
ARTICLE

Awareness and Utilization of a Prescription Monitoring Program Among Physicians

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ABSTRACT

In 2011, 5 years after the implementation of a statewide prescription monitoring program (PMP) in Ohio, a survey was distributed to physicians in five specialty areas. During the study period, 95 of 156 surveys were returned, for a 61% response rate. The purpose of the questionnaire was to assess utilization rates as well as reasons for accessing the PMP database and any influence the database may have had on prescribing practices. Over 84% of respondents were aware of the existence of the state PMP. However less than 59% of the respondents who were aware of the program had ever used it. Medical specialty was found to have a significant impact on both awareness and utilization of the system, with pediatric physicians least likely, and emergency physicians most likely, to be aware of and utilize the state PMP. Recommendations based on the authors' survey results include targeting pediatric and internal medicine providers for increased education regarding awareness and benefits of PMP utilization.

KEYWORDS Controlled substance prescribing, pain management, physician prescribing behavior, prescription monitoring program

INTRODUCTION

Prescription monitoring programs (PMPs), first begun in California in 1940, initially tracked select schedule II controlled substances (1). Since that time, PMPs have been established in many states throughout the country, with almost all tracking additional scheduled drugs. In 1992, only 20% of state PMPs were in place; this number reached almost 80% by the end of 2008 (2, 3). Goals of PMPs include decreasing abuse of prescription medications, minimizing prescription medication diversion, and controlling costs

associated with law enforcement and regulatory agencies policing illegal prescription drug abuse while not interfering with legitimate prescribing practices (1, 3). Additionally, these programs have the goal of improving overall patient care through enhanced pain management and decreasing the practice of “doctor shopping” (2, 3). Owing to an epidemic rise in unintentional drug overdose deaths, PMPs have become important components of drug abuse prevention efforts by pharmacy, law enforcement, and public health agencies nationwide (3–5). Critics contend, however, that PMPs may have multiple unintended consequences, such as reducing legitimate and necessary prescriptions, changing of clinician prescriptions to nonscheduled medications, medication withdrawal in patients unable to obtain needed prescriptions, and increased costs to implement and monitor PMPs (6).

In 2006, the Ohio State Board of Pharmacy began the Ohio Automated Rx Reporting System (OARRS), a statewide prescription reporting system for schedule II, III, IV, and V medications as well as carisoprodol and tramadol (2). Pharmacies and distributors are required to electronically update the

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database at least twice monthly; this information is made available to all prescribers, pharmacists, and law enforcement officers who have chosen to register with the Pharmacy Board (2). Obtained in real time from a secure online Web portal as a pdf document, the OARRS report includes data ranging from patient demographics (name(s), address(es), etc.) to medications, quantities obtained, dates dispensed, prescribers, and pharmacies utilized and method of payment (insurance, cash) (2).

Relatively few studies have been published on reasons surrounding utilization of PMPs and their impact on physician practice. Reasons for nonuse of a PMP by physicians in Virginia were assessed by Barrett and Watson (7) and determined to be a combination of a lack of information about the program, questions about the necessity of the program, and potential to negatively impact patient care. Although many physicians in the study noted that the PMP would be useful, few physicians had actually signed up to utilize the program (7). A 2010 study found that use of a PMP had an impact on prescribing patterns of emergency department physicians, leading to modifications in drugs prescribed (increased or decreased quantities) in 41% of cases (2). In a survey conducted among pharmacists, lack of time was cited as the barrier to use of a PMP, specifically the time required to register for the program and subsequently access reports online (8).

The purpose of this study was to determine patterns of PMP usage in an academic medical setting, including reasons for utilizing the system and what, if any, influence the system had on prescribing behaviors. As this was an exploratory study and there is not sufficient research to guide hypothesis testing, no hypotheses were made. The findings can be utilized to better understand perceived benefits of the system and eliminate possible barriers to system utilization by prescribers.

METHODS

Survey Development

Owing to the paucity of previous research on this topic, a survey tool was specifically developed for use in this study. To the authors' knowledge, previous questionnaires focused solely on individual patient encounters in the emergency department or on physician perspectives of the system in general (2, 7). Before dissemination, feedback on the questionnaire was reviewed and responded to by local practicing physicians as well as the medical director of the hospital for cogency. The questionnaire initially asked

respondents for demographic data regarding medical specialty, employment status, age, length of time practicing medicine, and gender. Per request from the institutional review board, these variables were collected categorically to ensure complete anonymity of survey participants.

Respondents were then questioned about their awareness of a PMP in Ohio. Those answering negatively were asked if they would utilize such a database if it existed and, if not, what would preclude them from use. Participants answering affirmatively were then asked about their past utilization of the PMP. Follow-up questions assessed reasons for accessing the database and the possible influence it had on their prescribing practices. Respondents were able to provide multiple reasons regarding their motivations for accessing the database and the possible influence it had on their practice.

From January to March of 2011 the survey was sent to all practicing physicians in the departments of Emergency Medicine, Internal Medicine, Neurology, Pediatrics, and Psychiatry at an academic medical center in Ohio. The survey was provided in paper form directly to participants in January at staff meetings and, to increase compliance, was then placed in administrative mailboxes in February. Completed questionnaires were collected from the start of the survey in January through March. An informational sheet was provided detailing the survey; consent was implied through participation and completion. Surveys were returned anonymously to the investigators after completion and no personal identifiers were collected. This study was approved by the academic medical center's Biomedical Institutional Review Board.

Study Population

Eligible participants included all physicians in the departments of Emergency Medicine, Internal Medicine, Neurology, Pediatrics, and Psychiatry at an academic medical center in Ohio. A total of 156 physicians were identified for inclusion in this study. Any results obtained from nonphysician providers (nurse practitioners, physician assistants) were excluded from the sample.

Data Analysis

Data Analysis was conducted using SPSS 17.0. Chi-square tests were undertaken to determine whether the observed distributions of key study variables differed from the expected distributions. Key variables included characteristics of physicians (age, gender,

specialty, and years in practice) who were aware of or used the OARRS system.

RESULTS

Physician Demographics

A total of 95 surveys were completed. One hundred fifty-six physicians were eligible to participate as members of the five departments at the medical center identified for the study; the overall survey completion rate was 61%. Table 1 provides respondent demographics including gender, age, medical specialty, and years in practice.

Awareness of PMP

Over 84% of respondents were aware of the existence of a PMP in Ohio. A significant difference was found in the ratios of awareness of the existence of the PMP by medical specialty (Table 2; $\chi^2 = 9.805$, $df = 4$, $P = .044$), with physicians in Pediatrics reporting relatively higher rates of being unaware of the system. Results of chi-square tests on gender of physician ($\chi^2 = 1.804$, $df = 1$, $P = .179$), age of physician ($\chi^2 = 5.031$, $df = 8$, $P = .754$), and years in practice ($\chi^2 = 5.499$, $df = 9$, $P = .789$) were not significant. All of the physicians ($n = 15$) who were unaware of the existence of a PMP in Ohio stated they would utilize such a database if available.

TABLE 1. Physician Demographics

Characteristics	<i>n</i> (%)
Total, <i>N</i>	95 (100%)
Gender	
Male	59 (62.1%)
Female	36 (37.9%)
Age range	
<30 years	36 (37.9%)
31–40	39 (41.1%)
41–50	8 (8.4%)
51–60	10 (10.5%)
>60	2 (2.1%)
Medical specialty	
Emergency medicine	12 (12.6%)
Internal medicine	42 (44.2%)
Neurology	13 (13.7%)
Pediatrics	15 (15.8%)
Psychiatry	13 (13.7%)
Years in practice	
<2 years	37 (39%)
2–10	35 (36.8%)
11–20	12 (12.6%)
21–30	7 (7.4%)
>30	4 (4.2%)

Utilization of PMP

Of those physicians aware of the PMP, only 58.8% reported having utilized the database. Chi-square tests were conducted using only the portion of the sample that reported both awareness and utilization of the OARRS system. Results revealed lower proportions of use among physicians in pediatric medicine and higher proportions of use among physicians practicing emergency medicine ($\chi^2 = 23.819$, $df = 4$, $P \leq .001$).

Reasons for Utilizing PMP

Of the portion of the sample reporting use of the system, over 91% of physicians reported concern about prescription medication abuse as the top reason for accessing the database. Forty-nine percent cited a suspicion the patient may be diverting a controlled substance, and 47% noted concern about drug abuse. Other reasons included gathering additional patient information (36%), job requirement (17%), or checking all relevant information available (2%). Results of chi-square tests analyzing each reason for accessing the PMP among the various medical specialties did not reach statistical significance.

PMP Influence on Prescribing Practice

Of the 47 physicians who reported utilizing the PMP, 44 (93.6%) noted that its use influenced the type or quantity of medication prescribed. Almost 73% of respondents reported that information obtained from the PMP decreased the quantity of medication prescribed. Over 68% related that they changed the medication to a nonscheduled drug. Thirty percent reported they were less concerned about prescribing a medication with abuse potential after accessing the PMP and 14% noted the information led them to increase the quantity of medication prescribed.

TABLE 2. Physician Awareness of PMP by Medical Specialty*

Medical specialty	Yes	No	Total
Emergency medicine	12	0	12
Internal medicine	33	9	42
Neurology	12	1	13
Pediatrics	10	5	15
Psychiatry	13	0	13
Total	80	15	95

* $\chi^2 = 9.805$, $df = 4$, $P = .044$.

DISCUSSION

Physician awareness of the state PMP was significantly influenced by medical specialty, a finding that, to our knowledge, has not previously been reported in the medical literature. The survey results also indicate that physicians who are unaware of the program would likely utilize such a database if they knew it existed, thus providing an opportunity to educate physicians on availability and use of the system. Lack of awareness is a barrier to physician use of PMPs. Utilization of the PMP was also significantly influenced by medical specialty. Therefore, if knowledge gleaned from the above data were applied to physicians in the state of Ohio, Pharmacy Board resources for increasing awareness of OARRS should be directed toward pediatricians and internists. Focused educational programs and targeted advertising campaigns have the potential to quickly increase system utilization in these not previously identified low use specialties. Therefore, the relative underutilization of the system should be addressed to ensure that the program goals of decreasing prescription drug abuse and diversion are accomplished. Although time limitations are frequently cited as a potential barrier to program utilization, the real-time nature of the PMP and relative ease of use should more than offset this perceived burden. Educational programs could address concerns by teaching proper utilization and efficiency by prescribers; sophisticated technological skill is not a required prerequisite of PMP utilization.

The concerns of drug abuse and diversion must be carefully balanced by prescribers against the actual legitimate medical benefits and needs for these medications. Importantly, prescribing practices in the age of PMPs must be closely monitored to ensure effective treatment of pain, pain related disorders and psychiatric conditions (6, 9). Furthermore, the potential creation of a national prescription monitoring program could serve to enhance efficacy and efficiency while placing minimal additional strain on physicians or state agencies (3). However, the usefulness of a national database must be determined in order to ensure system utilization.

Of those physicians who report having utilized the PMP, common reasons for accessing the system included concerns regarding prescription medication abuse and/or diversion. This is consistent with earlier published reports on state PMPs (3). Likewise, physicians in this study reported instances of the PMP influencing their behavior by either increasing or decreasing the quantity of controlled medication prescribed to a patient. Similar to findings reported by Baehren et al., most changes in prescribing behavior resulted in a decreased quantity or therapeutic

substitution; however, in some cases, a larger quantity of medication was prescribed (2). These results may serve to quell fears surrounding the influence of PMPs on legitimate prescribing practices. As 30% of respondents noted less concerns about prescribing a controlled medication and 14% of respondents stated they actually increased the quantity of medications prescribed after utilizing the database, PMPs may actually enhance patient care and improve prescription practices. Therefore, the use of a PMP does not appear to unnecessarily restrict patient access to appropriate prescriptions of controlled medications.

Study Limitations

There are several possible limitations to this study. It is from a small sample of physicians working at an academic medical center in Ohio. Regional variation may be present due to the administration at only one site. Despite the 61% response rate, physicians may have been more likely to respond to the survey if they were already aware of the state PMP. The survey was developed specifically for this study and therefore has not been validated. Response bias due to sensitive questions about controlled substance prescribing among physicians as well as the retrospective nature of the survey may have led to skewed data. For these reasons, the authors are cautious about the generalizability of these data to other settings.

Future Studies

These results indicate the need for continued research surrounding physician utilization of prescription monitoring systems. Future studies should further elucidate perceived benefits of a PMP and the actual impact on abuse and diversion of medications in an attempt to garner increased physician support and buy-in for utilization of prescription reporting systems. Additional research on the reasons for significant differences in utilization between medical specialties may elucidate perceived barriers to program participation and could improve use of the program, benefiting patients and prescribers alike.

CONCLUSIONS

The low awareness and utilization of PMPs appears to be influenced by medical specialty. Targeted educational and advertising programs for prescribers who indicated a willingness to participate but were unaware of the system could efficiently improve utilization. Despite concerns surrounding the negative

aspects of PMPs, 30% of respondents felt more comfortable prescribing controlled substances and 14% increased the quantity of scheduled medications prescribed. These findings suggest benefits of PMP utilization are not just avoiding prescribing controlled substances to those overusing these medications, but an increased comfort level with prescribing to those with a legitimate need.

REFERENCES

- [1] Wang J, Christo PJ. The influence of prescription monitoring programs on chronic pain management. *Pain Physician*. 2009;12:507–515.
- [2] Baehren DF, Marco CA, Droz DE, Sinha S, Callan EM, Akpunonu P. A statewide prescription monitoring program affects emergency department prescribing behaviors. *Ann Emerg Med*. 2010;56:19–23, e11–e13.
- [3] Manchikanti L, Whitfield E, Pallone F. Evolution of the National All Schedules Prescription Electronic Reporting Act (NASPER): a public law for balancing treatment of pain and drug abuse and diversion. *Pain Physician*. 2005;8:335–347.
- [4] Toblin RL, Paulozzi LJ, Logan JE, Hall AJ, Kaplan JA. Mental illness and psychotropic drug use among prescription drug overdose deaths: a medical examiner chart review. *J Clin Psychiatry*. 2010;71:491–496.
- [5] Hall AJ, Logan JE, Toblin RL, et al. Patterns of abuse among unintentional pharmaceutical overdose fatalities. *JAMA*. 2008;300:2613–2620.
- [6] Fisher J, Sanyal C, Frail D, Sketris I. The intended and unintended consequences of benzodiazepine monitoring programmes: a review of the literature. *J Clin Pharm Ther*. 2011; Feb 17 [Epub ahead of print].
- [7] Barrett K, Watson A. Physician perspectives on a pilot prescription monitoring program. *J Pain Palliat Care Pharmacother*. 2005;19:5–13.
- [8] Ulbrich TR, Dula CA, Green CG, Porter K, Bennett MS. Factors influencing community pharmacists' enrollment in a state prescription monitoring program. *J Am Pharm Assoc*. 2010;50:588–594.
- [9] Fishman SM, Papazian JS, Gonzalez S, Riches PS, Gilson A. Regulating opioid prescribing through prescription monitoring programs: balancing drug diversion and treatment of pain. *Pain Med*. 2004;5:309–324.

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