2021 NCSBN Scientific Symposium - Watch Board of Nursing Case Administration/Discipline Efficiency Study Video
Board of Nursing Case Administration/Discipline Efficiency Study Video Transcript

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2021 NCSBN Scientific Symposium

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Presenter
Brendan Martin, PhD, Director, Research, NCSBN

- [Woman] Brendan Martin is the Director of Research for NCSBN. He has more than 13 years in quantitative modeling and consulting. Brendan has extensive graduate-level statistical training in the fields of mathematics and public health sciences. His research interests include post-secondary access, biostatistics, healthcare reform, and regulation.

- [Brendan] Hello. My name is Brendan Martin, and I am the director of NCSBN's research department. I'm here today to discuss the results of a recently completed study examining the operational efficiency and effectiveness of nursing regulatory bodies as it relates to nurse discipline.

For today's presentation, we are going to cover a few major points. To start, I'll provide a bit of background on the study to give you all the necessary context for why we wanted to pursue this study in the first place and what we hope to achieve. I'll then share a brief overview of the study methodology, so that we are clear on the study sample, how we went about collecting the data, and how we analyzed the responses.

Then we'll get into the meat of the presentation, in which I will cover the results in detail before wrapping things up with a few key takeaways. As always, I'll attempt to leave ample time at the end for any follow-up questions or necessary clarification. So, please feel free to use the chat box to submit your comments as I go through the material. Operational efficiency and effectiveness in promoting public safety are key performance indicators for nursing regulatory bodies worldwide.

Nonetheless, these same regulatory bodies charged with ensuring public protection are often understaffed and poorly resourced. Aging patient populations, workforce shortages, and an increasingly

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mobile professional class require agile regulatory systems that facilitate the efficient disciplinary process and, when appropriate, safe return to practice.

In the U.S., differences in staffing, operations, terminology, and other critical measures have historically made it difficult for nursing regulatory bodies to create a standardized method for objectively evaluating performance. This is particularly evident in how discipline cases brought against nurses are managed. This pilot study aimed to examine the steps involved in the disciplinary process to identify the most efficient and effective models for case management, and thereby, develop an evidence-based, uniform discipline process.

Regarding the methodology, the study utilized a longitudinal survey design. NCSBN partnered with investigative staff at 10 U.S. nursing regulatory bodies to enter detailed, step-by-step information across five disciplinary case categories into an online data repository between June 2018 and June 2020.

The five case categories tracked for the analysis were professional conduct, impairment or diversion, practice error, criminal, and a random category. The random category was a free choice option for which participants could enter information for any new case that fell into one of the four fixed case categories.

To minimize selection bias, all participating boards of nursing were asked to track case details only for complaints that were logged in the two-year window. Further, participants were instructed to initially select cases that aligned with one of the four case categories as they came in, for example, the first instance of a professional conduct complaint after June 2018.

The fifth or random case was then afforded more flexibility as it could align with any form of the aforementioned cases. Detailed instructions on what data should be tracked and definitions for key terms were provided to all participating boards through a series of regularly scheduled training webinars prior to study launch. Regular contact was maintained throughout the two-year period to ensure that questions that came up were resolved in an efficient manner as possible.

The 10 states that participated in the study were Oregon, Georgia, Minnesota, Florida, Idaho, North Dakota, Ohio, Texas, Wyoming, and New Mexico. This sample allowed us to capture not only geographical but also operational diversity within our sample. We used Microsoft's Forms functionality within SharePoint to collect a baseline board and case information as well as detailed case records.

Detailed case records included the number of steps involved in resolving a complaint, the associated dates of those steps, broader descriptions as to the nature of the steps taken in the case, and detailed narratives regarding all activities. For the analysis, we used generalized estimating equation models to assess case resolution and time to case resolution.

This approach appropriately accounted for our clustered data collection process. In other words, because we were investigating operational efficiency within select nursing regulatory bodies, we wanted to ensure that any internal consistency, meaning the likelihood that an efficient board was consistently efficient across cases, or vice-versa, was captured. This approach also allowed for additional flexibility to assess a binary outcome and adjust for other important covariates as necessary.

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The primary dependent variable for this study was operational efficiency measured as number of days required to resolve a complaint. We also explored case resolution in general as a supplemental outcome. We then extended the analysis to incorporate participants' open-ended narrative responses using natural language processing.

You'll see shortly that we kept the presentation of these results fairly high-level for today's discussion. But the overall goal was to objectively align response trends, meaning word frequency and choice, with our primary outcome. More on this in a few slides. As I mentioned earlier, 10 states participated in the study. While participants were only asked to provide data on up to five cases, some voluntarily exceeded this total, such as Minnesota, Georgia, and Oregon, while one fell just short.

Across the four case categories, professional conduct was the most common, followed by impairment or diversion, practice error, and criminal. Nearly three-quarters of all cases included in the two-year review period were resolved. The median open case load across boards was approximately 500, but the distribution varied greatly, as is evident from the interquartile range.

The 25th percentile was 125, and the 75th percentile was 787. This underscored the range of complaint volume across participating boards. Similarly, the median investigator count was three. But some boards reported only one dedicated staff was assigned to complaints, or even just a proportion of one staff's time was allotted, while other larger boards reported over 30 investigators on staff.

To account for this variability, we also calculated a case load to investigator ratio variable. The median number of cases per investigator was 60, with an interquartile range of 29 to 131, affording us a bit more precision. The median number of steps involved in each case was 10, and it took approximately 177 days for each complaint to be resolved.

Regarding the demographic characteristics of the nurses involved in the complaints, the average age was approximately 43 years old, and a majority were female. As previously noted, generalized estimating equation logistic regression models were employed for the analysis. Initially, we explored the independent associations between board, case, and nurse characteristics, and the odds of the case being resolved.

As you can see from the detailed results on this slide, only two variables emerged as marginal drivers of case resolution. Those were open case load and number of active investigators. Overall, for every 100 additional cases, boards were about 10% more likely to resolve a complaint, perhaps suggesting efficiencies gained through familiarity with certain case types.

Less surprising, we also observed that boards were roughly 13% more likely to resolve a complaint for each additional active investigator. Nonetheless, while interesting trends, we did not document any significant correlations between board, case, and nurse characteristics, and the odds of the case being resolved. We then proceeded to explore our primary dependent variable of operational efficiency.

This measure was defined as the number of days required to resolve a complaint. To simplify the modeling process and to objectively delineate between efficient and inefficient processes, we settled on a binary cut point aligned with the median number of days to resolve a complaint, which was 177 days.

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As we were primarily interested in barriers to efficient case resolution, complaints that took more than 177 days to resolve were of primary interest. Thus, these models highlighted the possible determinants of inefficient case resolution or the likelihood that a case would take more than 177 days to resolve given a particular board, case, or nurse characteristic.

As before, the independent associations between board, case, and nurse characteristics, and the odds of inefficient case resolution were initially the focus of our analysis. Unlike our case resolution outcome, however, several notable trends emerged in our review. Overall, case volume contributed to backlog. For every 100 additional cases, a complaint was about 10% more likely to be inefficiently resolved.

To be more specific, in terms of operations, for every 10 additional cases per investigator, boards documented an 8% increase in inefficient case resolution. In addition, the number of steps involved in a case were reviewed as a possible indicator of the complexity of that case. Like case volume and the case-to-investigator ratio metric, for every additional step required in a case investigation, a board documented a 9% increase in the likelihood of inefficient case resolution.

For those of you who prefer figures over a table, we also created a figure to illustrate these associations. What you see before you is a forest plot of the odds ratios that highlights the three significant associations we just discussed, as well as the marginal alignment between inefficient case resolution and the number of active investigators.

Having documented the independent associations between board, case, and nurse characteristics, and the odds of inefficient case resolution, we shifted our focus to multivariable analysis, meaning we further explored the significant univariable trends, adjusting for other important covariates. In this first table, we further controlled for case category to better understand if some of these barriers to efficient case resolution related to the underlying case type.

For instance, we wanted to learn if criminal complaints or cases of professional misconduct, as examples, might exacerbate or mitigate some of these patterns. Clearly, they did not. So, in the second table, we ran a multivariable model, including both the case-to-investigator ratio and the number of steps involved in a case.

Importantly, both criteria retained at least a marginal alignment with the efficient processing of complaints. This highlights the critical importance of each investigator's case load at any given time and the complexity of those cases to operational efficiency. To further explore these two predictors, we generated receiver operating characteristic or ROC curves to identify specific cut points at which boards could expect to see a drop-off in operational efficiency.

Beginning with our case-to-investigator metric, we identified a meaningful cut point at the 35th observation in the sample. Specifically, this aligned with the case load per investigator of 38. As you can see, the area under the curve, or AUC, which is a measure of model fit, is good and just a bit below the 0.8 excellent threshold. This suggests an accurate and predictive reference point for our case-to-investigator ratio variable.

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Further, we noted a strong positive predictive value or PPV indicating investor case loads over 38 correctly identified 81% of the cases that would ultimately run over the median closure time. It also does a fairly good job of discriminating as it accurately identifies 69% of the cases that close more efficiently.

We followed a similar strategy to further investigate the number of steps involved in the case management. We identified a meaningful cut point at the 43rd observation in the sample. Specifically, this aligned with a case step count of 11. As you see, the AUC is again strong, also just a bit below the 0.8 excellent threshold. This suggests an accurate and predictive reference point for our case step count variable as well.

In this instance, we observed a slightly weaker PPV as the cut point of 11 case steps identifies about 68% of the cases that run over the median closure time. However, it does a somewhat better job discriminating than a ratio variable as it also accurately identifies 75% of the cases that close more efficiently.

Using participants' own narrative accounts, we then utilized natural language processing to align response trends, meaning word frequency and choice, with our primary operational frequency outcome. While fairly high level, these initial results presented an interesting snapshot into investigators' experiences in managing these cases.

For inefficient cases, administrative themes associated with subpoenas, notice letters, requests, calls, and emails drove participants' descriptions. While administrative steps dominated both groups, interestingly, the pronounced emphasis on the words send, call, and subpoena with inefficient cases perhaps aligns with our overall finding of case complexity measured as the number of case steps, suggesting built-in delays with more administratively burdensome complaints.

By contrast, more cut-and-dried criminal complaints, in which compounding factors such as felony arrest or concealment are present, may typify more efficient cases. So, what are the key takeaways? Despite differences in staffing, operations, terminology, and other critical measures that have historically made it difficult for nursing regulatory bodies to create a standardized method for objectively evaluating performance, there are indicators of operational efficiency that transcend individual jurisdictions.

To this end, monitoring investigator workload and case complexity is critically important to ensure the efficient management of complaints against nurses and, when possible, the quick and safe return of nurses to practice. Finally, as with all things, our shared goal of agile regulatory systems is best achieved and supported by standardized and systematic data collection.

The important findings in this study were only made possible by the 10 boards of nursing that generously volunteered their time and rigorously tracked their activities. Moving forward, routinizing basic data collection standards can facilitate ongoing case monitoring and, thereby, active management of operational efficiency. With that, I will open the floor to discussion and any questions you might have.

Hello, everyone. The floor is now open for any questions that you might have.

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As we wait for some of the questions to roll in, I did want to share a few updates since this presentation was prepared. The first is just to note that there will be an extension of the natural language processing analysis. So we are looking to delve a bit further into some of the free text or unstructured responses.

And then, in addition to that, we have now done access to some other kind of metadata that we are going to overlay on the data that we collected ourselves directly from board participants. So our hope here is to augment the analysis somewhat, in particular, with board characteristics. So we'll be able to get a little bit more nuanced insight into the governance structure of the boards and build that information into the analysis as yet another data point that might inform on our outcome of interest.

So, with that, I will wait to see all the questions that come in. I think we have our first question rolling in. Give me one second. So, in the definition... Here, let's make sure I can see the whole thing. "In your definition of complaint resolution, was it based on completion of the investigation? I ask because efficiency of the actual investigation process may not have any influence over the proceedings occurring after the investigation is complete."

Yes, that's an excellent question. So, we did have two primary outcomes of interest. Obviously, our primary outcome of interest was that dependent variable associated with efficient case resolution. But in terms of what we designated as the kind of formal close of the case, that was what investigators reported to us as the final step associated with formally resolving the case.

So that was one of the things that kind of stood out to us in this analysis and dealing with the type of data that we had come in. Many of the steps were largely outside of the control of the direct investigator, which ultimately oftentimes prolonged the timeline associated with the resolution of these cases. So that is why we looked at essentially both efficient case resolution, looking at number of days to case closure, but also did initially look at just case closure overall.

So that was defined at the board level by the investigator. So, a second question came in. "Did you ask New York State to participate?" Yes. So, this was initially positioned as a pilot study. Despite the fact that it was a pilot study, we did ask all states if they would be willing to participate.

This goes back to basically spring of 2018, because the bookend for this data collection period, if you remember back in the slide, was June 2018 to June 2020, so we just recently closed the data collection. But initially, we did ask all boards for their participation. But we did also recognize, I'm very quick to point out, that this was a pretty significant lift.

So, as you saw from some of the slides, there was pretty significant variability at the board level for the number of active investigators that they had on staff, the number of cases that they were looking to kind of try to resolve. And so, for many of these boards, asking them to essentially take more of their time to support this study was a pretty heavy ask.

So we were thrilled with the level of participation we got. We had about, as you saw, 10 boards participate from start to finish. We would have loved all 50 to participate, but we felt as though we were able to aggregate thousands of data points, both in terms of unstructured kind of free text responses as well as more kind of fixed or, like, finite criteria associated with board profile or respondent profile.

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So we were thrilled with the sample we had, but obviously, more would have been even better. And so, let's see if I have a… Yes. And I'll just echo what Cathy Russell [SP] is mentioning in the chat. The full slide deck is available in the details. But you can also feel free to reach out to me directly, and I'm happy to share.

In addition, if you have any questions that you think of later, please feel free to reach out to me directly. My email is bmartin@ncsbn.org. And I'll be happy to go back and forth with you. So, I do see another question come here. "Did you compare efficiency with types of outcomes?" So, in terms of what was the ultimate action taken, we did not.

So we looked at, effectively, the type of case category that it fell into. That's where we got into some of the nuance about what they were looking at or what they were attempting to investigate. But we did not look at efficiency to different outcome measures, if what you're talking about is like license revocation, temporary suspension, or whatnot.

We looked at specifically essentially the timeline writ large 50,000-foot view to case resolution in any manner that they deemed appropriate at the board level. And then I see another question. "Did you take into account the types of outcomes of the case?" Oh, yeah.

So this is a very related question. So, we do have some of that information available to us, but we have not yet investigated that. What we felt was most appropriate in kind of the initial pass of the data was to essentially just look at that timeline to, again, case resolution, be it whatever it is, whatever the board determined to be sufficient and appropriate for that particular case.

I will say we did run analyses trying to get at some of the complexities associated with these cases, which I think some of these questions kind of allude to. And also, I mentioned this at the beginning of the live Q&A session. We do plan on pursuing kind of an extension of the natural language processing or kind of machine learning analysis.

And the real core rationale behind that is to get at some of what you were kind of asking in the Q&A chat here. So we do want to understand some of the nuance associated with if it was kind of a larger, more complex case, but in certain instances, it was potentially more black and white. There were issues of concealment.

There were things that essentially lended themselves to more kind of efficient processing. We're hoping some of those trends will become more apparent kind of regardless of how the case was resolved within some of the free text responses. So the analysis is not over. So we will certainly look at different outcomes as well. And one of the things that I will note, just as I wait to see if any additional questions come in, is we are looking to, obviously, publish the results of this analysis.

It will likely be closer to the end of this year as we are looking to extend some of these analyses and make sure that essentially we have a comprehensive picture both of the unstructured and the structured data. All right.

So, I think we're at time. I just wanted to thank everyone for attending today's session and for your great questions. If you do have questions that come to top of mind after this session closes, please, again, feel

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free to contact me at bmartin@ncsbn.org. Otherwise, have a great day, and I hope you enjoy the rest of the program.

Bye.

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