

Contents lists available at [ScienceDirect](http://www.sciencedirect.com)

Preventive Medicine Reports

journal homepage: <http://ees.elsevier.com/pmedr>

Utilization of the Arkansas Prescription Monitoring Program to combat prescription drug abuse

Rebecca Rittenhouse^{a,b}, Feifei Wei^{c,*}, Denise Robertson^d, Kevin Ryan^e

^a College of Pharmacy, University of Arkansas for Medical Sciences, 4301 West Markham Street, Little Rock, AR 72205-7199, USA

^b Fay W. Boozman College of Public Health, University of Arkansas for Medical Sciences, 4301 West Markham Street, Little Rock, AR 72205-7199, USA

^c Department of Biostatistics, Fay W. Boozman College of Public Health, University of Arkansas for Medical Sciences, 4301 West Markham Street, #781, Little Rock, AR 72205-7199, USA

^d Pharmacy Services, Arkansas Department of Health, 4815 West Markham Street, Slot 25, Little Rock, AR 72205-3867, USA

^e Department of Health Policy and Management, Fay W. Boozman College of Public Health, University of Arkansas for Medical Sciences, 4301 West Markham Street, #820, Little Rock, AR 72205-7199, USA

ARTICLE INFO

Available online 11 June 2015

Keywords:

Prescription monitoring program
Substance abuse
Health care practice
Arkansas
Public health

ABSTRACT

Objective. The Arkansas Prescription Monitoring Program (AR PMP) was implemented in 2013 to combat prescription drug abuse. All enrollees were invited to participate in a user survey available in February 2014, to identify makeup of users, utilization of the program, and changes made to health care practices after implementation of the program.

Methods. Of the 3694 individual enrollees invited to participate, 1541 (41.7%) completed the survey. Data collected were analyzed to identify changes in health care practices by program frequency of use and user profession.

Results. Medical doctors, advanced practice nurses, and pharmacists are the professions who use the program most frequently. Daily AR PMP users are considerably more likely than infrequent users to be prompted to access the program by the involvement of a controlled substance (CS) prescription or by office/facility policy requirements. Increased frequency of use of the AR PMP results in positive impacts on CS prescribing and dispensing practices.

Conclusion. Compelling more users of the AR PMP to be prompted to access the program by the involvement of a CS prescription or by requirements per office/facility policy may increase frequency of use of the program and thereby changes in health care practices to combat prescription drug abuse.

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Introduction

Prescription drug abuse is defined as using prescription drugs for nonmedical/nonprescribed purposes, such as intoxication or mood alteration. This illegal and dangerous health behavior has increased over the past two decades. Overdose deaths due to prescription painkillers quadrupled from 1999 to 2010, going from 4030 to 16,651, and were more prevalent than overdose deaths from heroin and cocaine combined in 2010 ([National Vital Statistics System, 2012](#)). As of 2010, 60% of all drug overdose deaths were from prescription drugs, with opioids being involved in 3 of every 4 of these deaths. Prescription drug abuse in the United States is now described by the Centers for Disease Control and Prevention (CDC) as an epidemic ([National Vital Statistics System, 2012](#)). The significant increase in prescription drug

abuse can largely be attributed to the increased availability of prescription drugs. Although these prescription medications are prescribed for legitimate medical purposes, a portion of them become subject to drug diversion for recreational, non-medicinal use. Increased prescribing and the availability of these drugs are directly correlated to increased overdose deaths ([Vital Signs, 2011](#)). This paper describes an intervention to address this critical public health issue.

The CDC's Injury Center has made combating prescription drug abuse a principal focus of its strategic plan. Among other proposed interventions, they recommend the implementation of state run Prescription Drug Monitoring Programs (PDMP) to help mitigate this public health epidemic ([Vital Signs, 2011](#)). Through utilization of electronic databases, these programs allow enrollees the ability to track where and when patients are acquiring controlled substance (CS) medications, thereby assisting health care professionals in identifying drug seeking patients who may be abusing prescription drugs. PDMPs have the potential to drastically decrease the amount of drug diversion in the United States, which in turn can directly affect the rates of prescription drug abuse and overdose.

* Corresponding author at: 4301 West Markham Street, #781, Little Rock, AR 72205-7199, USA. Fax: +1 501 526 6729.

E-mail addresses: rebecca.rittenhouse@gmail.com (R. Rittenhouse), FWei@uams.edu (F. Wei), Denise.Robertson@arkansas.gov (D. Robertson), RyanKevinW@uams.edu (K. Ryan).

A PDMP was first authorized in Arkansas through passage of Act 304 of 2011 and implemented in 2013 as the Arkansas Prescription Monitoring Program (AR PMP) (Arkansas Department of Health, 2013). The program is administered by the Arkansas Department of Health (ADH) with the following goals:

- To enhance patient care by providing prescription monitoring information that will ensure legitimate use of controlled substances in health care;
- To help curtail the misuse and abuse of controlled substances;
- To assist in combating illegal trade in and diversion of controlled substances;
- To enable access to prescription information by practitioners, law enforcement agents and other authorized individuals and agencies (Arkansas Department of Health, 2013).

The AR PMP collects, stores, and monitors the dispensing of CS in Schedules II, III, IV, and V, as well as other state-controlled drugs (Arkansas Department of Health, 2013). Dispensers report patient name, address and date of birth, physician identification, pharmacy identification, prescription number, drug name, strength, quantity and date prescribed. Collection of this data began on March 1, 2013 and must be reported by prescription drug dispensers to the ADH on a weekly basis. Through authorized access to the AR PMP database, practitioners may view the CS dispensing history of their patients, including the exact quantity of medication prescribed by each prescriber and dispensed at each pharmacy, in order to make more informed prescribing and dispensing decisions.

Our objective in this study was to better understand the utilization and performance of the AR PMP during the first year of its implementation. Specifically, we sought to describe (1) the makeup of AR PMP users; (2) the utilization of the AR PMP; and (3) the performance of the program in regard to changing prescribing and dispensing practices. The results of the study survey were used to evaluate how access to the AR PMP is changing health care practices in efforts to address the public health epidemic of prescription drug abuse.

Methods

Procedure

A web survey was developed and administered via SurveyMonkey (online web based survey tool). All enrolled Arkansas prescribers and dispensers ($n = 3694$) were invited by email to participate in the study survey, which was available for 30 days from February 4 to March 5, 2014. Two reminder emails with the survey link invitation were sent out on days 14 and 28. The survey was designed with seven questions to take no more than 2 min to complete at the individual's convenience over the course of 30 days. The survey was anonymous and e-mail addresses were deleted at the end of the survey period. The ADH reviewed and determined that the survey project did not require human subject review.

Measures

Survey questions were designed by investigators of the study after review of other states' PDMP surveys and upon solicitation of AR PMP staff suggestions and statistical expert opinions. All survey questions were closed-ended (Appendix A). The AR PMP User Survey was created with three objectives. The first study objective, to describe the makeup of AR PMP users, was addressed by the following: "Which of the following best describes your profession?" and "Where is your primary practice located?" The second study objective, to identify the utilization of the AR PMP, was answered by the

following: "How often do you use the AR PMP?", "When do you use the AR PMP?" and "What prompts you to access the AR PMP?" The last study objective, to identify how the AR PMP has changed prescribing and dispensing practices, was answered by the last two survey questions in order to determine the performance of the program over the past year. One question was more patient specific: "After reviewing the AR PMP, how has a patient encounter been altered?" and the other more practice specific: "How has access to the AR PMP changed your prescribing/dispensing practices?" All statistical data analyses for this study were generated using SAS® software, Version 9.3 of the SAS System for Windows.

Table 1

Arkansas Prescription Monitoring Program 2014 User Survey respondents who completed the survey.

	<i>n</i>	Percentage	Actual percentage ^a
Profession (n = 1541)			
Medical doctor	536	34.8	37.0
Advanced practice nurse	210	13.6	12.2
Pharmacist	631	41.0	39.9
Other	164	10.6	10.9
Region (n = 1541)			
Central	546	35.4	
Medical doctor	220	40.3	
Advanced practice nurse	64	11.7	
Pharmacist	208	38.1	
Other	54	9.9	
Northeast	321	20.8	
Medical doctor	92	28.7	
Advanced practice nurse	57	17.8	
Pharmacist	130	40.5	
Other	42	13.1	
Northwest	446	28.9	
Medical doctor	153	34.3	
Advanced practice nurse	53	11.9	
Pharmacist	186	41.7	
Other	54	12.1	
Southeast	107	6.9	
Medical doctor	32	29.9	
Advanced practice nurse	20	18.7	
Pharmacist	47	43.9	
Other	8	7.5	
Southwest	121	7.9	
Medical doctor	39	32.2	
Advanced practice nurse	16	13.2	
Pharmacist	60	49.6	
Other	6	5.0	
Frequency of access (n = 1541)			
Daily	325	21.1	
2-3 times weekly	353	22.9	
At least once a week	394	25.6	
Less than 3 times a month	403	26.2	
Never	66	4.3	
Timing of access (n = 1475)^b			
Before issuing/dispensing a CS rx ^c	1187	80.5	
After issuing/dispensing a CS rx	65	4.4	
During patient consultation	159	10.8	
Not applicable	64	4.3	
Reasons for access (all that apply) (n = 1475)^b			
Any time involving a CS rx	348	23.6	
Any time involving a C-II CS rx	220	14.9	
Any suspicion of misuse/drug diversion	1342	91.0	
Requests from other prescribers/pharmacists	414	28.1	
Required per office/facility policy	163	11.1	
Not Applicable	10	0.7	

^a The actual overall AR PMP user composition, calculated in March 2014 by the ADH.

^b 66 participants who answered "Never" to the frequency of access question were excluded.

^c CS: controlled substance, rx: medical prescription.

Results

User makeup and program utilization

The makeup of the AR PMP User Survey participants is outlined in Table 1, closely resembling the actual AR PMP user composition that was calculated in March 2014 by the ADH (Arkansas Department of Health, 2013). There were a total of 1541 individuals who completed the survey, giving an overall response rate of 41.7%. Survey respondents were from health care practices located in all 75 Arkansas counties. The utilization of the AR PMP is described in terms of frequency of access, timing of access, and reasons for access of the AR PMP, as outlined in Table 1.

Very few (4%) AR PMP enrollees reported never accessing the program. Of those who access the AR PMP daily, 43% are PharmD/PDs, 36% are MDs, and 14% are APNs. Similar to the frequency of access distribution of all AR PMP users as outlined in Table 1, the frequency of use by MDs, APNs and PharmD/PDs is equally distributed in terms of how often they access the program.

Among the daily and infrequent users (those who use the program less than three times a month), the most common reasons to access the program are similar: suspicion of drug misuse or drug diversion (92% of infrequent users and 84% of daily users, Chi-square statistical test p -value = 0.0024) and requests from other prescribers or pharmacists (29% of infrequent users and 28% of daily users, p -value = 0.8156). However, daily users are considerably more likely than infrequent users to be prompted to access the program simply due to any involvement of a CS prescription (49% v. 8%, p -value < 0.0001), any involvement of a C-II CS prescription (32% v. 5%, p -value < 0.0001) or requirements per office or facility policy (22% v. 4%, p -value < 0.0001). Fig. 1 shows the reasons that AR PMP users are prompted to access the program among the professions with the most frequent use of the program.

Changes in health care practices

Among the 1475 study participants who access the AR PMP, the most common response as to how access to the program has impacted their health care practices was by causing a decrease in the number of

CS prescriptions issued or dispensed (61%), closely followed by causing them to provide more patient education and/or counseling on CS prescription use and abuse (57%). Access to the AR PMP is also causing users to decrease the quantity of dosage units prescribed (24%) and to increase the number of prescriptions changed from a C-II to a C-III/C-IV (7%). An insignificant number of survey respondents (0.8%) reported an increased number of CS prescriptions issued or dispensed after access to the AR PMP.

Compared to infrequent users who utilize the program less than three times a month, those who access the program daily were almost twice as likely to report that the program has caused them to decrease the number of CS prescriptions issued or dispensed (76% v. 39%, p -value < 0.0001). Daily users were 23% more likely to report that the AR PMP has caused them to provide more patient education and/or counseling on CS prescription use and abuse (67% v. 44%, p -value < 0.0001), they were twice as likely to report the AR PMP has caused them to decrease the quantity of dosage units prescribed for CS prescriptions (30% v. 15%, p -value < 0.0001) and they were almost three times as likely to report the AR PMP has caused an increase in prescriptions changed from a C-II to a C-III/C-IV (11% v. 4%, p -value = 0.0006) after accessing the AR PMP.

Reported changes to health care practice after accessing the AR PMP by the professions with the most frequent use of the program are shown in Fig. 2.

Discussion

The epidemic of prescription drug abuse has resulted in calls for new measures to address this devastating, life threatening public health issue. The AR PMP, as authorized by Arkansas Act 304 of 2011, has already changed health care practices across the state during its first year of operation. The results of this study show that the makeup of AR PMP users can be described as prescribing and dispensing health care professionals representing all 75 Arkansas counties. Program utilization analysis showed a large portion of AR PMP users regularly access the program either two to three times weekly or daily, with the majority of users accessing before issuing or dispensing a CS prescription, potentially preventing CS medications from being obtained by drug seekers or

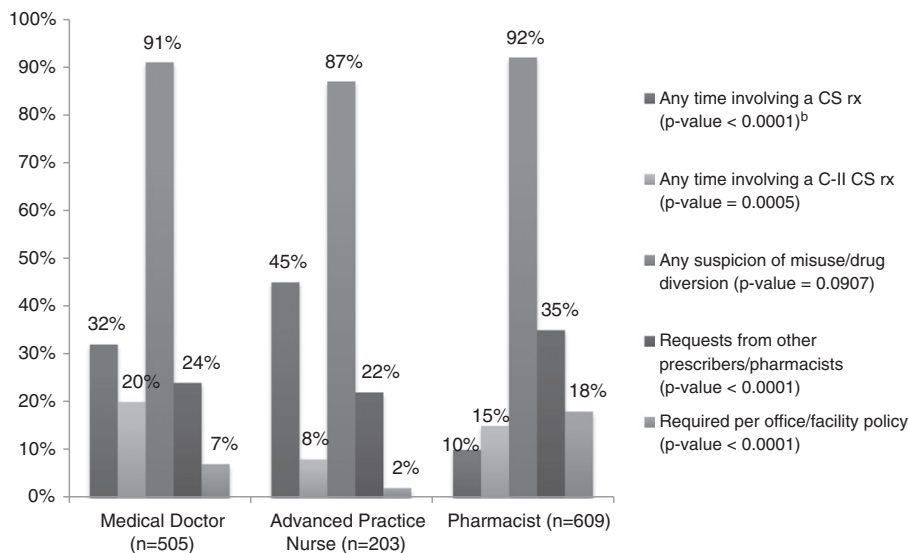


Fig. 1. Reasons for access to the Arkansas Prescription Monitoring Program by the Professions with the Most Frequent Use of the Program, 2014^a. ^aIn the survey, respondents could choose all reasons that apply to them, 31 medical doctors, 7 advanced practice nurses and 22 pharmacists who answered “never” to the frequency of access question were excluded, CS: controlled substance, rx: medical prescription. ^b p -Value < 0.0001 was the Chi-square test result comparing the percentages of medical doctors, advanced practice nurses and pharmacists who accessed to the Arkansas Prescription Monitoring Program because of anytime a prescription involving a CS rx.

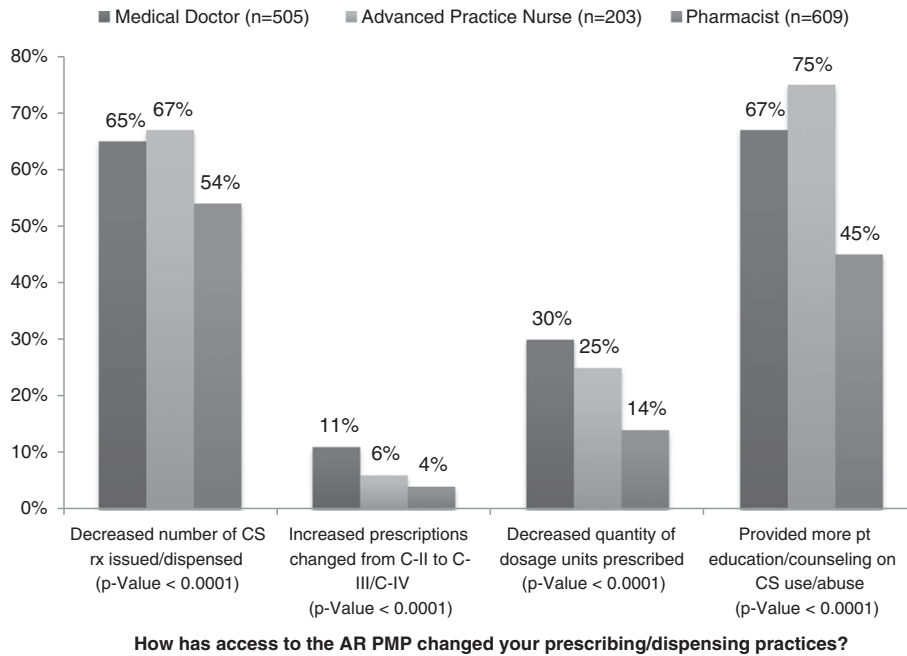


Fig. 2. Changes in Health Care Practices after Accessing the Arkansas Prescription Monitoring Program by the Professions with the Most Frequent Use of the Program, 2014^{a,b}. ^aIn the survey, respondents could choose *all* reasons that apply to them; 31 medical doctors, 7 advanced practice nurses and 22 pharmacists who answered “Never” to the frequency of access question were excluded, CS: controlled substance, rx: medical prescription. ^bSince a PharmD/PD cannot prescribe medications in Arkansas, the prescriber would have had to be contacted, therefore prompting a prescription change.

being misused and abused. Performance analysis showed that access to the AR PMP relates to changes in health care practices. A majority of AR PMP users responded that the program had caused them to decrease the number of CS prescriptions issued or dispensed and to provide more patient education and/or counseling on CS medication use and abuse. Program use also resulted in decreases in the dosage unit quantity of CS medication issued or dispensed and increases in the number of prescriptions changed from a C-II to a C-III/C-IV medication. These are positive actions in achieving the goals set out by the AR PMP. During the first year of implementation, the program demonstrated potential to mitigate misuse and abuse of CS medications. Through access to the AR PMP, health care professionals are better able to ensure the legitimate use of CS prescriptions and to take necessary measures when diversion is suspected.

This study demonstrated several limitations beginning with the low response rate of 41.7%. This response rate is likely attributable to several factors; email filter blocking of SurveyMonkey emails, the decision not to include partially completed surveys (3% of respondents) in the analyses, and the relatively short window for response (30 days).

Additionally it is possible that non-respondents were not able to access the AR PMP as often as respondents resulting in a possible overestimate of AR PMP utilization rates.

While the seven question survey instrument was intentionally brief in order to encourage participation from busy health care professionals, a longer survey could provide more refined information regarding AR PMP users and its impact on their prescribing practices.

Questions 4 through 7 of the survey allowed participants to choose the response N/A. This response option may have been selected for several reasons, including that they never use the program, they found none of the responses satisfactory, or they had additional responses they wished to express. This option resulted in a level of impreciseness in the study results.

Also, it is possible that changes in health care practices related to CS prescribing and dispensing could also be attributed to unknown forces

operating concurrently to the operation of the AR PMP, confounding the results of this study.

Finally, the results of this study came from a PDMP operating in Arkansas, a largely rural state. Extrapolating from these results to more urbanized states should be undertaken with care.

Conclusion

It appears clear that the AR PMP has positively impacted prescription drug abuse in our state. Increased frequency of access by health care providers to the PDMP appears essential to improving their CS practices. Daily users are significantly more likely than infrequent users to be prompted to access the AR PMP simply by the involvement of a CS prescription or by requirements per office or facility policy. Currently, neither Arkansas law nor regulation mandates that CS prescribers and dispensers access the AR PMP. It is likely that legal and regulatory requirements will result in increased PDMP utilization. Additionally, increased utilization of the AR PMP database is likely to occur as a result of planned program enhancements such as unsolicited reporting (providing alerts to registered and non-registered users of the appearance of misuse or abuse by a patient) and allowing prescribers/dispensers to designate delegates to access the database. These actions along with continued support of stakeholders in the adoption of CS prescribing and dispensing guidelines by healthcare facilities remain key strategies in combating prescription drug abuse.

Conflict of interest statement

Co-author Denise Robertson is the Administrator of the Arkansas Prescription Monitoring Program at the Arkansas Department of Health. Co-author Feifei Wei was partly supported by the National Center for Research Resources, National Institutes of Health, U.S. Department of Health and Human Services through grant #1UL1RR029884.

Acknowledgments

Dr. Wei was partly supported by the National Center for Research Resources, National Institutes of Health, U.S. Department of Health and Human Services through grant #1UL1RR029884.

Appendix A. Arkansas Prescription Monitoring Program 2014 User Survey

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.pmedr.2015.06.006>.

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