Prescription drug diversion and abuse is a national health problem. Prescribers and dispensers are faced with patients attempting to divert and abuse prescription drugs. This is a problem for all prescribers, including advanced practice nurses (APNs). APNs may prescribe Schedule II-V prescription drugs within their scope of practice. Prescribing scheduled drugs may place APNs in the situation or create a circumstance where knowing patients’ prescription history may be beneficial to their practice. Prescription drug monitoring programs (PDMPs) are a source for patient prescription histories. These histories may be accessed by stakeholders for patients in their care.

It is unknown how APNs are using PDMPs and how the information is impacting patient care and diversion. It is also unknown if APNs think PDMPs are easy to use and add value to their practice. It is critical to know how APNs are using PDMP information because APNs, like physicians and other prescribing authorities, are on the front lines of a growing prescription drug-abuse problem. Assessing how APNs are using the PDMP could help improve patient care and reduce diversion and abuse.

To better understand how APNs are using PDMP information, APNs were surveyed on the PDMP goals of improving patient care and reducing diversion without inhibiting care. They were also asked if the PDMP added value to their practice and their desire for more prescription drug abuse and diversion training.

LITERATURE REVIEW

Non-medical use of prescription drugs involves using the medication without a prescription or for recreational purposes. The US Department of Justice Drug Enforcement Administration describes prescription drug diversion as “the result of legitimately made controlled substances being diverted from their lawful purpose into illicit drug traffic.” Abuse of prescription drugs can lead to addiction, overdose, and death. Illegal possession and usage of prescription drugs can be a felony and lead to incarceration. Prescription drugs with high abuse rates are painkillers such as codeine, oxycodone, and morphine. Other commonly abused drugs include:

- Stimulant drugs prescribed to treat weight loss, narcolepsy, and attention deficit/hyperactivity disorder (ADHD), such as Ritalin, Adderall, and Dextrostat.
• Benzodiazepine sedative drugs prescribed to treat anxiety and sleeping disorders, such as Valium, Librium, and Xanax\(^8,11,12\)
• Non-benzodiazepine sedative drugs, such as Ambien, Lunesta, and Sonata\(^13\)

PRESCRIPTION DRUG MONITORING PROGRAMS
According to the Alliance of States with Prescription Monitoring Programs, as of January 27, 2012, 40 states have operational PDMPs to combat prescription drug diversion and abuse.\(^14\) The goals of PDMPs are based on a number of objectives, namely education and information, public health initiatives, early intervention and prevention, investigations and enforcement, and protection of confidentiality with a focus on detecting and monitoring the disbursement of prescription drugs to inhibit diversion.\(^15\)

PDMPs are administered at the state level and collect statewide prescription data that track the disbursement of prescription drugs. PDMPs collect, store, and centrally process prescription drug information from dispensers. PDMP data can include the date the medication was dispensed; the prescription number; whether it is a new prescription or refill; the quantity dispensed; how long the supply should last (daily supply); the drug name and strength; the dispenser’s name, city, and phone number; the prescriber’s name and patient’s name; and the patient’s date of birth and address. PDMP information is available to authorized stakeholders, such as prescribers, pharmacists, and possibly other state-specific groups (eg, licensure boards, law enforcement with an active case number, and physician assistants).

PREVIOUS RESEARCH ON PDMP EFFECTIVENESS
Researchers have only recently begun focusing on PDMP information effectiveness.\(^16\) With a few exceptions,\(^16-18\) most evaluations of PDMP users’ perceptions were at the individual program level and were not published in peer-reviewed journals. Past evaluations, published and unpublished, surveyed a broad category of users.\(^19-21\)

A 2010 evaluation of the Kentucky All Schedule Prescription Electronic Reporting Program (KASPER) surveyed health professional licensure boards, prescribers, pharmacists, and law enforcement officials.\(^19\) The prescribers and pharmacists included in the KASPER survey were only registered to access the system. Of these registered prescribers, only 28 (5%) were APNs. The APNs were not reported on separately. Similar to the KASPER evaluation, a 2007 evaluation of Maine’s prescription monitoring program surveyed only prescribers who were registered and did not report on APNs separately.\(^20\)

THE CHILLING EFFECT
Attention has increased on preventing drug abuse and managing pain.\(^22,23\) Because of a PDMP, prescribers might reduce their prescribing of controlled substances in fear of being penalized, referred to as the chilling effect.\(^22,24\) A 2005 survey of 600 Wisconsin physicians found approximately 41% indicated they were concerned their opioid prescribing might be investigated, and this concern was associated with a change in their prescribing.\(^25\)

ADVANCED PRACTICE NURSE PATIENT CARE
The American Academy of Nurse Practitioners (AANP)\(^26\) outlines the process of care for APNs as assessment of health status, diagnosis, development of a treatment plan, implementation of the plan, and follow-up and evaluation of patient status. When used effectively, the information contained in a PDMP report can help APNs manage their patients’ pain without enabling inappropriate behavior. The drug history contained in a PDMP can aid in the assessment of health status, as an APN is expected to obtain relevant health and medical history.\(^26\) Identifying health and medical risk factors is an important aspect of assessing a patient’s health status, which is aided by the drug histories contained in a PDMP report. PDMPs’ drug history information can also help develop a treatment plan.

PURPOSE OF STUDY
The purpose of this study was to assess the efficacy of the PDMP for APNs within the constructs of patient care, diversion, inhibit care/ease of use, value, and need for training. The study also compared APNs who signed up to use the PDMP to APNs who were not signed up.

METHODS
Participants
The study used a convenience sample of APNs attending North Dakota’s Nurse Practitioner Association Pharmacology Conference. North Dakota had a functional PDMP for more than 4 years. One hundred and forty-two surveys were distributed, and 108 were returned for a response rate of 76%. The majority of the
participants were female (96%) and indicated they were nurse practitioners (NPs) (90%). The study was approved by the University of North Dakota’s institutional review board.

Instrument
The instrument was developed by the researchers for the study and consisted of 35 items. Level 2 constructs were created to align with the specific goals of the PDMP. The instrument’s questions used the APN classification of NP. Constructs assessed the PDMP in terms of patient care, diversion, inhibit care/ease of use, value, and need for training. Participants were asked to rate the extent to which they agreed to each statement on a 6-point Likert-type scale, with 6 = strongly agree, 5 = agree, 4 = slightly agree (all some form of agreement), 3 = slightly disagree, 2 = disagree, and 1 = strongly disagree (all some form of disagreement). The instrument results were factor analyzed with principle components using varimax in SAS. Items included in the formation of the constructs were evaluated based on the factor loadings.

Procedure
Researchers were granted permission to hand out surveys to conference participants. Attendees were told their participation was voluntary and there would be no compensation for participating. Participation was taken as consent.

RESULTS
Participants indicated predominately serving urban communities (55%) and rural communities (35%). The most popular work setting was hospital outpatient clinics (41%) and inpatient hospitals (21%), followed by emergency rooms (15%), then long-term care facilities (13%). The largest specialty area was family care (60%).

Table 1 shows APN background information on prescribing, training, and PDMP usage. Less than half (41.4%) had training in prescription drug diversion, and 62% had training in drug abuse. Slightly more than half (58.2%) of APNs who participated in the study were signed up (registered electronically) to use the PDMP online.

Table 2 shows questions related to improving patient care for APNs registered to use the PDMP. For all questions, except question 16, the APNs had a strong sense that the PDMP helped them improve their care of patients. The lowest ranking score was for question 16, with 72.7% indicating some form of agreement (M = 4.4).

Table 3 shows the questions related to identifying drug seeking. For diversion, 94.6% of the APNs thought the PDMP made them more proficient at identifying prescription drug-seeking behavior. The percentage of some form of agreement was also high for investigating how far their patient traveled (88.7%) and how many providers their patient was accessing (98.1%).

As shown in Table 4, the APNs registered to use the PDMP strongly agreed the system is easy to use and the information can be obtained fast enough to be useful. When asked if the PDMP system has impeded their ability to prescribe, 18.5% had some form of agreement (M = 2.3). A further breakdown of the question shows that 5.6% strongly agreed, 11.1% agreed, and 1.8% slightly agreed.
Table 5 shows APN responses for the questions related to value of the PDMP. Overall, they thought that the system has been an effective tool and played a positive role in prescription medications. As for the potential for abuse of the system, 1.9% slightly agreed.

Participants were asked, “How has access to the PDMP improved your patients’ care in your words?” The comments were summarized and the following themes emerged. The PDMP alerts providers to possible abuse, which, in turn, has helped patients seek help for addiction; promotes the Health Insurance Portability and Accountability Act [HIPAA]; corroborates patient history; and addresses abuse of prescription drugs. Overall, these perceived attributes supported the positive impact the PDMP had on their practice.

The APNs generally held a positive view of the PDMP. To use it well, APNs need to understand the current issues related to prescription drug diversion.
and abuse. The APNs indicated they would like more training on prescription drug diversion (91.2%) and abuse (89.5%).

To understand why the APNs were not registered to use the PDMP, a comparison was made between APNs electronically registered and those not signed up. The individual items in each construct area were averaged and reliabilities were generally good (Table 6).

For the comparisons of APNs electronically registered or not, the only construct not statistically significant was inhibit care/ease of use. The differences found between APNs registered or not were large for patient care and diversion. For patient care, the standardized effect size for the differences was $d = 1.8, t(92) = 6.1, P < .05$. APNs who were registered to use the PDMP indicated it improved patient care more than APNs who weren’t registered. They also indicated positive outcomes for reducing diversion, $d = 1.6, t(92) = 6.4, P < .05$. Compared to APNs who weren’t registered, APNs who accessed the PDMP felt they could better reduce diversion with the information they obtained. Registered APNs also had more agreement that the PDMP added more value to their practice than APNs not registered to access the PDMP information, $d = 0.8, t(87) = 3.3, P < .05$.

**CONCLUSION**

The main purpose of the study was to assess the efficacy of the PDMP for APNs in the areas of care, diversion, not inhibit/ease of use, and value. An overwhelming majority of APNs who were registered to access the information from the PDMP thought it improved their ability to care for their patients. They also agreed the PDMP information made them more proficient in identifying prescription drug-seeking behavior. The APNs also agreed the PDMP was easy to use and the information was obtained fast enough to be used effectively.

A criticism of the PDMP was found in the key aspect of not inhibiting care where 18.5% of the APNs electronically registered had some form of agreement that

### Table 4. Advance Practice Nurses Registered to Use the PDMP ($n = 57$) to Inhibit Care/Ease of Use

<table>
<thead>
<tr>
<th>Question Number</th>
<th>Inhibit Care/Ease of Use Questions</th>
<th>% Some Form of Agreement</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>The PDMP has impeded my ability to effectively prescribe prescription drugs.</td>
<td>18.5</td>
<td>2.3</td>
<td>1.6</td>
</tr>
<tr>
<td>27</td>
<td>The PDMP has been easy to use.</td>
<td>96.2</td>
<td>5.1</td>
<td>0.8</td>
</tr>
<tr>
<td>28</td>
<td>The PDMP has added a substantial work load to my prescribing.</td>
<td>7.6</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>29</td>
<td>The PDMP information can be obtained fast enough to be useful.</td>
<td>88.7</td>
<td>4.9</td>
<td>1.0</td>
</tr>
</tbody>
</table>

### Table 5. Advance Practice Nurses Registered to Use the PDMP ($n = 57$) for Valuing the Information and Potential for Abuse

<table>
<thead>
<tr>
<th>Question Number</th>
<th>PDMP Value Questions</th>
<th>% Some Form of Agreement</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Currently, the PDMP plays a positive role in my prescription drug prescribing.</td>
<td>98.0</td>
<td>5.2</td>
<td>0.8</td>
</tr>
<tr>
<td>31</td>
<td>The PDMP has been an effective tool in my practice.</td>
<td>98.0</td>
<td>5.3</td>
<td>0.7</td>
</tr>
<tr>
<td>32</td>
<td>There is a high likelihood of abuse of the PDMP system by nurse practitioners.</td>
<td>1.9</td>
<td>1.4</td>
<td>0.7</td>
</tr>
<tr>
<td>33</td>
<td>Overall, I believe the PDMP has benefited nurse practitioners in the state of North Dakota.</td>
<td>98.1</td>
<td>5.5</td>
<td>0.8</td>
</tr>
</tbody>
</table>
the PDMP inhibited their ability to effectively prescribe prescription drugs. This is especially important to note because PDMPs generally aim to reduce diversion without inhibiting patient care, and a perception of inhibition could lead to the chilling effect.22,24

Within the study, only 58.2% of the APNs were signed up to access the information using the PDMP. The study found APNs who were electronically registered and using the PDMP perceived the program as effective and found substantial value in it for their practice. For these APNs, a high correlation was found between patient care and diversion (Table 6)—evidence that APNs view a drug-seeking patient as needing medical care. The information APNs were obtaining from the PDMP seemed to support the 2010 AANP process of care.26 The third element of that process is the development of a treatment plan. Ninety-eight percent of APNs who have registered for online access and were using the PDMP perceived the program as effective and found substantial value in it for their practice. APNs not registered to use the state PDMP did not see as much benefit for patient care and diversion and reported less value of the PDMP information than APNs who were. Given the perceived positive outcome for APNs using the PDMP, an attempt should be made to share the value they are receiving with those not currently using it.

APNs also agreed they would like more training on prescription drug abuse and diversion. Part of the training should incorporate the information available from the PDMP to better identify diversion and abuse.

### PRACTICE IMPLICATIONS

APNs who have registered for online access and were using the information from the PDMP found value in improving patient care and reduce prescription drug diversion. Because of this, more APNs should be encouraged to use their state PDMP. APNs not registered to use the PDMP did not see as much benefit for patient care and diversion and reported less value of the PDMP information than APNs who were. Given the perceived positive outcome for APNs using the PDMP, an attempt should be made to share the value they are receiving with those not currently using it.

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### References


Continued on page 405
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Advanced Practice Nurses’ UseContinued from page 388

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