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Evaluation of Pharmacists' Knowledge in Role of Naloxone Dispensing

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ABSTRACT:

Background and objective: There is currently an opioid epidemic in the United States affecting millions of lives and costing millions of healthcare dollars. In response to this crisis, New Jersey signed the Overdose Prevention Act (OPA) into law in May 2013, allowing pharmacists in New Jersey to provide naloxone without a prescription through a standing order. This research assessed the need for education and the impact of education on OPA awareness among pharmacists and naloxone availability in Camden County.

Methods: A free continuing education event was held at Cooper hospital which provided Camden County retail pharmacists with information regarding naloxone and the OPA. Following this event, pharmacists were anonymously surveyed on their knowledge of the OPA and naloxone pharmacy availability. This process was repeated the following year.

Results: In July 2017, we surveyed 97 of 117 pharmacies in Camden Country. Of the 97 total included pharmacies, 63% pharmacists reported knowledge of the OPA and 62% reported carrying naloxone. In February 2018, after the second education event, we successfully surveyed 96 of 117 pharmacies in Camden County. At that time 82% of pharmacists reported knowledge of the OPA and 80% reported carrying naloxone.

Comparing the chain and independent pharmacies, in July 2017, 70% of the chain pharmacies and 18% of the independent pharmacies reported knowledge of the OPA. At this point in time, 66% of the chain pharmacies and 41% of the independent pharmacies carried naloxone. In February 2018, 90% of the chain pharmacies and 53% of the independent pharmacies reported knowledge of the OPA. 86% of the chain pharmacies and 58% of the independent pharmacies carried naloxone.

Conclusions: There was an increase in pharmacist knowledge of the OPA in the time between July 2017 and February 2018. Pharmacists working at chain pharmacies were more likely to be aware of the law and carry naloxone than those working in independent pharmacies.

INTRODUCTION:

There is currently an opioid epidemic in the United States affecting millions of lives and costing millions of healthcare dollars. In 2016, 63,632 drug overdose deaths occurred in the United States and opioids were involved in 42,249 of those deaths, making up 66.4% of all drug overdose deaths[1]. These numbers continue to increase and New Jersey is among the roughly 50% of states in the US that saw a significant increase in overdose deaths from 2015 to 2016[2]. Heroin use represents a significant portion of opioid abuse, along with prescription and synthetic opioids. In 2016, nearly 948,000 people in the United States reported using heroin in the past year, which is an estimated rate of 0.4 per 100 persons. Unintentional, heroin-related poisonings resulted in 81,326 emergency department visits in the US[3].

In response to this crisis, New Jersey signed the Overdose Prevention Act (OPA) into law in May 2013, allowing pharmacists in New Jersey to provide naloxone without a prescription through a standing order. Naloxone blocks the effects of opioids and can be used acutely to reverse an overdose, preventing respiratory failure and death. Through the OPA, concerned friends and family members of persons with opioid use disorder are able to legally obtain the potentially life-saving drug. This law was intended to empower pharmacists to reduce the negative effects that opioid overdoses have on society and health systems. However, it is unclear if pharmacists are being proactive in this new role. Despite the OPA, pharmacist education regarding naloxone and its distribution is lacking. A preliminary survey of pharmacists in Camden County, the county known to be the epicenter of opioid abuse in New Jersey, showed that many pharmacists are not fully aware of the implications and details regarding prescribing naloxone. This research looked to assess the need for education and the impact of this education on prescribing practices. Our goal was to determine if pharmacists in Camden County are aware of the Overdose Prevention Act and stocking naloxone in their pharmacies for ready availability to patients in need, and would specific educational interventions improve pharmacists' knowledge and engagement.

METHODS:

A free continuing education event was held at Cooper hospital which provided Camden County retail pharmacists with information regarding opioids, naloxone, and the OPA. Following this event, pharmacists were anonymously surveyed via in-person or phone surveys on their knowledge of the OPA and naloxone pharmacy availability. Efforts were made to contact every single pharmacy in Camden County which included 117 chain and independent pharmacies. Survey questions included pharmacist awareness of the OPA, whether the pharmacy carries naloxone, what formulations are available, and recent dispensing of naloxone (*Figure 1*). The surveys were voluntary, anonymous, and without any identification of pharmacist or pharmacy name, with the exception of a designation of chain vs independent. This process was repeated in February 2018 with another continuing education event and another round of surveys.

Pharmacies were excluded if the pharmacist declined to participate in the survey or if the pharmacy was unable to be located or contacted.

Statistical analysis of the data comparing the two rounds of surveys was conducted using chi-square analysis using a p-value of <0.05. Our null hypotheses were that there would be no change in OPA awareness among pharmacists or naloxone availability between the two time periods. Additionally, we compared chain vs independent pharmacies.

RESULTS:
In July 2017, after the first education event, we successfully surveyed 97 of 117 pharmacies in Camden Country, representing 83%. Of these 97 pharmacies, 80 were chains and 17 were independent pharmacies. Of the 97 total included pharmacies, 63% (61/97) reported knowledge of the OPA and 62% (60/97) reported carrying naloxone. In February 2018, after the second education event, we successfully surveyed 96 of 117 pharmacies in Camden County, representing 82%. Of these 96 pharmacies, 77 were chains and 19 were independent pharmacies. At that time, of the 96 total included pharmacies, 82% (79/96) reported knowledge of the OPA *(Figure 2a)* and 80% (77/96) reported carrying naloxone *(Figure 3a)*.

Comparing the chain and independent pharmacies, in July 2017, 70% (56/80) of the chain pharmacies and 18% (3/17) of the independent pharmacies reported knowledge of the OPA *(Figure 2b)*. Also at this point in time, 66% (53/80) of the chain pharmacies and 41% (7/17) of the independent pharmacies carried naloxone *(Figure 3b)*. In February 2018, 90% (69/77) of the chain pharmacies and 53% (10/19) of the independent pharmacies reported knowledge of the OPA *(Figure 2c)*. Also at this point in time, 86% (66/77) of the chain pharmacies and 58% (11/19) of the independent pharmacies carried naloxone *(Figure 3c)*.

DISCUSSION: The results of this study reflected a positive change within the field of pharmacy in regards to making an impact on the opioid crisis in Camden County, New Jersey. Between 2017 and 2018, there were statistically significant increases in the number of pharmacists in Camden County with knowledge of the OPA and carrying naloxone in their pharmacies. In both 2017 and 2018, a statistically significant greater number of chain pharmacies had knowledge of the OPA as compared to independent pharmacies; however, a greater percentage of independent pharmacies reported knowledge of the OPA in 2018 compared to 2017, so it may be presumed that knowledge of the OPA has spread among independent pharmacies. In 2017, there was not a statistically significant difference between chain and independent pharmacies' likelihood of having naloxone in stock at the time of the survey, but in 2018, chain pharmacies were found to be more likely to have naloxone in stock.

In 2017 and 2018, respectively, 20 and 21 pharmacies declined participation in this study. Bias may be present in that pharmacists aware of the OPA and/or carrying naloxone may have been more willing to respond to the survey questions than other pharmacists. However, the increase in pharmacist knowledge and naloxone availability among the large representative sample included in this study were promising developments. These improvements were most likely caused by multiple factors. The increase in the number of pharmacists who were aware that naloxone could be dispensed without a prescription can be expected to occur with the passing of time and sharing of information, regardless of any intervention performed. However, it is the authors' hope that the educational event, which was held twice to capture as great of an audience as possible, contributed to the differences between survey results. Additionally, during the seven months between surveys, one of the large chains developed a standing order for naloxone which resulted in policy changes for that pharmacy and increased pharmacist awareness. This could have theoretically contributed to the change between 2017 and 2018 in chain pharmacies' likelihood of having naloxone in stock compared to independent pharmacies. Conducting the surveys themselves, which resulted in repeated conversations and further questioning regarding naloxone and the OPA, also may have contributed to more pharmacists being familiar with the law.

The results of the surveys most likely can be generalized to all of New Jersey because Camden County represents a very diverse population capturing the entire range of socioeconomic backgrounds. The large number of pharmacies surveyed also ensured that an adequate sample was obtained that could, in theory, represent the pharmacies across the state. The opioid epidemic is not limited to one particular geographic area or a particular ethnic or socioeconomic group.

A major limitation of the study was the fact that it relies on voluntary in-person and phone surveys. This, in theory, results in selection bias. However, the vast majority of pharmacists participated in the survey with a response rate of over 80% for both rounds of surveys. Many of the pharmacists relied on memory to determine when they last dispensed naloxone and how many times per month they had dispensed it, while others looked into their computer database. The answers to these questions, therefore, are approximations of those numbers. There was also sometimes confusion about whether we were inquiring about naloxone or naltrexone. Some pharmacists wrote in "tablets" as the formulation carried in their pharmacy which was not referring to the naloxone, but the drug naltrexone. This is a source of error for the survey questions.

Another significant limitation was the wording on question 1 which reads, "Does the state of New Jersey allow you to distribute Naloxone without a prescription from a physician?" It was determined later that some pharmacists found that this question was not clear on whether it

meant there was a standing order in place. As a result, some pharmacists who may have been aware of the law and their ability to dispense under the standing order may have marked the answer as “no”. This would result in the number of pharmacists who are aware of the OPA appearing lower than it actually was. However, the question remained identical in both surveys, so the increase in pharmacists answering “yes” to this question would still be significant.

CONCLUSION: There was an increase in pharmacist knowledge of the OPA in the time between July 2017 and February 2018. At the time of the most recent data collection, pharmacists working at chain pharmacies were more likely to be aware of the law and carry naloxone than those working in independent pharmacies.

There are multiple potential future directions in which one may continue to explore how to improve access to naloxone in Camden County and beyond. This research did not account for naloxone kits, which are sometimes made available outside of the pharmacy system to lay people through public health education programs. These kits, often free or provided at low cost if procured through attendance at an expert-led training program, are another important route through which individuals in the community may acquire naloxone. Assessing the distribution rates of these kits and their availability within particular regions of Camden County, particularly those areas with higher rates of opioid overdose, may provide further insight into the present availability of naloxone in Camden County.

While responding to the surveys, several pharmacists made comments regarding the high cost of naloxone, citing it as one reason to be disinclined to regularly keep naloxone in stock within their pharmacies[2]. Given that seventy-seven percent of opioid overdose deaths occur in non-clinical environments, including greater than fifty percent in private residences, medical-legal collaboration to improve access to naloxone among those who may benefit from having it readily available is a critical move toward harm-reduction as we combat the opioid epidemic[3]. The efforts of our colleagues in public health efforts to disseminate this knowledge and combat the dangerous misconception that access to naloxone increases risky behavior may further improve naloxone access in Camden County and nationwide[10].

Finally, given that this study relied on pharmacist memory at the time of survey, the existence of a national pharmacy database to track naloxone distribution with and without individual prescription may improve validity of future data collection efforts similar to this study. This would not be unlike the model of collaborative innovation networks in medicine that allows for widespread dissemination of data and knowledge across care sites. Additionally, smart utilization of technology may open up new pathways to allow pharmacists at small independent pharmacies with more limited resources to learn from their colleagues at larger institutions and more easily share knowledge, such as about the OPA.

Figure 1: Survey questions given to pharmacists

1) Does the state of New Jersey allow you to distribute Naloxone without a prescription from a physician?
Yes No I don't know

2) Does your pharmacy carry Naloxone?
Yes No I don't know

3) What forms of Naloxone do you carry? (circle all that apply)

1- Intranasal (IN) pre-filled syringe
2- NARCAN nasal spray
3- Solution for injection (IM/SubQ)
4- Evzio autoinjector
5- Do not carry

4) If you carry the IN pre-filled syringe, do you carry the nasal atomization device?

Yes No I don't know N/A

5) When is the last time you distributed Naloxone?

Today =1 wk ago =1 month ago N/A

6) In the last month how many doses have you dispensed?

A- 0-1 dose
B- 2-5 doses
C- 6-10 doses
D- >10 doses

7) If you do not currently carry Naloxone, would you be willing to carry the product?

Yes No I don't know

Figure 2a: Pharmacist Knowledge of OPA 2017 vs 2018

Survey Response	*2017*			*2018*		
	Observed #	*Expected #*	*Chi-Square Statistic*	*Observed #*	*Expected #*	*Chi-Square Statistic*
Knowledge of OPA	61	70.36	1.25	79	69.64	1.26
Lack of knowledge of OPA	36	26.64	3.29	17	26.36	3.33
Chi-square	9.1207					
P-value	0.002527					

Figure 2b: 2017 Chain v Independent Knowledge of OPA

Survey Response	*Chain*			*Independent*		
	Observed #	*Expected #*	*Chi-Square Statistic*	*Observed #*	*Expected #*	*Chi-Square Statistic*
Knowledge of OPA	56	48.66	1.11	3	10.34	5.21
Lack of knowledge of OPA	24	31.34	1.72	14	6.66	8.09
Chi-square	16.1271					
P-value	0.000059					

Figure 2c: 2018 Chain v Independent Knowledge of OPA

Survey Response	*Chain*			*Independent*		
	Observed #	*Expected #*	*Chi-Square Statistic*	*Observed #*	*Expected #*	*Chi-Square Statistic*

Knowledge of OPA	69	63.36	0.50	10	15.64	2.03
Lack of knowledge of OPA	8	13.64	2.33	9	3.36	9.44
Chi-square	14.3003					
P-value	0.000156					

Figure 3a: Pharmacies Carrying Naloxone 2017 vs 2018

Survey Response	*2017*			*2018*		
	Observed #	*Expected #*	*Chi-Square Statistic*	*Observed #*	*Expected #*	*Chi-Square Statistic*
Carrying Naloxone	60	68.85	1.14	77	68.15	1.15
Not Carrying Naloxone	37	28.15	2.79	19	27.85	2.81
Chi-square	7.8902					
P-value	0.00497					

Figure 3b: 2017 Chain v Independent Carrying of Naloxone

Survey Response	*Chain*			*Independent*		
	Observed #	*Expected #*	*Chi-Square Statistic*	*Observed #*	*Expected #*	*Chi-Square Statistic*
Carrying Naloxone	53	49.48	0.25	7	10.52	1.18
Not Carrying Naloxone	27	30.52	0.4	10	6.48	1.91

Chi-square	3.7358
P-value	0.053257

Figure 3c: 2018 Chain v Independent Carrying of Naloxone

Survey Response	*Chain*			*Independent*		
	Observed #	*Expected #*	*Chi-Square Statistic*	*Observed #*	*Expected #*	*Chi-Square Statistic*
Carrying Naloxone	66	61.76	0.29	11	15.24	1.18
Not Carrying Naloxone	11	15.24	1.18	8	3.76	4.78
Chi-square	7.4297					
P-value	0.006416					

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