

Sleep Apnea Treatment Equipment

Jenish Patel; Gerald Gentz; Michael Thome

Cleveland Clinic- Main Campus



Background

- Sleep Apnea is a serious sleep disorder that occurs when a person's breathing is interrupted during sleep, sometimes hundreds of times during the night. Those who suffer from a form of sleep apnea will feel fatigued, drowsy, and irritable during the day due to a decrease in the amount of time spent in Rapid Eye Movement (REM) sleep.
 - Obstructive Sleep Apnea (OSA)
 - Caused by a blockage (apnea) or partial blockage (hypopnea) of the airway. Usually, the soft tissue in the back of the throat collapses.
- Positive Airway Pressure (PAP) is the most common and least invasive form of therapy for OSA.
 - The machine pumps air through a hose and face mask to act as a pneumatic splint that keeps the pharyngeal airway open. It can come in the forms of Continuous PAP, Autotitrating PAP, Variable or Bi-level PAP, and Servo Ventilation.

Hypothesis

- Currently, the majority of OSA patients are provided a PAP machine through a home health care company. Cleveland Clinic Home Health Services sets up approximately 60 patients a month with a PAP machine.
- Hypothesis
 - Introducing PAP machines to the outpatient pharmacy product line and educating the pharmacy staff will benefit patients of sleep apnea in terms of compliance and accessibility.

Methodology

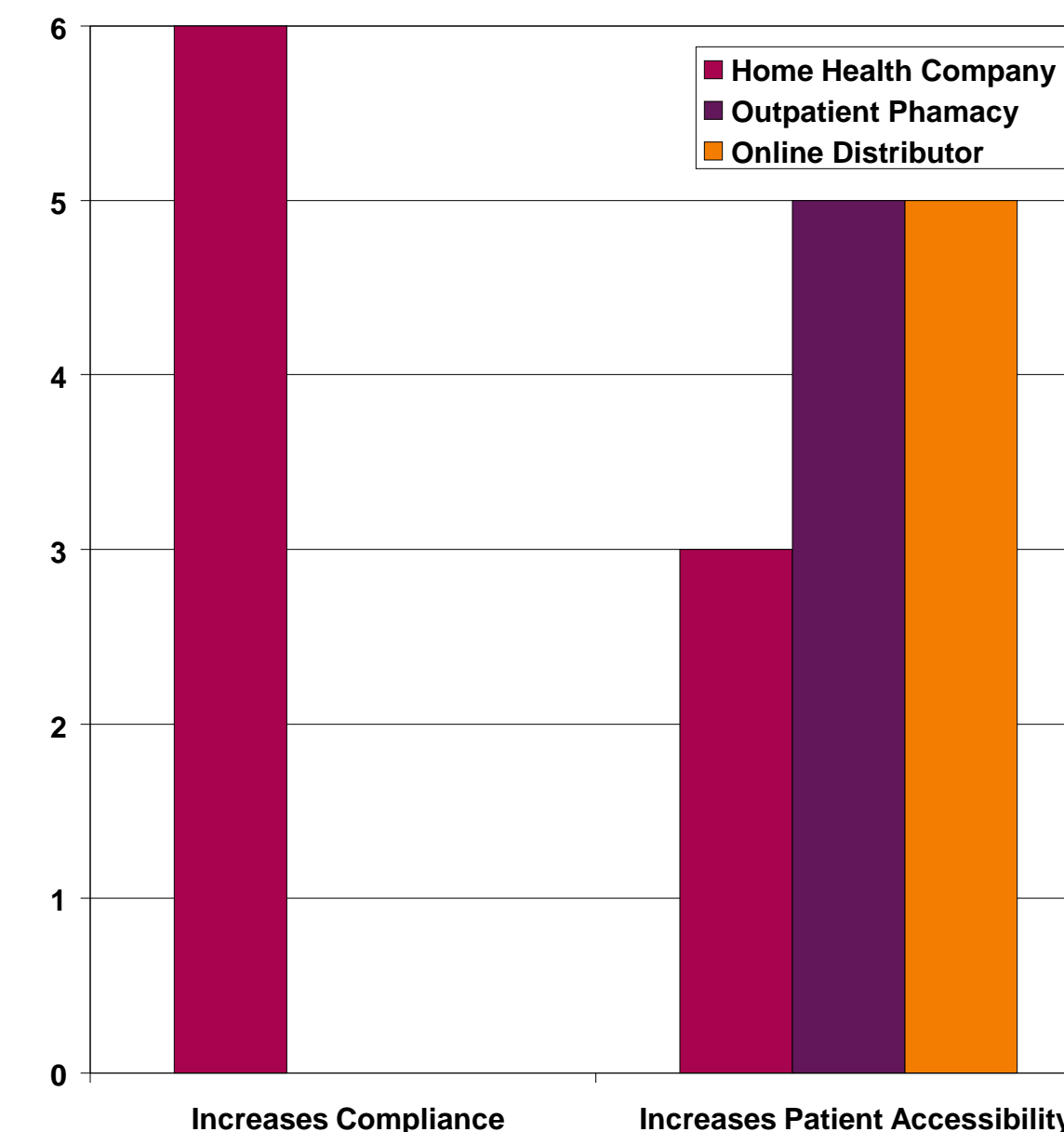
- The benefits of providing PAP machines to the outpatient pharmacies was evaluated through product research and several interviews were conducted with physicians, respiratory therapists, sleep technicians, and home health care respiratory therapists.
- Data was then used to compare the Cleveland Clinic Outpatient Pharmacies, the Cleveland Clinic Home Care Services, and primary internet distributors.
- An educational brochure was made and used to educate pharmacists on sleep apnea in order to increase awareness.

Data

	Home Care Services	Outpatient Pharmacy	Online Distributor
Serves patients from the Cleveland Clinic	X	X	X
Can serve patients from out of state or out of the country		X	X
Personalized education on sleep apnea, product usage, and mask fittings	X		
Routine home calls and visits by a technician to monitor progress	X		
No monthly fees		X	X
The ability to exchange/return machines or accessories	X		
Electronically monitors usage of machine for compliance	X		
24x7 call by assistance	X		
Ability to rent a machine	X		
Ability to purchase a specific machine or accessory	X	X	X
Medicare/ health insurance coverage (if proven compliant)	X		
Convenience of acquisition in proximity to Main Campus		X	

Results

- Each of the 12 criteria that were used to compare the three PAP machine distributors were individually categorized to show an increase in patient compliance with the therapy or an increase in patient accessibility of the products.
- Six criteria were categorized to show patient compliance, and the other six show patient accessibility.



- The educational brochure was created to focus on the following:
 - The causes of OSA
 - Who the disease affects
 - Signs and Symptoms
 - Long term effects
 - Treatment with PAP machines
 - Quick facts for maintenance and maximizing the benefits of PAP treatment
 - A Pharmacist's role in OSA awareness and assistance

Conclusions

- Cleveland Clinic outpatient pharmacies cannot compete with the many services that Cleveland Clinic Home Care Services can provide for patients of OSA.
- The Treatment of OSA with a PAP machine is considerably hard for patients to adhere to, and therefore, need follow up by trained specialists.
- Pharmacists cannot provide any more or even the same amount of service as a Home Health Care Clinic in order to increase compliance.
- PAP machines should not be treated as over the counter purchases because of all the follow up assistance that is needed for patients.
- The outpatient pharmacies are proven to be easily accessible to patients, and therefore, have the potential to assist sleep apnea patients with education.
- Education on OSA will increase awareness of the sleeping disorder since 90% of patients are unaware that they have it.
- Pharmacists' knowledge of OSA will benefit the patients.
 - If pharmacists are familiar with the signs and symptoms of OSA, they can recommend the unaware patients to have an exam.
 - If a patient has a basic problem with their PAP equipment, a pharmacist could be able to assist them or direct them to someone who could.

Recommendations

- The educational brochures that were created should be distributed to all CCF pharmacy employees.
 - Brochures should be used for all new employee training or staff meetings with a quick discussion and demonstration of PAP machines.
- Have at least one PAP machine on a main campus pharmacy for employee demonstrations or for answering patient questions.