The Bug-Bag: Consolidating Medications to Cut Costs

James Harrigan PharmD, MS3; Erin Bange MD; Jessica Caro MD; Sarah Yeager PharmD; David Manoff MD

Background

Founded in 1991, JeffHOPE is an organization of student run medical clinics providing care to the homeless and underserved populations of Philadelphia. JeffHOPE currently operates at 5 different sites

- **Eliza Shirley**
  - Population served: Women and children
  - Serves as a transitional shelter and aims to help newly homeless women and children find more stable housing
- **Sunday Breakfast**
  - Population served: Men older than 18
  - Serves as a transitional shelter offering housing for 30 days for homeless men
- **ACTS**
  - Population served: Women and children
  - Provides long term housing for women and children who are homeless. The shelter is also located next to a recovery house for drugs and alcohol whose participants are also seen in clinic.
- **Our Brothers' Place**
  - Population served: Men older than 18
  - Serves as a long term men's homeless shelter. Most residents stay in the shelter for 60-90 days before finding more permanent housing.
- **Prevention Point**
  - Population served: Men, women, and children
  - Mobile clinic conducted along with a needle exchange program using a harm reduction model of care.

Pharmacy at JeffHOPE

- Pharmacy committee consists of a MS3 director, MS2 committee members at each clinic, pharmacy residents and pharmacy students.
- MS2 committee members are responsible for dispensing and ordering medications.
- Each clinic has a separate supply of medications based on their individual needs.
- Medications are ordered from different sources with different grants.
  - General: Using McKesson as a wholesaler, medications are ordered in bulk and priced based on acquisition cost (ACQ).
  - Apothecary Grant: Yearly grant from the Jefferson Apothecary. Medications can be ordered in smaller quantities, and are priced based on average wholesale price (AWP).
  - Additional grants exist for medications ordered for the women and children clinics

Question

- What would be a less wasteful and more cost effective system of distributing expensive and rarely utilized medications?
  - Each clinic had a varied need for antibiotics, and anticipating that need was a challenge.
  - As a result, each clinic tended to carry a full supply of antibiotics, leading to increased expired stock

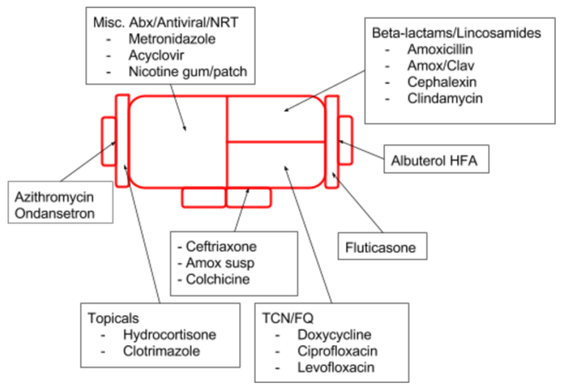
Criteria / Formulary

In order to maximize the impact on centralizing supply, medications were chosen based on certain criteria.

1. Antibiotics: Antibiotics were included for multiple reasons. Anecdotally, these tended to be the medications that were returned expired while being the most costly. Antibiotic use was also sporadic and unpredictable, so always having a supply on hand was essential for prompt care.
2. Inhalers/Nasal Sprays: Keeping individual clinics stocked with expensive items had led to overordering and under utilization. We decided to these, since they were dispensed as a single unit and required multiple units at each clinic.
3. Items used sporadically with increased frequency: We decided to include certain topical agents, such as topical corticosteroids and antifungal medications.

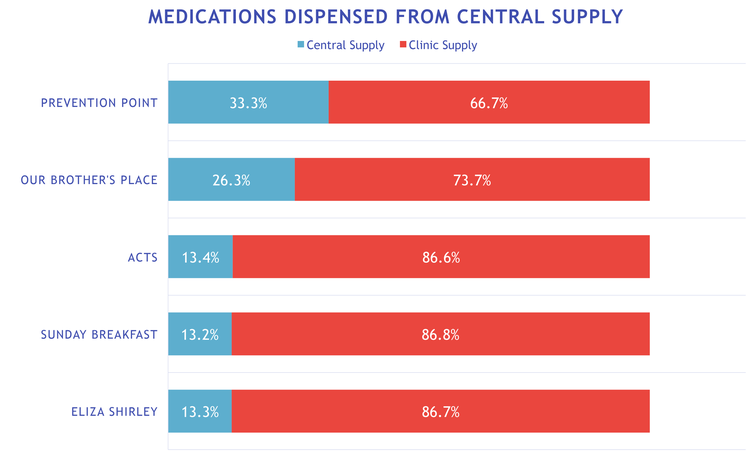
Medication	Min Quantity	Medication	Min Quantity
Amoxicillin 250mg	42 capsules	Fluconazole 150mg	6 tablets
Amoxicillin 250mg/5mL	2 bottles	Clotrimazole 1%	6 tubes
Amox/Clav 500/125mg	28 tablets	Hydrocortisone 1%	6 tubes
Amox/Clav 875/125mg	28 tablets	Ventolin HFA inhaler	5 inhalers
Cephalexin 250mg	56 capsules	Fluticasone NS	3 tubes
Ceftriaxone 250mg IM	5 vials	Ondansetron 4mg	21 tablets
Clindamycin 150mg	42 capsules	Colchicine 0.6mg	6 tablets
Clindamycin 300mg	42 capsules	Nicotine 7mg patch	28 patches
Levofloxacin 500mg	28 tablets	Nicotine 14mg patch	28 patches
Ciprofloxacin 250mg	28 tablets	Nicotine 21mg patch	28 patches
Azithromycin 250mg	30 tablets	Nicotine 2mg gum	1 box (110 pc)
Doxycycline 50mg	28 capsules	Nicotine 4mg gum	1 box (110 pc)
Doxycycline 100mg	28 capsules		
Acyclovir 400mg	35 capsules		
Metronidazole 500mg	42 tablets		

Pharmacy Bag Legend (top-down view)



Implementation and Challenges

- Step 1: Worked with pharmacist and attending to develop the formulary
  - Initially, one strength of a given medication was included
    - Alternative strengths would be made by doubling/splitting pills
    - This led to shortages on medications; ultimately we included multiple strengths to make stocking easier
- Step 2: Medications were organized inside the bag by drug class (e.g. beta-lactams vs. fluoroquinolones)
  - Since MS2 committee members have not had pharmacology training, an easy to use key was developed
- Step 3: Order-up-to levels (i.e. the quantity at which a medication should be reordered) were established
  - This was initially based on the typical quantity dispensed and frequency of dispensing
- Step 4: Medications were added or removed on a per-item basis
  - Additional items (e.g. colchicine and ondansetron) were added as they were expensive medications that were used infrequently
  - Most clinics dispensed approximately 13-26% of medications from the pharmacy bag



Areas for Future Research and Improvement

- Developing an inventory system to track dispensing and provide updated inventory
- Assessing the impact of the pharmacy bag on decreasing waste, by tracking expired items from both the clinics and the pharmacy bag
- Assessing the impact of cost, by measuring trends in ordering
- Using economic formulas to determine order-up-to levels
- Determine trends in prescribing to predict future needs

References

1. JeffHOPE. http://www.jefferson.edu/university/jmc/departments/family_medicine/community/jeffhope.html. Accessed December 23, 2016.
2. World Health Organization. Essential medicines, 19th edition. Available: http://www.who.int/medicines/publications/essentialmedicines/en/ Accessed 2017 January 5.