

APPENDIX A

SURVEY DEVELOPMENT

The survey was developed and conducted by University of California Davis and the California Department of Public Health, with cooperation from the California Board of Pharmacy, Medical Board of California (MBC), and Osteopathic Medical Board of California (OMBC). In addition to the items used in the study, the survey also assessed the following: prescribing/dispensing practice patterns, PDMP registration status, barriers to PDMP registration and use, and questions about specific features of CURES 2.0 (Controlled substance Utilization Review and Evaluation System; California's PDMP), need for additional training, and comparison of CURES 1.0 versus CURES 2.0. In order to reduce respondent fatigue, skip logic was used so that, to the extent possible, prescribers only answered questions relevant to their practice. For example, physicians who reported not having a DEA license (and so are not required to register for CURES) did not answer questions about CURES; physicians who reported not prescribing any controlled substances or not being registered for CURES did not answer questions about how often they checked CURES or about ease of using CURES, respectively. An open-ended response question asking "Is there anything else you would like to tell us about CURES? (e.g., problems, recommendations)" was also included. The survey was a web-based survey hosted by the Qualtrics survey program (Provo, UT). The full survey is available from the corresponding author. Survey questions were reviewed by the study team and approved by the three regulatory boards.

Sampling Strategy

Our study population was drawn from all pharmacists and allopathic physicians with licenses expiring on November 30, 2016 and all osteopathic physicians with licenses expiring on December 31, 2016. Licenses in California must be renewed every 2 years and expire at the end of the licensee's birth month; for osteopathic physicians, licenses must be renewed every 2 years and expire 6 times a year based on licensee birth month. Initial survey invitations were mailed from each regulatory board and were included in the same envelope as the licensee's license renewal paperwork. One or two additional reminders were sent by mail from the survey team; an additional reminder letter was mailed from each regulatory boards return address. Allopathic physicians also received several e-mail reminders (the OMBC and Board of Pharmacy do not maintain licensee e-mail addresses and so could not send out e-mail reminders). All survey materials were visually distinct from renewal materials and included the logos of both UC Davis and the applicable regulatory board. Licensees were advised that participation was voluntary and that their individual responses would not be shared with the regulatory boards. All surveys were completed on the web; respondents could access the survey by typing in a short web address, scanning a QR code on their cell phone, or clicking on a survey link on the appropriate regulatory board's web page. As previously mentioned, licensees were required to type in their license number before starting the survey; this prevented people from taking the survey multiple times, restricted respondents to licensees in our sample, and allowed us to keep track of respondents and in order to avoid sending reminders to licensees who had already completed the survey.

Appendix
Psychosocial Correlates of Clinicians' Prescription Drug Monitoring Program Utilization
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Appendix Table 1. Comparison of Responder and Non-Responder Characteristics

Characteristics	Physicians					Pharmacists ^a					
	Responders (n=1,406)		Non-responders (n=4,872)		<i>p</i> -value	Responders (n=497)		Non-responders (n=1,119)		<i>p</i> -value	
Gender (n, %) ^b						Gender (n, %)					
Male	908	64.6%	3,152	64.7%	0.94	Male	207	41.7%	439	39.2%	0.34
Female	498	35.4%	1,719	35.3%	0.92	Female	290	58.4%	680	60.8%	0.36
Mean age, years (SD) ^c	56.7	(13.0)	52.7	(14.1)	<0.01	Mean age, years (SD)	48.9	(13.6)	44.8	(13.8)	<0.01
Race/Ethnicity (n, %) ^d						Degree type (n, %)					
White	672	47.8%	1,843	37.8%	<0.01	PharmD	332	66.8%	868	77.6%	<0.01
Black	40	2.8%	126	2.6%	0.59	BS ^e	165	33.2%	251	22.4%	<0.01
Asian/Pacific Islander	389	27.7%	1,571	32.2%	<0.01	Pharmacy school (n, %)					
Hispanic	40	2.8%	226	4.6%	<0.01	Foreign school	61	12.3%	89	8.0%	0.01
Other	16	1.1%	26	0.5%	0.01	U.S. school	436	87.7%	1,030	92.1%	<0.01
Decline to state	198	14.1%	764	15.7%	0.14	California school	251	50.5%	644	57.6%	0.01
Missing	51	3.6%	316	6.5%	<0.01						
Primary specialty (n, %) ^f											
Internal medicine	186	13.2%	589	12.1%	0.25						
Family medicine	175	12.4%	503	10.3%	0.02						
Psychiatry	116	8.3%	250	5.1%	<0.01						
Emergency medicine	93	6.6%	185	3.8%	<0.01						
Anesthesiology	78	5.5%	228	4.7%	0.18						
OB/GYN	55	3.9%	207	4.2%	0.58						
Pediatrics	84	6.0%	295	6.1%	0.91						
Pain medicine	10	0.7%	23	0.5%	0.27						
Radiology	53	3.8%	241	4.9%	0.07						
Current license	1,390	98.9%	4,450	91.3%	<0.01						

Notes: Bolded *p*-values are less than Bonferroni corrected threshold of 0.0016.

^a Data missing for 10 pharmacists.

^b One missing for gender.

^c Weighted average.

^d Licensees can check multiple ethnicities.

^e PharmD became the entry-level degree in 2003

^f Percentages do not sum to 100%; Licensees may list more than one specialty.

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Appendix Table 2. Correlation Among the Main Study Variables

Variable	1	2	3	4	5	6	7	8
1. Concern about misuse of CS	–	0.31***	0.19***	0.27***	–0.19***	0.07	0.09**	0.11**
2. PDMP usefulness	0.27***	–	0.38***	0.41***	–0.57***	0.30***	–0.04	0.38***
3. Subjective norms	0.27***	0.51***	–	0.36***	–0.45***	0.36***	–0.05	0.41***
4. Professional and moral obligation	0.22***	0.40***	0.46***	–	–0.31***	0.13***	–0.05	0.20***
5. Barriers to use	–0.25***	–0.61***	–0.46***	–0.30***	–	–0.53***	0.15***	–0.60***
6. PDMP experience	0.17***	0.33***	0.30***	0.15***	–0.38***	–	–0.13***	0.49***
7. Years in practice	–0.05	–0.14***	–0.10***	–0.03	0.16***	–0.16***	–	–0.23***
8. Intention to use PDMP	0.23***	0.50***	0.41***	0.23***	–0.58***	0.37***	–0.21***	–

Notes: Physicians are represented in the lower diagonal; Pharmacists in the upper diagonal. Tests of statistical significance based on bootstrapped SEs.

** $p < 0.01$; *** $p < 0.001$

CS, controlled substances; PDMP, prescription drug monitoring program

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Appendix Table 3. Model Fit Statistics and Nested Model Tests for Mediation Model

Model	χ^2	<i>df</i>	<i>p</i> -value	RMSEA	AIC	CFI
1. Hypothesized model	337.60	47	<0.001	0.09	37241.81	0.89
2. Free equality constraints on means	137.14	39	<0.001	0.06	37057.34	0.96
3. Free paths from experience using PDMP to endogenous variables	114.91	35	<0.001	0.06	36937.12	0.97
4. Free covariance between experience using PDMP and barriers	98.92	34	<0.001	0.05	36921.13	0.97
5. Free variance of mediators	47.41	31	0.03	0.03		0.99
Model difference tests	$\Delta\chi^2$	Δdf	<i>p</i> -value			
1 vs 2	200.46	8	<0.001			
2 vs 3	22.23	4	<0.001			
3 vs 4	15.99	1	<0.001			
4 vs 5	51.51	3	<0.001			

RMSEA, root mean square error of approximation; AIC, Akaike information criterion; CFI, Confirmatory Fit Index; PDMP, prescription drug monitoring program