JOURNAL of MAINE MEDICAL CENTER

Journal of Maine Medical Center

Volume 4
Issue 2 *July 2022*

Article 10

2022

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Recommended Citation

Hemphill, Sarah BA; Silvia, Kristen MD; and Kimball, Marc D. MD (2022) "Increasing Naloxone Co-Prescribing Among At-Risk Individuals: Evaluation of a Quality Improvement Project in a Large Health System," *Journal of Maine Medical Center*: Vol. 4 : Iss. 2 , Article 10.
Available at: https://knowledgeconnection.mainehealth.org/jmmc/vol4/iss2/10 https://doi.org/10.46804/2641-2225.1109

Increasing Naloxone Co-Prescribing Among At-Risk Individuals: Evaluation of a Quality Improvement Project in a Large Health System

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RESEARCH AND QUALITY IMPROVEMENT BRIEF

Increasing Naloxone Co-Prescribing Among At-Risk Individuals: Evaluation of a Quality Improvement Project in a Large Health System

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Despite interventions to curb opioid-related morbidity and mortality, the rate of deaths due to opioid overdose in the United States continues to rise. Naloxone is a mu-opioid receptor antagonist that can reverse an opioid overdose if administered correctly. Expanding the availability of naloxone in the community is a key harm-reduction strategy,[1] and naloxone distribution has been associated with lower rates of deaths due to opioid overdose.[2]

Health care providers play a key role in identifying patients at risk of opioid overdose[3] and dispensing or prescribing naloxone. However, rates of prescribing naloxone remain low, even among patients with multiple risk factors for overdose.[4,5] Nationally, only 0.46% of Medicare Part D beneficiaries with an opioid prescription were co-prescribed naloxone in 2017.[6] Another health system increased naloxone co-prescribing by 15-fold through a quality improvement intervention involving automatic alerts in the electronic medical record (EMR).[7]

From 2016 to 2018, only 6% of at-risk patients in 5 primary care practices at MaineHealth had naloxone available to them.[8] We aimed to evaluate the results of a quality improvement intervention to increase naloxone co-prescribing among patients at risk of opioid overdose across all primary care practices in the MaineHealth system.

METHODS

MaineHealth is the largest health system in the state of Maine. The system includes 9 hospitals in Maine and New Hampshire with 30 primary care practices serving 1.1 million patients. The EMR was queried for patients of primary care practices at MaineHealth who met one or more of the following criteria: (1) opioid prescription of greater than or equal to 50 morphine milli-equivalents per day, (2) concurrent outpatient prescriptions for a benzodiazepine and an opioid, (3) concurrent outpatient prescriptions for a sedative/hypnotic and an opioid, (4) diagnosis of opioid use disorder, (5) diagnosis of substance use disorder (not including tobacco use disorder), (6) opioid overdose on the active problem list, and (7) opioid overdose in the medical history.

Between 2017 and 2020, our team used Plan-Do-Study-Act cycles to develop multiple interventions system-wide, including:

1. Implementing a standing order for naloxone. Any individual could pick up naloxone from the pharmacy at Maine Medical Center without a prescription.

2. Providing on-site naloxone trainings for all primary care providers, including clinical and non-clinical staff.

3. Developing online training modules for prescribers that were available to anyone for CME credit. The modules included 3 videos on opioid use disorder, 1 of which described the benefits and indications of naloxone co-prescribing.

4. Disseminating system-wide guidelines on naloxone prescribing. All system-wide employees received a document via email that described the benefits and indications of naloxone co-prescribing.

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5. Automating best practice advisories (BPAs) in the EMR. This automation was an alert that popped up to prescribers when an opioid was prescribed to a patient who met the above criteria. The prescriber could populate a naloxone order directly from that screen.

Our primary measure was the percentage of patients meeting one or more of the inclusion criteria who had a documented prescription for naloxone in the EMR.

RESULTS

Between quarter 1 of 2017 and quarter 4 of 2020, the overall rate of system-wide naloxone co-prescribing increased from 0.4% to 26% of patients (Figure 1). The largest single-quarter increase in system-wide co-prescribing rates was associated with the implementation of the BPA: 4.5% from quarter 3 to quarter 4 of 2019 (Figure 1). Online education modules rolled out simultaneously with prescribing guidelines were associated with a smaller increase of 0.9% from quarter 3 to quarter 4 of 2018 and another 3% from quarter 4 of 2018 to quarter 1 of 2019. The naloxone standing order and on-site naloxone trainings were each associated with a less than 1% increase in the quarter following the intervention (Figure 1). The total number of patients in each hospital system who met the criteria for naloxone prescription did not change appreciably over the study period (supplemental figure 1).

After stratification by hospital system, we noted an increase in the Western Maine Health Partners system, from 1% of patients with prescriptions in quarter 1 of 2018 to 30% by quarter 2 of 2019 (Figure 2). Interviews with leadership and providers of Western Maine Health Partners revealed that their entire team set naloxone co-prescribing as an Annual Implementation Plan (AIP) goal, due to the impact of opioid overdose they saw in their community. Leadership made one practice an opioid health home and empowered both clinical and non-clinical staff to address the problem. Specifically, they obtained naloxone through a state-run program and dispensed the medication to uninsured patients, and the prescribed naloxone to patients with insurance.

DISCUSSION

The most effective system-wide intervention was implementing a BPA or an automatic alert in the EMR. This intervention could be easily adopted by other health systems that use an EMR capable of BPAs or other automatic alerts. Moderate improvements were also seen after provider education, including online modules and naloxone guidelines disseminated via email. At the practice level, the greatest improvement, independent of our interventions, resulted when an entire team committed to increasing naloxone access with significant leadership buy-in. This result shows that health systems and practice leaders can improve naloxone access by prioritizing the effort and involving all staff members.

Several limitations to this study exist. First, a naloxone prescription in the EMR does not mean the patient picked up the medication from the pharmacy. Second, we could not account for non-prescribed naloxone. And third, there has been a concurrent increase in awareness and acceptability of naloxone unrelated to our interventions that may have contributed to the increase in co-prescribing.

Despite the progress, the hospital with the highest co-prescribing rates had only 39% of eligible patients with naloxone prescriptions at the end of the study. This low prescription rate would be unacceptable, for example, for aspirin in the secondary prevention of cardiovascular events. Further work and more urgency are needed to ensure everyone at risk of opioid overdose has naloxone available to them.

CONCLUSIONS

The most effective interventions for increasing naloxone co-prescribing created automatic alerts in the EMR and empowered front-line workers with support from leadership.

Keywords: naloxone, quality improvement, opioid overdose, harm reduction

Acknowledgments: The authors would like to acknowledge Christine Berg for her assistance with obtaining data for this project.

Conflicts of Interest: None

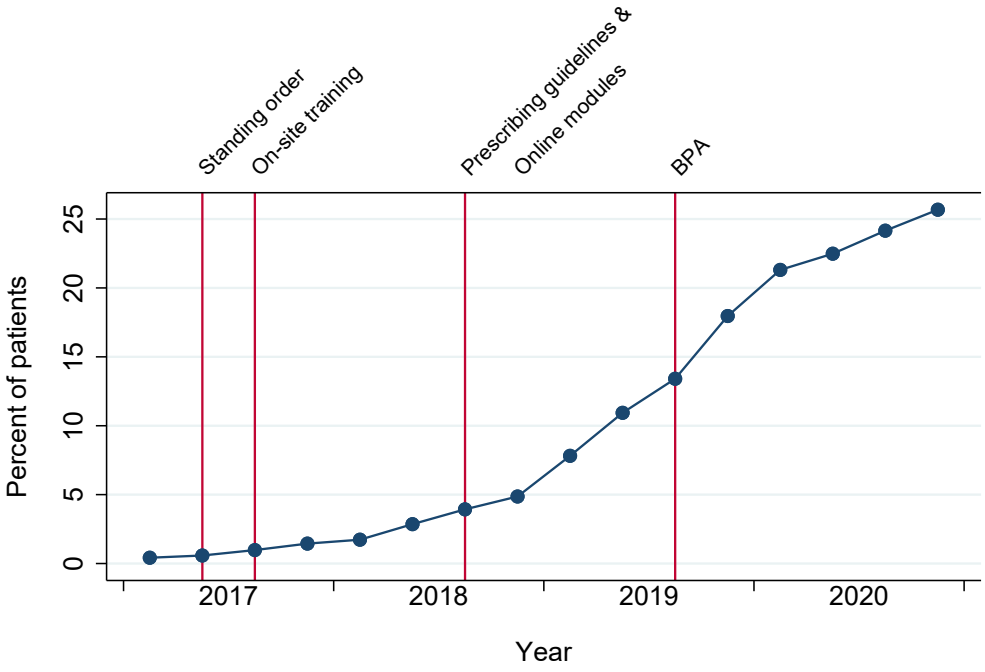

Figure 1. Percentage of Patients at Risk of Opioid Overdose in the MaineHealth System with a Prescription for Naloxone in Their Electronic Medical Record Over the Study Period. Vertical red lines indicate the timing of quality improvement interventions. The standing order involved implementing a standing order for naloxone. The on-site training provided on-site training for all providers. The prescribing guidelines involved disseminating system-wide guidelines on naloxone prescribing. The online modules included developing online training modules for all providers. The best practice advisories (BPA) involved automated alerts in the electronic medical record.

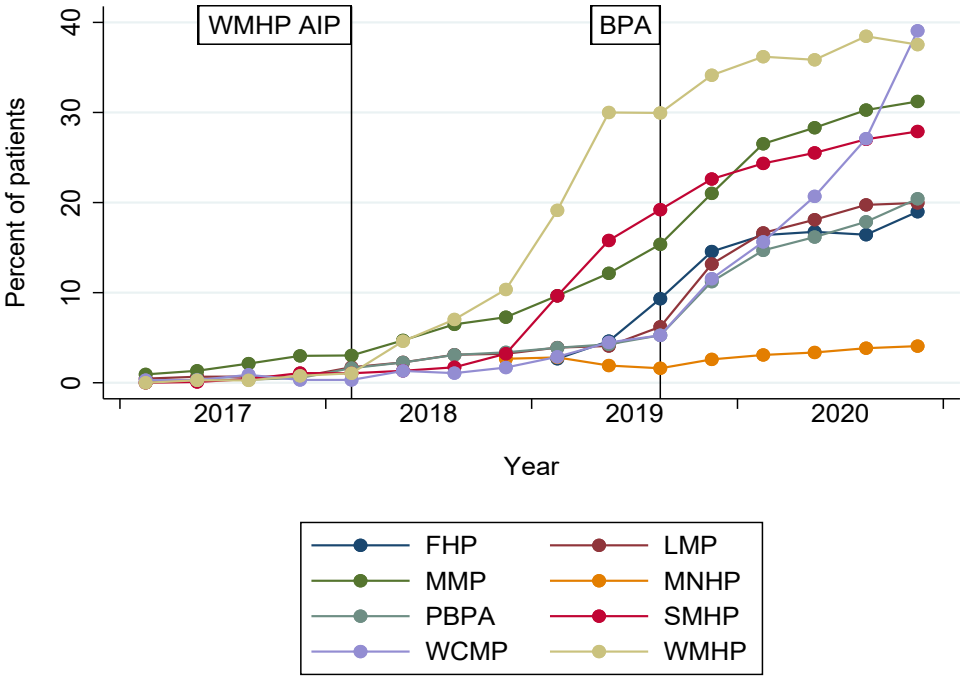

Figure 2. Percentage of Patients at Risk of Opioid Overdose by Hospital Group with a Prescription for Naloxone in Their Electronic Medical Record Over the Study Period. WMHP AIP denotes when the Western Maine Health system set naloxone co-prescribing as an Annual Implementation Plan (AIP) goal. BPA, best practice advisory; FHP, Franklin Health Partners; LMP, Lincoln Medical Partners; MMP, Maine Medical Partners; MNHP, Memorial Hospital Partners; PBPA, Pen Bay Physicians & Associates; SMHP, Southern Maine Health Partners; WCMP, Waldo County Medical Partners; WMHP, Western Maine Health Partners.

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