



Pilleve Smart Pill Dispenser

VALUE BRIEF

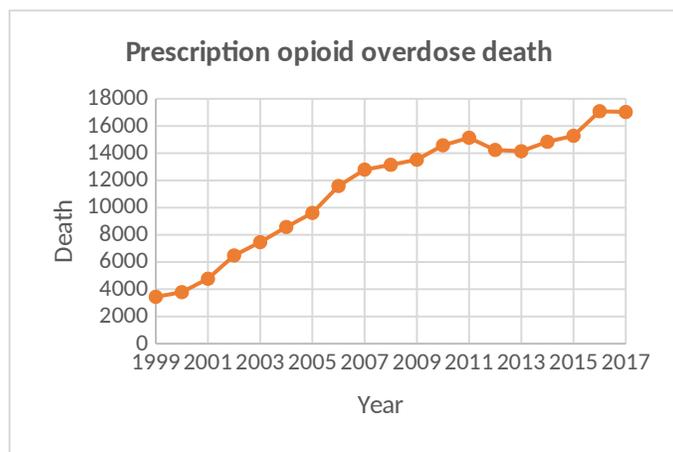
Introduction

This value brief presents information on the clinical and economic values of prescribing opioids with the Pilleve smart pill dispenser. This secure pill dispenser is intended for safer prescribing of opioids to prevent substance abuse. The device easily pairs with patients' smartphones to provide a safer way to dispense opioid pills and monitor opioid consumptions.



Background: Opioid Epidemic

Over 126 million adults have complained of having pain resulting in mass opioid prescribing.¹ Unfortunately, opioid overdose has taken over 17,000 lives in 2017 and this number has grown 2-fold in the past decade.² Prescription opioid deaths from 1999 accounted for on average 31% of all drug overdose related deaths in the US.



The opioid overdose is responsible for an approximated 147,000 emergency room visits in the US.³ The estimated direct medical cost to treat opioid abuse is estimated to be \$153 million in the United States. Average annual excess health care costs for opioid abusers with private insurance ranged from \$14,054 to \$20,546 per patient in the US.⁴ A retrospective claims database study of privately insured patients in 2017 estimated that opioid abusers incur annual excess health care costs of over \$14,000 per patient relative to non-abusers.⁵

Safe opioid prescribing can prevent misuse and overdose resulting in lower healthcare costs. Recent increases in opioid related morbidity and mortality have reignited scrutiny of prescribing practices by law enforcement, regulatory agencies, and state medical boards.⁶ These activities in turn create tremendous burdens and concerns to practicing physicians and providers of pain treatment.

In conclusion, the clinical, economic, and societal burdens of opioid overdose and misuse worth immediate attention and mitigation measures have to be in place.

Pilleve's Value

The Pilleve mission is to prevent the long-term costs associated with opioid abuse and addiction. Pilleve was founded with strong core beliefs in preventative health care and higher quality of life for patients. Pilleve strives to provide the greatest experience for users.

Pilleve is a smart device and is easy to use. It tracks opioid consumption and thereby may enhance compliance.

Patients receive their prescription in a smart, secure pill dispenser which monitors pill intake and can help identify misuse. Pills are correctly dispensed through a

smartphone application which pairs to the dispenser using a bluetooth connection. The secure pill dispenser is equipped with tamper-evident sensors and levers that detect and notify physicians if the device is forcefully accessed. Physicians are able to accurately track device usage as well as be able to monitor pill intake using a state of the art subscription service that allows for easy tracking.

Expected enhanced compliance for Pilleve users may have far-reaching positive impacts in patients' treatment and overall well-being.

Pilleve has the potential to reduce opioid misuse and increase treatment effectiveness to reach expected outcomes.

Based on real life evidence collected with KureSmart, the largest group of pain clinics in Maryland, Pilleve was able to help reduce prescription opioid use by 22% while helping patients comply with their prescription. This result has implications in patients' well-being and treatment success with appropriate prescription volume. Further research has been undertaken by Pilleve to collect confirmatory data.

Pilleve may reduce direct, indirect, and societal economic costs associated with opioid misuse associated with pain treatment.

Although no formal economic analysis has been performed to estimate potential cost saving associated with Pilleve use, the reduction in opioid misuse may directly translates to a lower economic burden in health care expenditures.

Reduction in inappropriate overutilization of opioid has direct cost consequences. It not only reduces direct cost burden associated with treatment itself, but it may reduce costs associated with hospitalization, emergency room visits, and rehabilitation.

Pilleve has the potential to serve as a safeguard for physicians and practices by accurately monitoring patient pill intake. This safeguard reduces physicians' and providers' concerns of unnecessary legal actions. Any real reduction of legal actions has an indirect cost reduction attributed partially to Pilleve's effectiveness of enhanced compliance.

Conclusions

The Pilleve smart pill dispenser is a tool that offers safer opioid prescribing for physicians as well as reduction in opioid prescription use which in turn can lead to lesser risk of misuse. Lower opioid misuse translates to health care expenditures being significantly lowered and provides a better quality of life of patients that have an opioid prescription.

The Pilleve smart pill dispenser can play an important role in reducing deaths, lowering costs to society, and slowing a growing epidemic.

References:

1. Nahin RL. Estimates of Pain Prevalence and Severity in Adults: United States, 2012. *J Pain*. 2015;16(8):769-780. <https://doi.org/10.1016/j.jpain.2015.05.002>
2. NIDA. Overdose Death Rates. NIDA Website. <https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>. Revised January 2019. Accessed August 10, 2019.
3. Guy GP, Pasalic E, Zhang K. Emergency department visits involving opioid overdoses, U.S., 2010–2014. *Am J Prev Med*. 2018;54(1):e37-e39. doi: 10.1016/j.amepre.2017.09.003.
4. Meyer R, Patel AM, Rattana SK, Quock TP, Mody SH. Prescription opioid abuse: a literature review of the clinical and economic burden in the United States. *Popul Health Manag*. 2014;17(6):372-387. doi: 10.1089/pop.2013.0098.
5. Kirson NY et al. The Economic Burden of Opioid Abuse: Updated Findings. *J Manag Care Spec Pharm*, 2017 Apr;23(4):427-445. <https://doi.org/10.18553/jmcp.2017.16265>.
6. Kelly K, Dineen et al. Between a Rock and a Hard Place: Can Physicians Prescribe Opioids to Treat Pain Adequately While Avoiding Legal Sanction?. *Am J Law Med*. 2016; 42(1): 7–52.