change in providing access to medication to low income, uninsured patients soon after prescription through the course of needed treatment resulted in a 15% increase in medication adherence.[xvii]

While the studies cited above do not specifically look at the medical charts of Dispensary of Hope-served patients, the research relates to populations and programs that closely mirror operations administered by the Dispensary of Hope and its national network of charitable medical home clinics. One can deduce that the Dispensary of Hope's medication access programs produce similar results—increasing adherence and improving health outcomes.

Environmental Impacts

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Pharmaceutical waste is a massive problem in American society, resulting in increased avoidable costs and environmental pollution. Each year, consumers waste $408 billion in medications due to non-adherence, suboptimal delivery channels, and suboptimal dispensing of low cost alternatives.[xviii] While most consumer surplus cannot be recovered for reuse, a large portion of surplus generated by licensed healthcare facilities (manufacturers, distributors, pharmacies, hospitals, and physician practices) may be recoverable. Healthcare facility surplus is most often attributed to overproduction, over-purchase, and nonuse, and results in billions of dollars annually in increased costs, as well as thousands of tons of waste material in landfills. A review of medication destruction data for one of the nation's largest health systems found that between $600 and $800 million each year in wasted medications originates from hospital-based pharmacies.[xix] Another study by the Journal of the American Board of Family Medicine found that $2.2 billion in sample medications were wasted by physician practices.[xx] Samples waste alone equates to over 1,650 tons annually in medication and packaging, medication that may be recovered for use, but is wasted due to expiration.[xxi]

For surplus medications to be recoverable and dispensed to patients, the medication must have been: 1) housed only in licensed healthcare facilities for the duration of its life; 2) stored appropriately in terms of temperature, humidity, and access; 3) never prescribed, 4) never opened or tampered (exception is repackaging by an FDA licensed medication packager), and 5) unexpired. From July 2009 to November 2012, the Dispensary of Hope received and processed $30,490,000 in medication, an amount equivalent to 6,633,067 doses or 22.87 tons of medication and packaging. After processing, the Dispensary of Hope has been able to distribute and inventory $19,759,754 in medication, or an amount equivalent to 4,298,714 doses or 14.82 tons in medication and packaging.[xxii] The Dispensary of Hope has been able to recover, distribute, and have dispensed to patients 65% of all the medication it received. Considering that as much as 30% of all medication shipped into the facility is already too short dated to inventory, that means that the vast majority (90%) of surplus medication is useful in filling a therapeutic need somewhere in the US. Though the Dispensary of Hope conducts heroic work reducing waste and providing much needed medication for the poor, the program still recovers

less than, .0071% of all surplus sample medication - an enormous opportunity to expand impact in reducing waste while improving the health of those in need.

Results

The Dispensary of Hope is a unique and effective thought leader in the medication recovery arena, recovering and processes millions of dollars annually in medication. This medication is then provided for free to low income, uninsured, chronically ill patients. The program then bridges long term access to the same medication, impacting the environment and patient health, in a way that returns a strong value to society, to donors, and to clinics. The Dispensary of Hope's overall impact results in a 15% decrease in medication nonadherence among the uninsured, a reduction in avoidable medication waste, and all at a remarkably reduced cost to charity care providers. As the Dispensary of Hope continues to grow its donor and dispensing network, larger numbers of patients will benefit from reduced waste and increased access to life saving medication.

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[i] A 2012 maximum gross income of $46,100 for a family of four.
[ii] "Income, Poverty and Health Insurance Coverage in the United States: 2011," US Census Bureau, September, 12, 2012.
[iii] Wilper A, et al "A National Study of Chronic Disease Prevalence and Access to Care in Uninsured U.S. Adults" Annals of Internal Medicine 2008.
[iv] "Five Facts about the Uninsured Population" Kaiser Commission on Medicaid and the Uninsured. September 2012.
[v] Dispensary of Hope internal data based on actual 6-month retrospective distribution data. Compiled November 2012.
[vi] "Many Sample Closet Medications are Expired" Journal of the American Board of Family Medicine. May 2012.
[vii] 150 sample closets @ $2,190.40 per closet, Dispensary of Hope Donor Evaluation, 2011.
[viii] The current ROI value of $3.36 per $1.00 is understated for two reasons. 1) First, over the past year, the addition of new dispensing sites has not kept pace with the rapid increase in acquiring donors, resulting in an accelerated acquisition of medications with a flat distribution of the same medications and flat expenses. Indicative of this issue has been an increase in medication inventory in the Dispensary of Hope Distribution Center from an inventory of $3,300,000 in October 2011 to an increase to $7,400,000 in October 2012. 2) The second reason the current ROI value understates the impact of the Dispensary of Hope is because, as would be anticipated with any 4-year-old program model, the trajectory of growth will increase the company's efficiency, as fixed costs (facility costs, development of an IS system, executive and professional staff) are reduced when compared to variable costs (postage, purchased medications, front line staff). The Dispensary of Hope anticipates an overall annual Return on Investment growing over the next several years to $9.33 for every dollar invested and an administrative percentage of 10.71% by 2015. This forecast is based on an annual expense of $1,500,000 and a distribution of $14,000,000 in medication to 156 dispensing sites, a goal anticipated to be achieved by 2015.
[ix] Dispensary of Hope internal data based on actual 12-month retrospective distribution data. Compiled December 2012. All values reflect Average Wholesale Price (AWP).
[x] "New Insights in Nonadherence" Express Scripts, http://www.drugtrendreport.com/insights-and-solutions/nonadherence-new-insights
[xi] "Patient adherence and medical treatment outcomes: a meta-analysis" *Med Care.* 2002 and "Impact of medication adherence on hospitalization risk and health care cost" *Med Care.* 2005.
[xii] "Nonadherence: the $30 Billion Problem" Express Scripts. http://www.drugtrendreport.com/insights-and-solutions/nonadherence-new-insights/the-317-billion-problem#
[xiii] "Pharmacy Benefits and the Use of Drugs by the Chronically Ill," JAMA, May 2004.
[xiv] "Medication Adherence in Cardiovascular Outcomes" Circulation. 2009;119:3028-3035
[xv] "The Uninsured, a Primer" Kaiser Family Foundation. October, 2012.
[xvi] "The Uninsured, a Primer" Kaiser Family Foundation. October, 2012.
[xvii] "NBER Working Paper Series: THE OREGON HEALTH INSURANCE EXPERIMENT", Amy Finkelstein, et al, 2011
[xviii] Express Scripts Analysis, http://www.drugtrendreport.com/insights-and-solutions/waste-across-america
[xix] Internally compiled Data. Ascension Health Pharmacy Reverse-Distribution Waste Analysis Project, 2011.
[xx] "Many Sample Closet Medications are Expired" Journal of the American Board of Family Medicine. May 2012.
[xxi] "How to Dispose of Unused Medicines" FDA Consumer Health Information. 2012.
[xxii] Not accounting for variations in packaging size (resulting in a +10% or -10% variation in weight), every $10,000 (AWP) in branded sample medication value weighs 15lbs and consumed 2.25 cu. ft. of space. Dispensary of Hope Internally compiled Data. 2012.

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