Licensee Response to the North Carolina Medical Board’s Efforts to Reduce Unsafe Opioid Prescribing

By

Aliya L. Wilson, MD

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Sue Tolleson – Rinehart, PhD

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Adam Zolotor, MD, DrPH

Date
Abstract

Background: North Carolina has been hit hard by the opioid epidemic plaguing the United States. In 2015, 738 people in the state died of overdose on prescription opioids. Recent Centers for Disease Control and Prevention (CDC) data shows that in North Carolina, there are approximately 97 opioid prescriptions written per 100 people in the state. An important perspective on solving this crisis involves decreasing unsafe prescribing. In response, the North Carolina Medical Board has enacted several initiatives to decrease unsafe opioid prescribing by physicians and physician assistants in the state, including a new continuing medical education requirement for certain licensees, adoption of the CDC guideline on opioid prescribing, and a novel monitoring program called the Safe Opioid Prescribing Initiative.

Purpose: The goal of this study is to characterize North Carolina Medical Board licensee attitudes toward each of the Board's three initiatives to detect and decrease unsafe opioid prescribing in the state.

Methods: Letters, emails, and website correspondence submitted directly to the NCMB as well as online comments posted to NCMB newsletter articles pertaining to the three initiatives were analyzed. Comments posted to the articles were analyzed and coded as were the initial letters. Select items of interest were identified and recorded in a codebook, available in appendix 2. Demographic information related to the sender included origination of the letter (reply to an NCMB communication, or a letter that was originated by sender.) We also included the format of the communication, person or group sending the letter, and licensee specialty when provided. Content areas abstracted from each letter included letter tone, advocacy, and theme. Quantitative analysis was limited to calculating simple frequencies and percentages of demographic and content areas of interest.
**Results:** Forty-nine letters were obtained for analysis. The majority of articles (43) were comments left on the NCMB website in response to articles about SOPI, the new CME requirements, or the CDC guidelines. Most respondents did not sign with their credentials or indicate practice specialty in the body of their letter. The majority of the letters, 25 (51%) were solely negative, or critical of the policy that they referenced. 10 letters (20.4%) were positive, praising the policy. 2 letters (4.1%) were both positive and negative, presenting “pros and cons” of the policy. Nearly one quarter of letters 12(24.5%), however, had a tone that could not be determined. Respondents overwhelmingly advocated for the interests of themselves and their fellow licensees, with 35 letters (71.4%) addressing the concerns only of physicians. Letter themes varied widely as well, with 35% providing alternative policy recommendations and 22% lamenting the added CME burden facing licensees. 16% represented praise for the policy being enacted. Fear of under prescribing, diminished access to patient care, and general policy discussion each received 8% of the references, with increased provider burnout and stress representing less than one percent.

**Conclusion:** NCMB licensees have varying views on the initiatives that the Board has put forth to combat unsafe opioid prescribing. While the majority of communications were negative in tone, many responded with alternative policy recommendations, showing stakeholder engagement in the process. In order to optimize its connection to licensees, the Board must continue to communicate new opioid prescribing policies and refine them as necessary to prevent unsafe prescribing while protecting the practice of appropriate pain management.

**Background**
North Carolina has been hit hard by the opioid epidemic plaguing the United States. In 2015, 738 people in the state died of overdose on prescription opioids.\(^1\) This death toll was larger than that of the deaths from heroin and cocaine combined.\(^1\) Recent CDC data show that in North Carolina, approximately 97 opioid prescriptions are written per 100 people in the state.\(^2\)

Nationally, of individuals who use prescription opioids, 55\% obtain the pills free from a friend or relative, while 17\% receive them from one physician.\(^3\) Therefore, one view on solving this crisis involves reducing irresponsible prescribing. While various state, local, and non-governmental agencies have adopted various roles to address prescribing, the North Carolina Medical Board is well positioned to take action. Charged with “properly regulating the practice of medicine and surgery for the benefit and protection of the people of North Carolina,”\(^4\) the Board has enacted several initiatives to reduce unsafe opioid prescribing by physicians and physician assistants in the state, while accounting for the fact that the treatment of pain is essential to the practice of medicine.\(^4\)

In March 2016, the Board voted to change rules to their continuing medical education (CME) requirement, requiring mandatory opioid prescribing CME for all licensees who prescribe controlled substances beginning July 1, 2017. Under this policy, licensees must be able to show that for each 3 year CME cycle they have completed at least 3 hours of training related to safe opioid prescribing. There is no single mandatory course nor defined subject matter. Licensees are not required to immediately document completion and report it to the board, but must be able to show evidence of completion upon audit or request. A 60 hour CME requirement per 3-year cycle is already in place. This new rule now designates that 5\% of that total CME time must be dedicated to opioid education. North Carolina’s medical board is not the first state to implement such a policy. At least sixteen other boards require that their licensees complete varying hours of
continuing medical education related to prescribing controlled substances. One purpose of the present study is to determine licensee reaction to the policy in North Carolina in order to understand how these reactions may affect the future direction and overall survival of the policy.

The second policy to be enacted was the creation of the Board’s novel “Safe Opioid Prescribing Initiative.” Enacted in April 2016, this monitoring initiative is designed to identify and appropriately discipline North Carolina Medical Board licensees who are found to be prescribing opioids in an unsafe or irresponsible manner. Licensees are selected for review if they meet at least one of three criteria: the prescriber falls within the top one percent of licensees prescribing 100 morphine milligram equivalents (MME) per patient per day; or the prescriber is in the top one percent of those prescribing 100 MME with a benzodiazepine and falls within the top one percent of all controlled substance prescribers; or the licensee has had two patients die from opioid overdose within a span of twelve months. Prescribing information is provided to the board by the North Carolina Department of Health and Human Services. For the period between the program’s enactment in April 2016 through January 2017, the program resulted in the NCMB opening 62 cases on licensees, 54% of which resulted in action being taken by the Board; the remaining 46% of cases were closed with no formal action taken. Upon examining the records of licensees selected for review and the results of these investigations, the board has decided to make several changes to the selection criteria. They will expand the first two categories to cover the top two percent of those prescribing 100 MMEs instead of only one percent. To improve specificity for the opioid deaths criteria, the time period will now be 6 months, with the stipulation that the prescribing physician had to prescribe at least 30 opioid tablets to the patient within 60 days of the patient’s death. The Board will be accepting public
comment on these rules until May 1, 2017. While awaiting an official rule change, the Board has begun to apply these rules internally during case reviews.

Though the Board emphasized in communications to licensees that the policy did not denote a limit to prescribing opioids, community feedback began to suggest that some physicians may have been treating it this way. Board staff reported fielding phone calls from patients complaining that their physician either drastically cut their opioid dose, discontinued prescribing opioids for their pain, or dismissed the patient from the practice altogether because of the “medical board’s new rule.” Though the initial program criteria should only have been likely to involve 0.2% of active licensees directly, the literature suggests that triggering medical board action remains a concern of some physicians who prescribe opioids. To address this concern, the board put together a presentation about SOPI that outlined the need for and details of the program. Board staff offered this presentation to hospitals, physician groups, educational institutions, or whomever requests more information about the policy. They even had meetings with individuals and groups in efforts to quell fears and further explain any details about which licensees were concerned. The Board, however, continued to receive calls and letters. Given that SOPI is a new program, continually being refined to meet optimal goals, it can benefit from a systematic initial evaluation of stakeholder reaction.

The third step the NCMB took was its decision to phase out its comprehensive opioid prescribing policy in favor of adopting the Centers for Disease Control’s Guideline for Prescribing Opioids for Chronic Pain. Published in March 2016, this set of guidelines, designed mainly to address opioid prescribing in the primary care setting, lays forth a series of suggested steps and principles that providers can follow when deciding to use opioid analgesics to treat a patient’s non-cancer pain. These guidelines have been endorsed or supported by various entities,
such as professional medical societies, state health and justice departments, and medical regulatory boards.\textsuperscript{9,10,11} The guidelines themselves, however, are not without controversy. Some groups have cited the lack of strong evidence to support some of the recommendations put forth in the guidelines, such as setting thresholds on strength of medicine to be prescribed and duration of treatment for acute pain.\textsuperscript{12} This study also seeks to characterize licensee reaction to these guidelines.

**Methods**

I obtained licensee feedback on the Board’s prescribing policies from two sources. The Medical Board Communications Director provided me with correspondence from licensees sent via email, regular US postal mail, and as comments submitted directly through the NCMB website. I obtained additional correspondence by searching the NCMB website for comments submitted in response to articles in the NCMB’s quarterly newsletter, the “Forum” pertaining to the SOPI initiative, the CME requirement, and adoption of the CDC opioid prescribing guidelines. All letters provided by the communications director were analyzed at the NCMB offices in Raleigh, NC. Letters were kept behind at least 2 locked doors at all times. Due to a confidentiality agreement in place with the NC Medical Board, I was the only individual able to see the letters that came from this source. I did not record any identifying information about licensees from this source.

All coding and letter analysis was performed by me, in conformity with the NCMB confidentiality procedures I agreed to. The University of North Carolina Institutional Review Board for Human Subjects Research determined that the study is “not human subjects research,”
as defined under federal regulations [45 CFR 46.102 (d or f) and 21 CFR 56.102(c)(e)(l)], and
does not, thus, require IRB approval (UNC IRB study # 17-0388).

I searched all past issues of “The Forum” were searched for articles pertaining to the Safe
Opioid Prescribing Initiative, the opioid prescribing CME requirement, and the Board’s decision
to adopt the CDC guidelines and then printed out and numbered reader comments posted at the
end of all the identified articles. I then coded and analyzed the comments exactly as I had the
NCMB board correspondence (see below and in Appendix 2). As the names and content of these
letters are publicly available on the NCMB website, there was no need for strict confidentiality
procedures, but I did not code any identifying information.

I selected items of interest from all communications and recorded them in a codebook,
available in Appendix 2. Demographic information related to the sender included origination of
the letter (reply to an NCMB communication, or a letter or comment originated by the sender.) I
also coded the format of the communication, person or group sending the letter, and licensee
specialty when that information was included in the communication.

The content areas I abstracted from each letter included letter tone, advocacy, and theme.
“Tone” encompassed whether the letter or comment was positive (in favor or support of the
policy), negative (against the policy) or both positive and negative. “Advocacy” was defined as
whether the letter/comment represented the interest of patients, physicians, or both. I coded eight
possible themes for letters/comments, including fear that the policy would lead to under-
prescribing of opioids, fear that physicians would acquire a history of medical board action, that
the policy would result in patients’ diminished access to care, or added and undue CME burden.
Other themes included general policy discussions, praising the policy, or providing alternative
policy recommendations. I coded up to three themes for each letter and comment. Each variable
allowed for a value of “not ascertainable” when letters were either too short or too vague in their messaging to determine an overall tone, clear direction of advocacy, or theme.

I coded a total of 49 communications which generated and 51 distinct, analyzable subjects. I coded all data in a single Microsoft Excel spreadsheet, which was also used to calculate frequencies and percentages of demographic characteristics and content areas of interest. The small N of cases in this early evaluation of reactions to the Board’s policy precluded the use of inferential statistics and limited analysis to a discussion of simple frequencies and percentages of demographic and content areas of interest. This resulted in a descriptive study at this early stage of policy implementation, but the structure of the codebook would allow for more complex analysis, should the Board decide to continue coding responses over time.

Results

Forty-nine letters were obtained for analysis. All but one was originally in electronic format. Four letters were originated by the sender, whereas 45 were responses to NCMB communications. The majority of licensee responses were comments left on the NCMB website in response to articles about SOPI, the new CME requirements, or the CDC guidelines. (Figure 1) One was a typed letter, nine were emails, and three were transmitted via the “contact us” form on the NCMB website. All but one letter were sent by individual licensees, while one was signed by a group of physicians from a single practice. Most respondents did not sign with their credentials or indicate practice specialty in the body of their letter. Thirty-four did not designate their specialty. Two respondents self-identified as general surgeons, and two as orthopaedic
surgeons. One letter each came from physicians practicing pain management, radiology, general practice, pathology, anesthesiology, emergency medicine, and ophthalmology. One licensee self-identified as a physician assistant.

Although there were 49 unique communications, some referenced more than one topic, yielding a total of 51 distinct policy references. In terms of subject area, the CME requirements elicited the most feedback, with 63% of references being to this policy. Fourteen references (27%) were about the Safe Opioid Prescribing Initiative, and 5 references (10%) commented on the Board’s adoption of the CDC Opioid prescribing guidelines. Because so few communications addressed the CDC guidelines, I cannot comment meaningfully on the overall licensee response to this policy.

I devoted particular attention to coding the tone of the letters the board received. The majority of the letters, 25 (51%), were solely negative about or critical of the policy they addressed. Ten letters (20.4%) were positive, praising the policy. Two letters (4.1%) were both positive and negative, presenting “pros and cons” of the policy. Nearly one quarter of letters, 12 (24.5%), however, had a tone I could not ascertain. Many of these letters neither praised nor criticized the various policies, but provided words of caution or alternative policy recommendations. Tone differed widely across the different types of letters. (Figure 2) The table makes clear that, thus far in the policies’ early history, the SOPI program has attracted less negative attention than has the CME requirement. The adoption of the CDC guidelines has attracted the smallest number of comments to date.

Respondents overwhelmingly advocated for the interests of themselves and their fellow licensees, with 35 letters (71.4%) addressing the concerns only of physicians. (Figure 3) Five letters (10%) were neutral responses based on the policy rather than advocating for the groups
affected by it. When analyzed by letter topic, advocacy trends between groups appeared consistent with subject matter. Physician advocacy dominated the SOPI and CME letter groups, with solely physician interests accounting for 57% and 88% of advocacy, respectively. SOPI letters did have the largest percentage of references to patients, with 36% (of 14 letters) representing the interests of patients and physicians or patients alone. Of the five letters referencing the CDC guidelines, two advocated for physician interests, one for both physicians and patients, none for solely patients, and two were unascertainable.

The 49 letters exhibited a diverse group of themes. As was the case with topics, letters were capable of presenting more than one theme, such that licensees offered total of 63 discrete themes in all the letters. The themes are represented in Figure 4. Twenty-two references (35%) provided alternative policy recommendations. Aside from licensees referencing the increased CME burden, the two themes referenced the most were alternative policy recommendations and outright praise for a policy, showing that despite a small majority of letters having a negative tone, a substantial portion of licensee comments reflect support for the Board’s activities. Of note, two themes that have been previously documented in opioid policy literature, fear of under-prescribing and diminished access to patient care, represented only a small portion of licensee concerns.

Prevailing themes differed by letter topic. The most common themes represented in SOPI letters were fear that the policy would result in underprescribing of opioids even when prescribing them would be appropriate; alternative policy recommendations; and praise for the policy. These, combined, represented 76% of the themes in the SOPI comments, with praise for the policy representing 24%. For CME letters, concerns about an added CME burden and alternative policy recommendations accounted for 76% of the themes, with a slightly higher
representation for alternative policy recommendations. For the CDC guideline letters, 56% of
responses were praise for the policy and alternative recommendations. For each of the topics,
however, provider burnout, diminished access to patient care, and general policy discussions
were all mentioned at least once.

Discussion

Much information can be gained from the results of this small yet important study.
Regarding SOPI, though nearly one fourth of the letter themes reflected praise for the policy, the
initiative elicited a large number of negative responses, with respondents primarily concerned
that the measure would result in physicians failing to prescribe opioids in order to avoid board
action, even when such prescriptions were appropriate, thus harming patients. The argument can
be made, however, that it is better for physicians and physician assistants to be regulated,
monitored, and disciplined by a board of their peers who share a similar background and
understanding of medical principles than by groups largely composed of nonmedical individuals,
such as state legislatures and justice departments. Gilson et al showed that when given the
choice of actions taken by health regulatory boards and those taken by legislators, health
regulatory boards are more likely to use language in their policies that promote treatment of pain
and less likely to contain measures that arbitrarily restrict prescribing or require expert
consultation, both of which are widely viewed as barriers to effective pain management.13 While
SOPI is being refined by the Medical Board, the North Carolina Legislature is taking its own
steps to combat the opioid crisis. House Bill 243, currently before the legislature and known as
the Strengthen Opioid Misuse Prevention or “STOP” act, aims to slash the number of opioid
prescriptions by imposing the very measures that Gibson et al determined to be discouraging of optimal pain management. The bill mandates limiting the duration of prescriptions for acute pain for 5 - 7 days, requiring that physician assistants and nurse practitioners consult with a supervising physician before prescribing for a patient over 30 days, and mandates registration and use of the North Carolina Controlled Substances Reporting System.\textsuperscript{14} It would be interesting to note whether NCMB licensees, if given the chance, would embrace or acquiesce to SOPI to avoid the much more imposing rules proposed by the legislature.

In a review of state medical board opioid policies and initiatives, I was unable to locate another state with a similar monitoring policy. The only other state that mentions any specific MME threshold of any kind is the state of Ohio, whose board endorses an 80 MME “cutoff.”\textsuperscript{15} Once prescribers meet this point, rather than triggering a board investigative process, prescribers are simply encouraged to take a step back and re-evaluate the patient, treatment plan, and goals, then make a decision whether to continue opioid treatment or refer to specialty care.\textsuperscript{15} While this would possibly alleviate some of the concerns about board action and provider burnout expressed by NCMB licensees, it may still create a sense of a virtual “limit” above which some physicians may be hesitant to prescribe, leading to the similar result of under prescribing.

Overall response to the CME requirement was negative, with a large number of licensees remarking that this new requirement would result in an added, unnecessary and unhelpful CME burden, especially for physicians who do not prescribe opioids. One positive note that came from the letters, however, was that many licensees did not simply criticize the policy, but also offered recommendations on how to improve it, some of which, the Board has gone on to implement. For example, a recurring theme from some letters was that if the Board was going to implement this policy, it should make the courses free and easily available to licensees on the Board.
website, to facilitate compliance with the least amount of added work for licensees. The Board did, in fact do this.

Some opioid prescribing CME initiatives have shown to be helpful to clinicians. Boston University’s Safe and Competent Opioid Prescribing Education (SCOPE of Pain) program is a 3 hour course on safe opioid prescribing. Follow up assessments of clinicians who received the training showed an increase in their knowledge, confidence, and clinical practice in safe opioid prescribing. Perhaps one key to a successful CME initiative lies in finding programs from which licensees can derive the most benefit.

Among state medical boards nationwide who require chronic pain and opioid CME, there is large variability in terms of the hours and types of course required as well as the physicians who must take the course. Some states, such as Florida and Ohio, only require this training for operators of or physicians working in registered pain clinics. Iowa, however requires two hours of chronic pain CME for all primary care physicians. West Virginia requires 50 hours of CME every two years, 3 hours of which must be related to controlled substances, and the courses must be those that are already approved by the Board. In this sense, North Carolina’s requirement is not the most burdensome, nor is it the most restrictive, but likely falls near the median in terms of flexibility and time commitment. Based on feedback from the NCMB licensees, it may be important to consider ease of access to courses, and tailoring the courses to the prescribers who can actually benefit the most from them.

This study has several important limitations. As written communications were the only source of data for analysis, we excluded one source of potentially informative information – phone calls to the NCMB by both physicians and patients. NCMB staff state that they did receive a significant volume of phone calls from patients. Some called to complain that their physicians
had stopped prescribing them their previous doses of opioids or dismissed them from their
practice altogether as a result of the new opioid rule. While this is not, in fact, board policy, there
were reports of its occurrence. Though staff have repeatedly stressed to patients and licensees
that this was not, in fact, a result of board policy, it speaks to one of the concerns that the rule
will cause under prescribing and diminished access to care for some patients.

I relied on one NCMB staff member who receives communications from licensees and
the public to collect these letters and make them available for review. The Board had not
heretofore had a particular system for archiving these communications. It is reasonable to assume
that, in fact, I did not obtain all letters and that I may have an unrepresentative sample, and not
the universe, of all written correspondence received by the Board. If this is the case, I could be
missing some concerns. One recommendation emerging from this study is that the Board may
consider routinely logging and coding every such communication.

My sample of letters represents only a portion of letters that licensees chose to write,
reflecting views of individuals who chose to actively communicate with the board. I cannot
assume that the sample of written letters and comments reflects the opinions and beliefs held by
all board licensees.

The overall sample size was quite small. The NCMB represents over thirty thousand
physician and physician assistant licensees. Our sample size of 49 letters represents a fraction of
one percent of board licensees affected by these policies. Given this and the fact that our sample
may not have included all of the written correspondence, it is difficult to make the argument that
the results of this study will be generalizable to the entre body of NCMB licensees.

Although it is important to consider this study’s limitations, they should not invalidate its
results. Though the sample size was small, I know of no particular way in which it is incomplete,
and getting letters or comments from every written communication venue available at the Board means I have a wider variety of sources and subjects. Even with the small sample size, some themes did recur frequently, and are worthy of additional attention. For example, while licensees had varied responses to SOPI and the adoption of the CDC guidelines, the tone of the letters about the CME requirement was overwhelmingly negative. For the reasons mentioned above, it cannot be said that this was the opinion of all or most licensees who were made aware of the requirement, but it certainly warrants further investigation.

If nothing more, the results of this small, initial evaluation could serve as a starting point from which the board can conduct a larger, more in depth review of correspondence. As many licensees also responded with alternative policy recommendations, the board may also take some of those recommendations into consideration.

**Conclusion**

The American opioid epidemic continues to garner more attention, and entities from all levels of the public and private sectors are continuing to come up with ways to address the problem.

Many states have adopted CME guidelines, mandatory CSRS registration and use, and other interventions. The Safe Opioid Prescribing Initiative, however, is a novel program that continues to develop. The Board should carefully evaluate the feedback it receives as it refines policy criteria, more physicians are disciplined, and opioid prescribing patterns change. We should also watch to determine whether other state boards adopt similar measures. North Carolina, as do other states, illustrates how state legislatures may choose to act, oftentimes
regardless of what health regulatory boards do. The evidence suggests that health regulatory board policies are often less harsh and restrictive toward healthcare providers than is legislative intervention.\textsuperscript{13} This means that it will be important for medical regulatory boards to guide the process, acting in a way that protects the public from unsafe prescribing, while not unduly burdening their own licensees and promoting medically appropriate practice.
References


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9. ACP supports CDC guideline for treating chronic pain. 15 March 2016. Retrieved from https://www.acponline.org/acp-newsroom/acp-supports-cdc-guideline-for-prescribing-opioids-for-chronic-pain


Figures

Figure 1:

[Bar chart showing letter formats: 37 comments posted to website article, 2 submitted via NCMB, 1 typed letter, and 9 emails to NCMB.]

Figure 2:

[Bar chart showing tone by type of letter: 19 CME comments with positive tone, 7 with positive and negative tone, and 2 with negative tone.]

Figure 3:
Figure 4:
Appendix 1: Limited Systematic Review

Over the past two years, the North Carolina Medical Board has adopted new policies to combat inappropriate opioid prescribing and rising opioid overdose deaths in North Carolina. Some initiatives, including mandatory continuing medical education about opioid prescribing for all licensees who prescribe controlled substances, is similar to policies in other states. Another, the implementation of the Safe Opioid Prescribing Initiative, is a novel approach to this persistent problem. To gain a better understanding of the role and effectiveness of state medical boards in addressing the opioid epidemic, I conducted a limited systematic review of published medical literature aimed at answering the following question: Among all US states with medical regulatory boards, do state medical board opioid prescribing policies compared with legislative or no regulatory policy affect physician attitudes about opioids, opioid prescribing practices, or opioid overdose deaths in their respective states?

A search of PubMed database using the terms “state medical board” and “opioid” was performed on March 27, 2017 at 10:47 pm. MeSH terms included opioid, regulation, and medical board. In order to be included, studies had to reference state medical board regulatory efforts, be available in English, and pertain to board regulation of opioids and controlled substances. Exclusion criteria were non-English language articles, no references to state board policy surrounding opioids or controlled substances, and the resource being unavailable through UNC libraries.

The PubMed search yielded 39 results, of which 21 referenced state medical boards and opioid prescribing. An additional two studies were found in the reference section of included studies. The full text of each of these articles was reviewed. Seventeen of these studies met inclusion criteria. One of the original twenty articles was excluded because it was not available
from UNC libraries. An additional three were excluded because they did not address state medical board regulatory efforts in relation to opioid prescribing.

Of the sixteen included studies, three were historical analysis of the development and implementation of various Board and Federation of State Medical Board policies over the past years. Seven were analyses of various policies and programs that had been implemented. One was an interview with the president of a state board discussing his board’s specific policies and procedures. One was an editorial in response to a historical analysis, and three were studies (one initial and two follow up) on board member attitudes surrounding opioids and opioid policy. One was a systematic review on the effect of regulatory policy on opioid prescribing and opioid overdose.

Four articles noted the strong role of medical boards in providing regulation and oversight in the area of oversight, and advocated for the use of medical board policies over legislative statutes to regulate opioid prescribing. One study, the systematic review, addressed the association between regulatory policies and effect on opioid overdose deaths, found insufficient evidence of association, and concluded that more studies are needed in this area. Eight articles covered the changes in state medical board regulatory policy over time, and found that policies have evolved with the changing epidemic, and are becoming more positive in language and promoting adequate, appropriate pain management while adopting policies that aim to decrease diversion and inappropriate prescribing.

In conclusion, there is a shortage of evidence linking state board regulatory policy directly with opioid overdose rates. There is, however, strong support for medical board regulation over legislative or judicial regulation of opioids prescribing, due in part to more positive language in board policies as well as influence of medical board over physician’s ability
to practice. As data collection methods on opioids prescribing improves and medical boards adopt new policies, it is important for boards to track the effect that their policies have on both physician and patient centered opioid outcomes in their states.
### Appendix 2: Data Collection Sheet

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*Note: This image represents a part of a larger portion of the data collection sheet*