

Promoting Consistent Use of Prescription Drug Monitoring Programs (PDMP) in Outpatient Pharmacies: Removing Administrative Barriers and Increasing Awareness of Rx Drug Abuse

**Article Synopsis:**

Prescription drug monitoring programs (PDMP) may be effective tools to reduce drug diversion and improve clinical decision-making for pharmacists, but can only be effective if utilized. This cross-sectional study examined the relationship between outpatient pharmacists' use of Indiana's PDMP (INSPECT) and perceived barriers. Pharmacists were significantly more likely to use INSPECT if they reported no barriers. Pharmacists extremely concerned with prescription drug abuse were 18 times more likely to use INSPECT more consistently compared to those not at all concerned. Innovative strategies to reduce administrative barriers to INSPECT must include efforts to improve awareness about PDMPs and prescription drug abuse.

## ABSTRACT

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20

**BACKGROUND:** Prescription drug monitoring programs (PDMPs) are proving to be valuable resources in fighting the prescription drug abuse epidemic through improved access to patient drug histories. Ninety-four percent of Indiana pharmacists have heard of Indiana's PDMP (INSPECT), only 71% of them reported using the program in 2012.

**OBJECTIVE:** To identify barriers to PDMP use in outpatient pharmacies and determine the impact these barriers have on utilization.

**METHODS:** A cross-sectional study examined pharmacists' knowledge and use of INSPECT. Bivariate analyses on utilization and perceived barriers were conducted using cross-tabulations and  $\chi^2$ . Multiple logistic regression examined the relationship between pharmacists' level of concern with prescription drug abuse and reported utilization.

**RESULTS:** Pharmacists were significantly less likely to use INSPECT if they reported at least one barrier and 3 times more likely to use INSPECT if they reported no barrier. Pharmacists were 10 times more likely to use INSPECT and 18 times more likely to use it more consistently if they were extremely concerned about prescription drug abuse in their community as compared to those not at all concerned.

**CONCLUSION:** Strategies to improve utilization of PDMPs should look for innovative ways to limit barriers and build outpatient pharmacists' awareness of prescription drug abuse and misuse within their community.

21

## INTRODUCTION

22 In the 1990s, health care quality improvement initiatives focused on raising awareness for  
23 the problem of inadequately treated pain.<sup>1</sup> After the adoption of new standards for the  
24 management of pain, the United States saw an increase in prescribing of opioid analgesics.  
25 Between 1997 and 2007, the distribution of opioid drugs increased by over 7 times.<sup>2</sup> Overdoses  
26 from prescription opioid pain relievers (OPR) quadrupled between 1999 and 2010.<sup>3</sup> OPR  
27 overdoses remains a serious public health problem with 5.6 deaths per 100,000 individuals in  
28 2012.<sup>3</sup> A national approach to addressing prescription drug overdoses attempts to “balance the  
29 desire to minimize abuse with the need to ensure legitimate access to these medications”.<sup>4</sup> One  
30 section of this plan calls for the establishment of prescription drug monitoring programs  
31 (PDMPs) in all 50 states. A PDMP is a statewide electronic database that collects detailed data  
32 on controlled substance prescriptions (CSPs) in a state.<sup>5,6</sup> PDMPs have proven to be invaluable  
33 tools in fighting the prescription drug abuse epidemic by reducing drug diversion of controlled  
34 substances and improving clinical decision-making through increased access to detailed patient  
35 drug histories.<sup>7</sup>

36 Pharmacists have an important role in the effort to address prescription drug abuse and  
37 are the “last line of defense”. A recent study suggested that more consistent use of PDMPs by  
38 pharmacists resulted in a higher number of refusals to dispense CSPs as a result of greater access  
39 to patient information.<sup>8</sup> “Limited access to information affects [outpatient] pharmacists in  
40 fundamental ways, most specifically having incomplete prescription information which can leave  
41 the pharmacist unable to fill the prescription”.<sup>9</sup> Pharmacists’ utilization of PDMPs may lead to a  
42 decrease in the morbidity and mortality associated with prescription drug abuse.<sup>10</sup> Utilization of  
43 PDMPs in pharmacy practice may be beneficial to reducing the impact of prescription drug

44 abuse on the community, but a good portion of pharmacists do not utilize these programs. An  
45 evaluation of the Indiana Scheduled Prescription Electronic Collection and Tracking Program  
46 (INSPECT), Indiana's PDMP, showed that among the 94% of pharmacists who had heard of  
47 INSPECT only 72% of them reported actually using the program.<sup>11</sup> PDMPs may prove to be  
48 effective tools to increasing access to patient information and supporting clinical decisions  
49 regarding the dispensation of CSPs, but they can only be effective if they are used.

50 The primary objective of this study was to identify common barriers to INSPECT use  
51 reported by outpatient pharmacists and subsequently examine how these barriers influence  
52 PDMP utilization. The study also looked at a provider's level of concern with Rx drug abuse in  
53 the community to assess how awareness of Rx abuse and misuse translates to INSPECT  
54 utilization.

## 55 METHODS

### 56 Study Design

57 This cross-sectional study examined information on providers' practice characteristics,  
58 behaviors, and key information about their knowledge and use of INSPECT. The *2012 IPLA*  
59 *Knowledge and Use Survey* was conducted by the Indiana University Purdue University –  
60 Indianapolis (IUPUI) Center for Health Policy (CHP) as part of an initiative to evaluate Indiana's  
61 PDMP. Detailed methodology for the evaluation is described in an previous report.<sup>11</sup> The  
62 evaluation surveyed 10,606 pharmacists in the State of Indiana who held a valid license to  
63 dispense controlled substances in 2012. With 1,582 pharmacists responding, the survey returned  
64 a 15% response rate. Basic demographics of the study sample were compared to Indiana's 2012  
65 Pharmacist Workforce Data<sup>12</sup> in a previous study<sup>8</sup> to ensure the sample was representative of

66 Indiana's total pharmacist population. The sample exhibited similar characteristics to Indiana's  
67 2012 Pharmacist workforce in regards to age, years practicing, and gender.<sup>8</sup>

#### 68 *Study Population*

69 The study population included 1,000 outpatient pharmacists who completed the 2012  
70 *IPLA Knowledge and Use Survey*. Pharmacists were considered to be working in an outpatient  
71 setting if they reported their primary practice setting as a community health center, diagnostic  
72 testing facility, outpatient clinic, outpatient surgery center, pharmacy (outpatient), retail medicine  
73 clinic, or an urgent care facility. Otherwise, the pharmacist was excluded from the study.

#### 74 *Study Outcomes*

75 The study consisted of 2 primary outcome measures. The first outcome measure, Used  
76 INSPECT, is a binary variable (Yes=1, No=0) indicating whether or not the pharmacist reported  
77 using INSPECT within the last 12 months. The second outcome measure, "Often Check  
78 INSPECT, is a 3 level categorical variable (Never=1, Periodically=2, At Every Visit=3) that  
79 indicates the pharmacist's reported frequency of INSPECT use.

#### 80 **Data Analyses**

81 Statistical analyses were performed using SAS Statistical Software 9.4<sup>®</sup>. Descriptive  
82 statistics were performed to describe the study sample. Cross-tabulations and  $X^2$  statistics were  
83 used to identify differences in INSPECT use by gender, age, training period, and reported  
84 barriers. Relative risks were calculated to look at reported barriers as predictors of INSPECT  
85 use.

86 Multiple logistic regression was used to study 2 outcome variables, Used INSPECT and  
87 Often Check INSPECT. Variables that were contextually relevant or statistically significant in  
88 the bivariate analyses were added to the initial multiple logistic regression models to control for

89 factors that may influence the relationship between the primary outcome measures and the  
90 dependent variable. Degree type was not available in these data and so the variable training  
91 period was created to control for the time in which the provider was trained in relation to the  
92 adoption of the PharmD as the sole entry level degree for the pharmacy profession.<sup>8</sup> Stepwise  
93 elimination was used to fit the model and to exclude any variables that had no statistical or  
94 conceptual significance in the multivariate model.<sup>13</sup> The study outcome measures were assessed  
95 with determination of odds ratio (OR) estimates and 95% Wald confidence intervals (CIs).

## 96 RESULTS

### 97 Barriers to INSPECT Utilization

98 Basic demographic information describing the sample population is provided in Table 1.  
99 Although 97% of outpatient pharmacists had heard of INSPECT prior to receiving the survey,  
100 only 81% of them reported using it. Furthermore, only 3% of outpatient pharmacists reported  
101 using INSPECT at every visit compared to periodically (88%) or never (9%) using INSPECT.  
102 All respondents who had heard of INSPECT were asked to report perceived barriers to using the  
103 PDMP. The frequency of reported barriers to INSPECT and there association to INSPECT use  
104 (relative risk) is included in Table 2. If a pharmacists reported no barrier, they were 3 times more  
105 likely to also report using INSPECT; however, they were significantly less likely to use  
106 INSPECT if they reported at least one barrier (RR=.80). Surprisingly, pharmacists who reported  
107 being afraid of legal ramifications were the least likely to report using INSPECT (RR=.44).

108 The study also aimed to examine how barriers effect the frequency of INSPECT use.  
109 Figure 1 illustrates the variation in the frequency of INSPECT use based on respondents  
110 perceived barriers. Not surprisingly, when no barriers were reported there was a larger  
111 percentage (14%) of pharmacists utilizing INSPECT at every visit as compared to when at least

112 one barrier was reported (7%). No pharmacists who reported being afraid of legal ramifications  
113 utilized INSPECT at every visit.

#### 114 **Pharmacists Level of Concern**

115 Multiple logistic regressions examined the relationship between INSPECT use and the  
116 provider's level of concern with prescription drug abuse in the community. These results (Table  
117 3) demonstrated that outpatient pharmacists who reported being extremely concerned with  
118 prescription drug abuse in the community were approximately 10 times more likely to use  
119 INSPECT as compared to those who reported being not at all concerned (OR = 9.96, 95% CI,  
120 1.724 – 57.536). Not only were those pharmacists extremely concerned with prescription drug  
121 abuse in the community more likely to report using INSPECT, but they were 18 times more  
122 likely to use INSPECT more frequently than those who were not at all concerned (OR = 17.89,  
123 95% CI, 1.457 – 219.69).

### 124 **DISCUSSION**

125 Pharmacists play a crucial role in the national efforts to reduce the abuse and misuse of  
126 CSPs. Pharmacists have the responsibility to investigate the validity of CSPs if there is any  
127 reason to question the authenticity of the prescription. However, many times outpatient  
128 pharmacists find themselves devoid of the proper clinical resources or information to resolve  
129 concerns that may arise while filling a CSP. PDMPs may provide key information to pharmacists  
130 allowing them to make informed clinical decisions reducing the risk of drug diversion. This  
131 study illustrated that there are barriers to using INSPECT which results in outpatient pharmacists  
132 failing to utilize the program as frequently as may be desired. When pharmacists reported no  
133 barrier they were significantly more likely to use INSPECT. Conversely, if there was at least  
134 one reported barrier the provider was significantly less likely to use INSPECT. Interestingly,

135 10% of outpatient pharmacists reported that they were afraid of the perceived legal ramifications  
136 that may accompany use of the program. Although this is not necessarily an administrative  
137 barrier, it may indicate that health professionals should look to raise awareness and provide  
138 comprehensive training for INSPECT users. These findings suggest that health professionals  
139 must look for innovative ways to ameliorate the impact key barriers including reimbursement,  
140 time, registration, and legal ramifications may have on utilization of INSPECT in order to fully  
141 leverage the potential of Indiana's PDMP. These results are also in line with conclusions from  
142 another study which examined PDMP utilization for primary care physicians.<sup>14</sup>

143         These findings suggest that health professionals should look to remove barriers to  
144 INSPECT use and also to build awareness within the pharmacy community about prescription  
145 drug abuse in order to promote more consistent use of the PDMP. Outpatient pharmacists were  
146 10 times more likely to report using INSPECT if they were extremely concerned with  
147 prescription drug abuse as compared to those who were not concerned at all. Also, outpatient  
148 pharmacists were 18 times more likely to use INSPECT more often if they were extremely  
149 concerned as compared to those who were not concerned at all. Therefore, it is possible that  
150 building awareness about prescription drug abuse within the pharmacy community may  
151 significantly increase the number of pharmacists not only using the PDMP, but using it more  
152 frequently.

### 153 **Study Limitations**

154         This study was conducted within one state, Indiana. The generalizability of these  
155 findings to other states may be a limitation. Furthermore, the response rate for the survey was  
156 low and may be a limitation to the study. A previous study compared Indiana's 2012 pharmacist  
157 workforce to the survey sample and confirmed the survey sample comparable to Indiana's

158 pharmacist workforce. Another limitation to this study was response bias as the outcome  
159 measures were self-reported. It is likely that response bias may result in an overestimate of  
160 pharmacists use of INSPECT as well as reported frequency of use. The survey was administered  
161 anonymously to limit response bias. In light of these limitations, the study findings should still  
162 be considered due to their important implications and consistency with previous literature.

163

### **CONCLUSION**

164 This study concludes that strategies to improve outpatient pharmacists' utilization of  
165 PDMPs should look for innovative ways to limit administrative barriers and also build outpatient  
166 pharmacists' awareness of prescription drug abuse and misuse within their community.

167

168 **Acknowledgements**

169           This research was supported, in part, by an evaluation contract to the second author from  
170 the Indiana Professional Licensing Agency (IPLA) made possible by a grant from the U.S.  
171 Department of Justice, Office of Justice Programs and the Harold Rogers Prescription Drug  
172 Monitoring Program (IPLA Contract No. 062166-00002B). The authors would like to  
173 acknowledge the collaborative effort between the IPLA, the Indiana State Prescription Drug  
174 Abuse Prevention Task Force Education Committee, and the Indiana University Purdue  
175 University – Indianapolis, (IUPUI) Center for Health Policy (CHP) which led to the development  
176 of the *IPLA Knowledge and Use Survey* used in this study. The content is solely the  
177 responsibility of the authors and does not necessarily represent the official views of the Indiana  
178 Board of Pharmacy or the aforementioned collaborators.

## REFERENCES

- 179
- 180 **1.** Quality improvement guidelines for the treatment of acute pain and cancer pain.  
181 American Pain Society Quality of Care Committee. *JAMA*. 1995;274:1874-1880.
- 182 **2.** Centers for Disease Control Prevention. CDC grand rounds: prescription drug overdoses -  
183 a U.S. epidemic. *MMWR. Morbidity and mortality weekly report*. 2012;61:10-13.
- 184 **3.** Rudd RA, Paulozzi LJ, Bauer MJ, et al. Increases in Heroin Overdose Deaths—28 States,  
185 2010 to 2012. *MMWR: Morbidity and mortality weekly report*. 2014;63:849-854.
- 186 **4.** Centers for Disease C, Prevention. CDC grand rounds: prescription drug overdoses - a  
187 U.S. epidemic. *MMWR. Morbidity and mortality weekly report*. 2012;61:10-13.
- 188 **5.** NAMSDL. The role of a prescription drug monitoring program in reducing prescription  
189 drug diversion, misuse, and abuse: National Alliance for Model State Drug Laws; 2014.
- 190 **6.** Blumenschein K, Fink J, Freeman PR, et al. Review of Prescription Drug Monitoring  
191 Programs in the United States: Institute for Pharmaceutical Outcomes and Policy;  
192 2010:1-28.
- 193 **7.** PDMP Center of Excellence. Briefing on PDMP Effectiveness. Brandeis University:  
194 Bureau of Justice Assistance; 2014.
- 195 **8.** Norwood CW, Wright ER. Integration of Prescription Drug Monitoring Programs  
196 (PDMP) in Pharmacy Practice: Improving Clinical Decision-Making and Supporting a  
197 Pharmacist's Professional Judgment. *Research in Social and Administrative Pharmacy*.  
198 2015.
- 199 **9.** Maxwell L, Odukoya OK, Stone JA, Chui MA. Using a conflict conceptual framework to  
200 describe challenges to coordinated patient care from the physicians' and pharmacists'  
201 perspective. *Research in social & administrative pharmacy : RSAP*. 2014;10:824-836.

- 202 **10.** Fleming MLPDa, Barner JCPDb, Brown CMPDb, Shepherd MDPDb, Strassels SPDb,  
203 Novak SMDPDb. Using the theory of planned behavior to examine pharmacists' intention  
204 to utilize a prescription drug monitoring program database. *Research In Social &*  
205 *Administrative Pharmacy*. 2014;10:285-296.
- 206 **11.** Kooreman H, Carnes N, Wright E. Key Findings and Recommendations from the 2013  
207 IPLA INSPECT Knowledge and Use Survey. Center for Health Policy: Indiana  
208 University; 2014.
- 209 **12.** Maxey HL. Indiana Pharmacist 2012 Licensure Survey Data. In: Indiana University  
210 Health Workforce Studies, ed2015.
- 211 **13.** Menard S. *Applied Logistic Regression Analysis*. Thousand Oaks, CA: Sage; 2002.
- 212 **14.** Rutkow L, Turner L, Lucas E, Hwang C, Alexander GC. Most primary care physicians  
213 are aware of prescription drug monitoring programs, but many find the data difficult to  
214 access. *Health Aff (Millwood)*. 2015;34:484-492.
- 215
- 216

## TABLES &amp; FIGURES

*Table 1*  
*Sample Demographics*

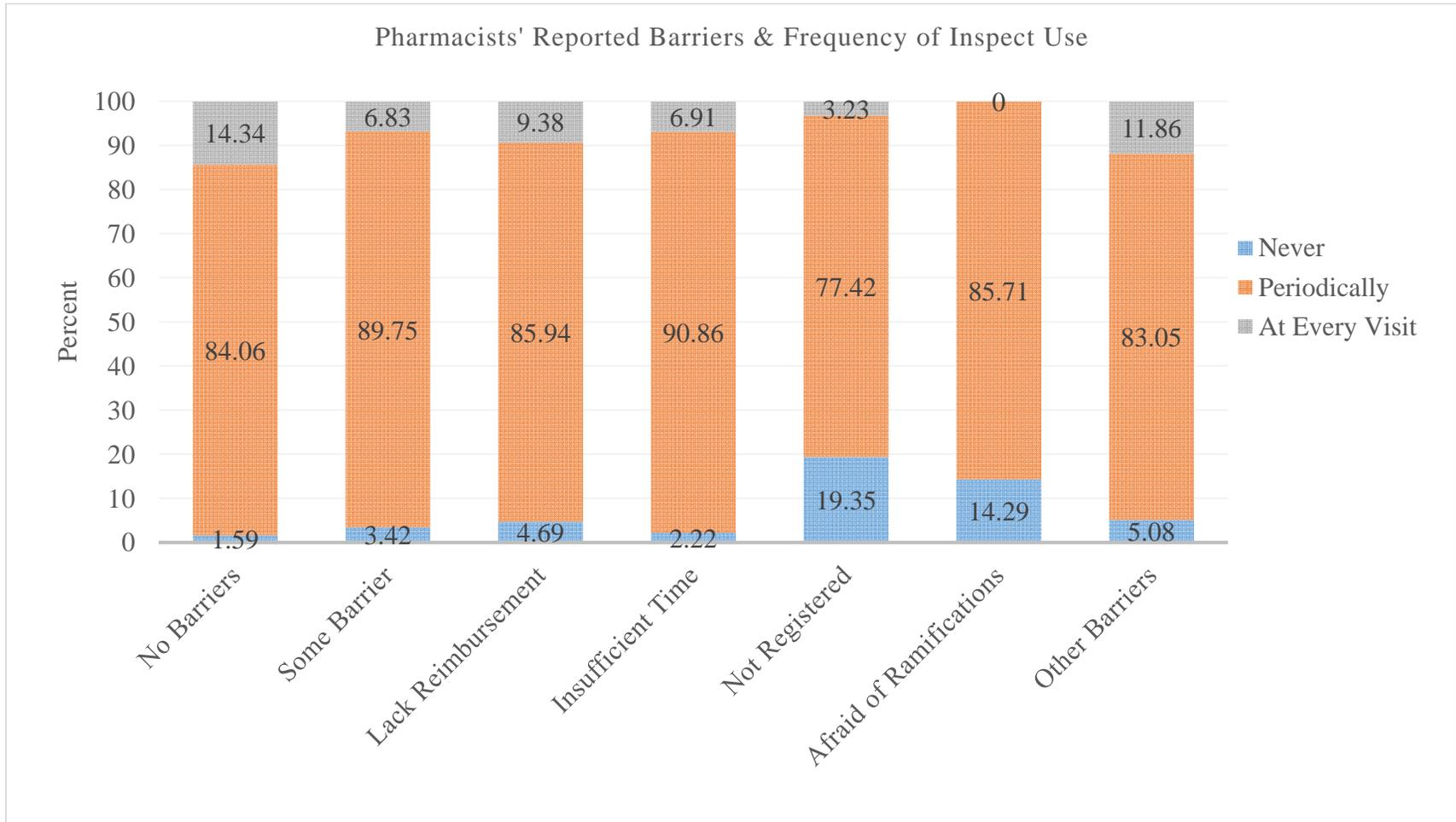
	N (%)
<b>Age (years)</b>	Mean $\pm$ SD, 46.4 $\pm$ 13.6
<b>Years Practicing</b>	Mean $\pm$ SD, 20.5 $\pm$ 14.0
<b>Gender</b>	
Female	521 (54)
Male	445 (46)
<b>Race/Ethnicity (n=1000)</b>	
White/non-Hispanic	898 (93)
Asian American/ Pacific Islander	28 (3)
Black/non-Hispanic	17 (2)
American Indian/ Alaska Native	3 (0)
Hispanic/Latino	11 (1)
<b>Training Period</b>	
Cohort 1	272 (28)
Cohort 2	302 (31)
Cohort 3	393 (41)
<b>Barriers to INSPECT</b>	
Insufficient Time	532 (58)
Not Registered	129 (14)
Lack of Reimbursement	89 (10)
Other Barriers	96 (10)
Afraid of Legal Ramifications	26 (3)
No Barriers	288 (31)

*Table 2*  
*Sample Demographics and Bivariate Analysis*

	Total Respondents	Used Inspect				
Outpatient Pharmacists		Yes	No	X <sup>2</sup>	P	
<b>Age Category</b>				11.67	.0086	
<35	265 (29)	224 (25)	41 (5)			
36-45	198 (22)	170 (19)	28 (3)			
46-55	177 (19)	142 (16)	35 (4)			
56+	272 (30)	204 (22)	68 (8)			
<b>Gender</b>				.0232	.8790	
Female	521 (54)	400 (44)	96 (10)			
Male	445 (46)	342 (37)	80 (9)			
<b>Training Period</b>				10.211	.0061	
Cohort 1	272 (28)	223 (24)	42 (5)			
Cohort 2	302 (31)	244 (27)	44 (5)			
Cohort 3	393 (41)	272 (30)	89 (9)			
<b>Barriers to INSPECT</b>						Relative Risk (95% Confidence Interval)
No Barriers	532 (58)	268 (29)	20 (2)	38.86	<.0001	3.112* (2.0381, 4.751)
At Least One Barrier	638 (68)	492 (52)	146 (16)	18.23	<.0001	.7960* (.7290, .8692)
Not Registered	129 (14)	38 (4)	91 (10)	262.29	<.0001	.0970* (.069, .1363)
Afraid of Legal Ramifications	89 (10)	17 (2)	9 (1)	4.35	0.037	.4386* (.1989, .9673)
Lack of Reimbursement	96 (10)	71 (7)	18 (2)	.1226	.7262	.9160 (.5611, 1.495)
Insufficient Time	26 (3)	444 (48)	88 (10)	4.3914	.0361	1.172* (1.001, 1.3721)
Other Barriers	288 (31)	75 (8)	21 (2)	.6435	.4225	.8293 (.5263, 1.3068)

222 Figure 1: Outpatient Pharmacists' Reported Barriers & Frequency of Inspect Use

223



224

225

*Table 3*  
*Multivariate Logistic Regression*

Variable	Used INSPECT				Often Check INSPECT			
	OR	95% CI		P	OR	95% CI		P
<b>Male</b>	0.88	.592	1.30	.509	1.095	.648	1.85	.734
<b>Age (in years)</b>	1.03	.999	1.06	.060	.963	.925	1.00	.072
<b>Training Period</b>								
Cohort 1	1.11	0.465	2.667	.230	.603	.166	2.20	.443
Cohort 2	.672	.351	1.29	.809	.852	.335	2.17	.736
Cohort 3	ref	ref	ref	ref	ref	ref	ref	ref
<b>Rx Abuse in Community</b>								
Extremely Concerned	ref	ref	ref	ref	ref	ref	ref	ref
Moderately Concerned	.743	.495	1.12	.153	.733	.425	1.26	.264
Slightly Concerned	1.17	.624	2.18	.629	.402	.146	1.10	.077
Not concerned at all	9.96	1.72	57.54	.010	17.89	1.457	219.69	.024