**Advanced Practice Registered Nurse Practice Autonomy, Prescribing Authority and Board of Nursing Disciplinary Actions**

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APRNs have been providing safe, high-quality, cost-effective care for decades. Reviews of the literature and medical malpractice claims data (Jordan, Kremer, Crawforth & Shott, 2001), governmental evaluations (United States Congress Office of Technology Assessment, 1981; United States Congress, Office of Technology Assessment, 1986), systematic reviews (Sox, 1979; Ventura, Feldman, & Crosby, 1991; Horrocks, Anderson, & Salisbury, 2002; Laurant et al., 2005; Hatem et al., 2008; O’Grady, 2008; Newhouse et al., 2011), research studies (Mundinger et al., 2000; Lenz et al., 2004; Dulisse & Cromwell, 2010); and meta-analyses (Brown, & Grimes, 1995), have been conducted to evaluate APRN practice. All of these publications found that the quality of care provided by APRNs is high, and comparable to MDs.

APRN practice and prescribing is regulated by each state’s legislation, with considerable variability from state to state. Some states allow an APRN to practice and prescribe to the full extent of their education and training; other states limit the practice and/or prescribing ability of APRNs based on a document detailing the collaborative relationship between the APRN and a physician or podiatrist, while other states require APRNs practice or prescribe under the supervision of a physician or podiatrist.

The NCSBN Campaign for APRN Consensus calls for removing barriers to APRN practice by revising legislation in those states that place restrictions on APRN practice or prescribing. Yet, despite these initiatives, Boards of Nursing and APRN groups continue to face strong opposition from physician groups who work to impose barriers to APRN autonomy by advocating for restricted practice and prescribing authority. To support legislative decision making, a direct comparison of APRNs working independently, those working collaboratively with physicians or with a collaborative agreement, and those working under physician supervision is needed. For this comparison, disciplinary action may be considered a proxy for safety—a lack of disciplinary actions or low levels of discipline is an indication of practitioner safety.

**Research Questions**

The goal of the current study is to answer the following three research questions:

1. Are there differences in the rate of disciplinary actions for APRNs who *practice* independently, compared to those whose practice is supervised by a physician or collaborative with a physician?
2. Are there differences in the rate of disciplinary actions for APRNs who *prescribe* independently, compared to those whose prescribing authority requires supervision by a physician or collaboration with a physician?
3. How do APRN discipline rates compare to physician rates of reported discipline?

**Method**

For the first two research questions, a retrospective design, utilizing BON disciplinary actions as a proxy for safety, was utilized. That is, low rates of discipline by a BON were interpreted as being indicators of safe practice by APRNs, and high rates of discipline by a BON were interpreted as being indicators of unsafe practice by APRNs. The following disciplinary information from 2009 were reviewed and analyzed: number of APRNs disciplined, type of practitioner disciplined, and reason(s) for discipline. Only data from 2009 was utilized because it facilitated the analyses which required total number of APRNs for the time period and their corresponding level of practice. The year 2009 was chosen because it was the most current data.

During the fall of 2009, each jurisdiction’s BON was contacted to obtain the current number of CNMs, CRNAs, CNSs, and CNPs in their jurisdiction. Second, disciplinary data was obtained through the following methods: (a) BON websites/newsletters were reviewed for listings of disciplinary actions taken by the BON; (b) Nursys® access was granted by some states in order to identify APRNs with disciplinary action; and (c) BONs were contacted directly for assistance in obtaining disciplinary information. Online license verification was used to determine APRN status in instances where a state’s disciplinary listings or reports only identified an RN license.

Third, once the disciplined APRNs were identified in each jurisdiction, a copy of the final disciplinary document (e.g., final board order or consent agreement) was obtained. The discipline documents were obtained through the following methods: (a) The BON website; (b) BONs contacted directly; and (c) a formal request for public records made to the BON or umbrella agency.

And finally, all final board orders/consent orders were reviewed, specifically the Findings of Fact, and reasons for disciplinary action were recorded. The reasons for discipline were categorized. To ensure accuracy, a group of three researchers met, reviewed each case, reached agreement on the reason(s) for discipline, and determined the number of violations for each licensee.

Each jurisdiction’s Nurse Practice Act and/or Rules and Regulations were reviewed by a group of three NCSBN Nursing Regulation staff members. This group created definitions for determining whether the legislation used language for practice and prescribing that allowed APRN independence, or required collaboration with a physician, or physician supervision. The definitions used by the group are as follows:

Independent—No requirement for a written collaborative agreement, no supervision, no conditions for practice.

Collaborative—Any time a written agreement exists which specifies scope of practice and medical acts allowed with or without a general supervision requirement by an MD, DO, DDS or podiatrist.

Supervised—Direct supervision required in the presence of a licensed MD, DO, DDS, or podiatrist, with or without a written practice agreement.

No authority—This category was assigned to RNs who have a master’s degree and/or national certification and the state legislation grants title protection, but these individuals are only allowed to practice at the level of RN (i.e., CNSs). This category was also used when an APRN was not eligible for prescriptive privileges (i.e., CNSs and CRNAs).

The absence of language restricting practice was assigned to the independent category. In some cases, the level of practice and level of prescribing determination was made after review of the legislative language with further discussion and clarification with the Executive Officer from the jurisdiction. When assigning the level of prescriptive authority to a state, the level of prescriptive authority could not exceed the level of practice autonomy. For example, if the legislation allowed independent prescribing, but APRN’s are required to have a collaborative agreement, that state was assigned the category of collaborative prescribing for purposes of this analysis.

The methodology used to investigate the third research question involved comparing discipline rates of APRNs to physicians. NPDB and HIPDB reports were available for a five month period of time in 2009. A direct comparison of reports against APRNs and reports against physicians was made taking into consideration the number of each type of provider.

**Participants**

Data from all APRNs disciplined by a BON in participating jurisdictions during 2009 were examined. A jurisdiction was considered a participant only if (a) the total number of APRNs in the jurisdiction was provided; (b) the number of APRNs disciplined in 2009 was obtained; and (c) the disciplinary records were obtained. As a result, 43 (out of 51) jurisdictions were included in the analyses. In 2009, there were 184,771 APRNs recognized in the 43 jurisdictions studied in this analysis.

**Results**

To be included in this analysis, only final board actions taken in 2009 were considered. Complaints made to the BON that were dismissed, or were still under investigation, or instances where the BON took no action, were not used in the analyses. Also, sister state disciplinary actions were excluded to avoid counting the same violation more than once. Sister state discipline occurs when an APRN is licensed, or recognized/registered in more than one state, where one of the BON takes disciplinary action. Boards in other states in which that APRN holds a license, or is registered, may mimic the discipline, or take other action, in an effort to provide consistency and discourage nurses from moving to other states to avoid discipline. Since the goal of this study was to examine APRN safety related to practice, disciplinary actions taken for issues unrelated to practice (e.g., licensing issues, criminal convictions, and failure to comply with a board order), are reported, but were not analyzed in relation to practice autonomy.

In the 43 jurisdictions included in this analysis, there were 184,771 APRNs in 2009. Applying the definitions described above, APRNs were assigned to the categories of independent practitioners, collaborative practitioners, and supervised practitioners. Table 1 shows the level of autonomy for each type of APRN. Table 2 depicts the numbers of APRNs in the independent, collaborative and supervised prescribing categories. APRNs in states where no prescriptive authority is allowed were included in the supervised category for the purposes of this analysis.

Table 1. Level of practice autonomy by type of APRN\*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | CNM | CRNA | CNS | CNP | APRN^ | Total |
| Independent | 1,780 | 6,878 | 3,350 | 17,354 | 1,588 | 30,950 |
| Collaborative | 5,139 | 17,790 | 7,467 | 92,155 | 8,396 | 130,947 |
| Supervised/None | 0 | 13,438 | 3,532 | 5,904 | 0 | 22,874 |
| Total | 6,919 | 38,106 | 14,349 | 115,413 | 9,984 | 184,771 |

*Note.* \*Table represents 43 jurisdictions who supplied data in 2009 for this analysis.

^Some jurisdictions classify all advanced practice nurses as APRNs (i.e., they do not specify an APRN as a CNM, CRNA, CNS or CNP).

Table 2. Level of prescriptive authority by type of APRN\*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | CNM | CRNA | CNS | CNP | APRN^ | Total |
| Independent | 1,612 | 2,384 | 1,444 | 11,551 | 1,409 | 18,400 |
| Collaborative | 5,045 | 18,170 | 7,652 | 97,018 | 8,575 | 136,460 |
| Supervised/None | 262 | 17,552 | 5,253 | 6,844 | 0 | 29,911 |
| Total | 6,919 | 38,106 | 14,349 | 115,413 | 9,984 | 184,771 |

*Note.* \*Table represents 43 jurisdictions who supplied data in 2009 for this analysis.

^Some jurisdictions classify all advanced practice nurses as APRNs (i.e., they do not specify an APRN as a CNM, CRNA, CNS or CNP).

There were 260 out of 184,771 APRNs identified as having disciplinary action in 2009, or rather study data indicated that 0.14% of all APRNs were disciplined in 2009. These 260 APRNs were categorized into one of the following groups: CNM, CRNA, CNS, or CNP (see Table 3).

Table 3. APRNs disciplined in 2009

|  |  |
| --- | --- |
|  | Number of APRNs disciplined |
| CNM | 9 |
| CRNA | 71 |
| CNS | 8 |
| CNP | 150 |
| APRN^ | 22 |
| Total | 260 |
| 260 disciplined APRNs out of 184,771 total APRNs = 0.14% overall discipline rate | |

*Note.* ^Some jurisdictions classify all advanced practice nurses as APRNs

(i.e., they do not specify an APRN as a CNM, CRNA, CNS or CNP).

In order to better understand the reasons and frequency of discipline, each discipline case was placed into one of seven categories (i.e., practice issues, prescribing issues, licensing issues, criminal conviction – no contest or guilty plea, chemical dependency, failure to comply with board order, or other/unknown) (see Table 4). Please refer to the Appendix for definitions of each of these categories. Practice related issues, licensing related issues, and prescribing related issues were the most frequent reasons APRNs were disciplined in 2009.

Table 4. Reasons for APRN discipline

|  |  |
| --- | --- |
|  | Number of APRNs disciplined  (% of all 2009 disciplines)\* |
| Practice related issues | 67 (26%) |
| Licensing related issues | 65 (25%) |
| Prescribing related issues | 63 (24%) |
| Criminal conviction, no contest, guilty plea | 39 (15%) |
| Chemical dependency | 30 (12%) |
| Failure to comply with a board order | 21 (8%) |
| Other/Unknown | 34 (13%) |

*Note.* \*Percentages total more than 100% due to APRNs being disciplined for more than one reason.

**Practice-related Discipline**

A total of 67 APRNs were disciplined for practice-related reasons in the 43 participating jurisdictions in 2009. Table 5 illustrates the number of APRNs disciplined according to their level of practice autonomy. The overall rate of APRN discipline for practice related issues is 0.036%, a very small percentage, indicating APRNs provide safe care. While all three autonomy levels of APRNs had a discipline rate of less than a tenth of a percent over the year, independent practitioners were disciplined more frequently than their collaborative or supervised counterparts (0.068%, 0.029%, and 0.035% respectively).

Table 5. APRNs disciplined for *practice* related reasons

|  |  |  |  |
| --- | --- | --- | --- |
|  | Number of APRNs disciplined | Total number of APRNs | Rate of discipline |
| Independent | 21 | 30,950 | 0.068% |
| Collaborative | 38 | 130,947 | 0.029% |
| Supervised | 8 | 22,874 | 0.035% |
| **Total** | **67** | **184,771** | **0.036%** |

*Note.* 67 of 184,771 (0.036%) APRNs were disciplined for practice-related reasons.

Logistic regression with dummy coding was used to investigate the effects of level of practice autonomy (i.e., independent, collaborative, and supervised) on practice-related discipline (i.e., disciplined or not disciplined), where collaborative was the reference group. Given high sample size, non-random assignment to groups, and extremely low overall discipline rates, results should be interpreted with caution. Table 6 presents the results which indicated that level of practice autonomy reliably distinguished whether practitioners were disciplined or not, χ2 (2, *N* = 184,771) = 9.87, *p* = .007. Specifically, independent practioners were significantly more likely to be disciplined versus collaborative practitioners (*B* = .85, *SE* = .27) (odds ratio, 2.34); where independent practitioners were 2.34 times more likely to be disciplined versus collaborative practitioners. There was no significant difference between collaborative practitioners and supervised practitioners (*B* = .19, *SE* = .39) (odds ratio, 1.21).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Table 6 | | | | | | |
| *Summary of Logistic Regression Analysis for Level of Practice Autonomy Predicting Practice-related Discipline* | | | | | | |
| Predictor | *B* | *SE B* | Wald’s  *χ2* | *df* | *p* | *eB*  (odds ratio) |
| Constant | 7.11 | .45 | 253.88 | 1 | .000 |  |
| Level of practice autonomy |  |  | 9.87 | 2 | .007 |  |
| Independent vs. collaborative | .85 | .27 | 9.77 | 1 | .002 | 2.34 |
| Supervised vs. collaborative | .11 | .47 | .05 | 1 | .817 | 1.21 |

*Note.* To obtain the odds ratio for the independent versus supervised groups (odds ratio, 1.94, *p* = .110), the analysis was re-run where the supervised group was coded as the reference group in the dummy variables.

**Prescribing-related Discipline**

The 63 APRNs who were disciplined by BON in 2009 for prescribing reasons were compared according to their level of prescriptive authority. These results are included in Table 7. Again, the overall rate of discipline among APRNs is very low—0.034%, indicating that APRNs are safe prescribers. A total of 63 APRNs were disciplined by boards of nursing in 2009 for prescribing related reasons. Independent APRN prescribers had the highest rate of discipline (0.060%), followed by collaborative prescribers (0.034%), and supervised prescribers (0.027%).

Table 7. APRNs disciplined for *prescribing* related reasons

|  |  |  |  |
| --- | --- | --- | --- |
|  | Number of APRNs disciplined | Total number of APRNs | Rate of discipline |
| Independent | 11 | 18,400 | 0.060% |
| Collaborative | 46 | 136,460 | 0.034% |
| Supervised/None | 6 | 29,911 | 0.027% |
| **Total** | **63** | **184,771** | **0.034%** |

*Note.* 63 of 184,771 (0.034%) APRNs were disciplined for prescribing-related reasons.

Logistic regression with dummy coding was used to investigate the effects of level of practice autonomy (i.e., independent, collaborative, and supervised) on prescribing-related discipline (i.e., disciplined or not disciplined), where supervised was the reference group. Given high sample size, non-random assignment to groups, and extremely low overall discipline rates, results should be interpreted with caution. Table 8 presents the results which indicated that level of practice autonomy *marginally* distinguished whether practitioners were disciplined or not, χ2 (2, *N* = 184,771) = 5.07, *p* = .079. Given that this test approached significance, group comparisons were made, however, should be interpreted with caution. Specifically, independent practioners were significantly more likely to be disciplined versus supervised practitioners (*B* = 1.09, *SE* = .51) (odds ratio, 2.98); where independent practitioners were 2.98 times more likely to be disciplined versus supervised practitioners. There was no significant difference between collaborative practitioners and supervised practitioners (*B* = .52, *SE* = .43) (odds ratio, 1.68).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Table 8 | | | | | | |
| *Summary of Logistic Regression Analysis for Level of Practice Autonomy Predicting prescribing-related Discipline* | | | | | | |
| Predictor | *B* | *SE B* | Wald’s  *χ2* | *df* | *p* | *eB*  (odds ratio) |
| Constant | 6.90 | .53 | 170.52 | 1 | .000 |  |
| Level of practice autonomy |  |  | 5.07 | 2 | .079 |  |
| Independent vs. supervised | 1.09 | .51 | 4.63 | 1 | .031 | 2.98 |
| collaborative vs. supervised | .52 | .43 | 1.43 | 1 | .232 | 1.68 |

*Note.* To obtain the odds ratio for the independent versus collaborative groups (odds ratio, 1.77, *p* = .088), the analysis was re-run where the collaborative group was coded as the reference group in the dummy variables.

**Physician versus APRN Reporting Rates**

The number of NPDB and HIPDB reports were compared for APRNs and physicians. Table 9 depicts the number of discipline NPDB and HIPDB reports, and the number of healthcare providers for all 51 jurisdictions over a five month period of time, August 1, 2009 through January 3, 2010.

Logistic regression with dummy coding was used to investigate the effects of level of practice (i.e., physician and APRN) on NPDB reporting (i.e., reported or not reported). Results indicated that level of practice reliably distinguished whether practitioners were reported or not, χ2 (1, *N* = 1,271,944) = 611.63, *p* = .000. Specifically, physicians were significantly more likely to be reported versus APRNs (*B* = 2.27, *SE* = .09) (odds ratio, 9.70); where physicians were 9.70 times more likely to be reported versus APRNs. Additionally, logistic regression with dummy coding was used to investigate the effects of level of practice (i.e., physician and APRN) on HIPDB reporting (i.e., reported or not reported). Results indicated that level of practice reliably distinguished whether practitioners were reported or not, χ2 (1, *N* = 1,271,944) = 217.71, *p* = .000. Specifically, physicians were significantly more likely to be reported versus APRNs (*B* = 1.89, *SE* = .13) (odds ratio, 6.59); where physicians were 6.59 times more likely to be reported versus APRNs.

Despite these significant differences, unlike comparing independent, collaborative, and supervised APRN practitioners – which are similar roles. Physicians and APRNs have different roles and requirements (e.g., physicians may take more difficult/serious cases), which may explain any difference in reporting rates.

Table 9. NPDB and HIPDB reports by state for APRNs and physicians\*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| State | Number of APRNs | Number of physicians~ | NPDB all APRNs | NPDB all physicians~ | HIPDB all APRNs | HIPDB all physicians~ |
| AK | 767 | 1783 | 1 | 14 | 1 | 15 |
| AL | 3223 | 12545 | 0 | 28 | 6 | 12 |
| AR | 1616 | 7254 | 1 | 33 | 0 | 14 |
| AZ | 1825 | 19348 | 1 | 109 | 0 | 94 |
| CA | 21534 | 126893 | 3 | 695 | 0 | 246 |
| CO | 5125 | 16775 | 1 | 124 | 0 | 65 |
| CT | 3092 | 16568 | 0 | 64 | 3 | 16 |
| DC | 1237 | 5432 | 1 | 13 | 0 | 4 |
| DE | 981 | 2912 | 1 | 8 | -1 | 7 |
| FL | 7051 | 65122 | 28 | 435 | 1 | 81 |
| GA | 6787 | 25306 | 2 | 138 | 2 | 46 |
| HI | 1037 | 5028 | 0 | 25 | 0 | 15 |
| IA | 1371 | 8280 | 3 | 64 | 0 | 27 |
| ID | 1045 | 3522 | 0 | 17 | 1 | 6 |
| IL | 6679 | 45705 | 3 | 184 | 0 | 129 |
| IN | 2841 | 17802 | 2 | 100 | 0 | 32 |
| KS | 3270 | 8587 | 3 | 71 | 0 | 19 |
| KY | 3609 | 12408 | 3 | 114 | 18 | 51 |
| LA | 3507 | 14108 | 6 | 180 | 0 | 27 |
| MA | 8460 | 37284 | 6 | 188 | 0 | 27 |
| MD | 4282 | 27450 | 2 | 144 | 0 | 41 |
| ME | 1659 | 5353 | 1 | 32 | 0 | 10 |
| MI | 6203 | 36450 | 3 | 192 | 0 | 51 |
| MN | 4429 | 18979 | 1 | 55 | 0 | 26 |
| MO | 5460 | 19575 | 0 | 103 | 0 | 42 |
| MS | 2519 | 6619 | 3 | 36 | 3 | 4 |
| MT | 795 | 2914 | 2 | 24 | 0 | 1 |
| NC | 7515 | 28995 | 1 | 100 | 0 | 53 |
| ND | 670 | 1938 | 0 | 14 | 1 | 14 |
| NE | 1498 | 5540 | 1 | 23 | 0 | 7 |
| NH | 1409 | 4974 | 1 | 34 | -1 | 8 |
| NJ | 5509 | 36036 | 5 | 273 | 1 | 62 |
| NM | 1055 | 6064 | 0 | 49 | 0 | 27 |
| NV | 754 | 6524 | 0 | 64 | 0 | 22 |
| NY | 14000 | 94836 | 8 | 590 | 2 | 122 |
| OH | 8650 | 41763 | 2 | 232 | 0 | 147 |
| OK | 1831 | 9626 | 0 | 77 | 3 | 12 |
| OR | 3058 | 13947 | 4 | 72 | 3 | 29 |
| PA | 6637 | 53564 | 3 | 320 | 2 | 94 |
| RI | 927 | 4938 | 0 | 17 | 0 | 1 |
| SC | 4418 | 12910 | 0 | 56 | 0 | 10 |
| SD | 862 | 2259 | 0 | 10 | 0 | 6 |
| TN | 7213 | 20174 | 5 | 123 | 4 | 67 |
| TX | 13395 | 65622 | 6 | 286 | 2 | 106 |
| UT | 1856 | 7233 | 0 | 48 | 3 | 11 |
| VA | 7878 | 26402 | 2 | 164 | 5 | 103 |
| VT | 1134 | 2980 | 1 | 15 | 0 | 3 |
| WA | 4553 | 22791 | 4 | 113 | 4 | 64 |
| WI | 179 | 18703 | 0 | 65 | 0 | 28 |
| WV | 1131 | 5813 | 1 | 62 | 0 | 28 |
| WY | 423 | 1351 | 0 | 9 | 0 | 3 |
|  | 206,959 | 1,064,985 | 121 | 6006 | 63 | 2135 |
| Rate of discipline: | | | 0.06% | 0.56% | 0.03% | 0.20% |

\*NPDB and HIPDB data were obtained from a 5 month period August 1, 2009-January 3, 2010.

~Physicians include MDs, DOs, resident MDs and resident DOs.

**Discussion**

**Limitations**

Comparing APRNs across states is a difficult process. The way in which one state defines APRN collaboration with a physician, for example, can be very different from another state’s definition. Assigning states to a pre-defined category for purposes of comparison and analysis was a careful and deliberate process; yet, the categories assigned in this analysis may not truly reflect the intent of the legislation in a state or the manner in which the legislation is enforced. Additionally, a Nurse Practice Act may state that an APRN *may* practice independently, however, this does not mean that an APRN in that state *is* practicing independently. As a retrospective study, it is not known how the APRNs who were disciplined, and those who were not disciplined, were actually practicing in 2009. This study encountered other challenges which may make interpretation of the results difficult.

The analyses reflect information from the year 2009 only. Looking at trend data may have been helpful; however, it would have required knowing the number of APRNs for each of the previous years of interest, and their level of practice and prescribing autonomy for that corresponding year.

States have different requirements for what constitutes cause for disciplinary action by professional boards. Variations in the rates of discipline among states could be due to the reporting requirements of these boards. Hence, it is possible that any differences in rates of discipline may be partially explained by differences in characteristics of the professional boards. It is important to consider state variability in discipline reporting requirements, as this may have skewed the results. A state with strict reporting requirements may be over-represented in this analysis, making APRNs in that state appear less safe than in those states with differing requirements for discipline reporting.

Chemical dependency is not accurately reflected in these data. Many states have a system in place to refer chemically dependent nurses to a confidential Assistance Program without a disciplinary component to the referral—these providers are not able to be captured in this analysis.

**Implications**

Overall, study results revealed extremely low rates of APRN discipline—one indication that APRNs are safe healthcare providers. The results of independent practitioners and prescribers having a significantly higher rate of discipline should be interpreted with caution. The large sample size used in this analysis makes small differences among groups statistically significant when in reality the differences are hundredths of a percent. All the discipline rates were found to be very low, which indicates APRNs are safe providers of healthcare.

The results of this study support NCSBN’s Campaign for APRN Consensus. The Campaign for Consensus calls for consistency among the states in the licensure, accreditation and certification of APRNs, and the educational requirements for APRNs. Consistent regulation of APRNs will facilitate the interpretation of information across states regarding APRN practice safety and discipline rates in the future.

**References**

Brown, S. & Grimes, D. (1995). A meta-analysis of nurse practitioners and nurse-midwives in primary care. *Nursing Research, 44,* 332-339.

Dulisse, B., & Cromwell, J. (2010). No harm found when nurse anesthetists work without supervision by physicians. *Health Affairs, 29,* 1469-1475. doi: 10.1377/hlthaff.2008.0966

Hatem, M., Sandall, J., Devance, D., Soltani, H., & Gates, S. (2008). Midwife-led versus other models of care for childbearing women. *Cochrane Database of Systematic Reviews*, issue 4. Art. No.: CD004667. DOI: 10.1002/14651858.CD004667.pub2

Horrocks, S., Anderson, E., & Salisbury, C. (2002). Systematic review of whether nurse practitioner working in primary care can provide equivalent care to doctors. *British Medical Journal, 324,* 819-823. doi: 10.1136/bmj.324.7341.819

Hudspeth, R. (2007). Survey of advanced practice registered nurses disciplinary action. *Online Journal of Issues in Nursing, 12,* doi: 10.3912/OJIN.Vol12No02PPT02

Jordan, L. M., Kremer, M., Crawforth, K., & Shott, S. (2001). Data-driven practice improvement: the AANA Foundation closed malpractice claims study. *American Association of Nurse Anesthetists Journal, 69,* 301-11.

Laurant, M., Reeves, D., Hermens, R., Braspenning, J., Grol, R., & Sibbald, B. (2005). Substitution of doctors by nurses in primary care. *The Cochrane Library*, Issue 2. Art. No.: CD001271. DOI: 10.1002/14651858.CD001271.pub2

Lenz, E., Mundinger, M., Kane, R., Hopkins, S., & Lin, S. (2004). Primary care outcomes in patients treated by nurse practitioners or physicians: Two-year follow-up. *Medical Care Research & Review, 61,* 332-51.

Mundinger, M. O., Kane, R. L., Lenz, E. R., Totten, A. M., Tsai, W.-Y., Cleary, P. D., Friedewald, W. T., Siu, A. L., & Shelanski, M. L. (2000). Primary care outcomes in patients treated by nurse practitioners or physicians: A randomized trial. *Journal of the American Medical Association, 283,* 59-68. doi: 10.1001/jama.283.1.59

National Council of State Boards of Nursing Campaign for APRN Consensus, www.ncsbn.org/aprn.htm.

Newhouse, R.P., Stanik-Hutt, J., White, K.M., Bass, E.B., Zangaro, G., Wilson, R.F., Fountain, L., Steinwachs, D.M., Heindel, L., & Weiner, J.P. (2011). Advanced practice nurse outcomes 1990-2008: A systematic review. *Nursing Economics*, 29 (5), 230-250.

O’Grady, E. (2008). Advanced practice registered nurses: The impact on patient safety and quality. In Hughes, R. (Ed). (2008*). Patient Safety and Quality: An Evidence-Based Handbook for Nurses* (AHRQ Publication No. 08-0043). Agency for Healthcare Research and Quality: Rockville, MD.

Sox, H. (1979). Quality of patient care by nurse practitioners and physician’s assistants: A ten-year perspective. *Annals of Internal Medicine, 91,* 459 – 468.

Statehealthfacts.org (n.d.). *Number of nonfederal physicians, 2008*. Retrieved from: <http://www.statehealthfacts.org/comparemaptable.jsp?ind=429&cat=8>

United States Congress. Office of Technology Assessment (1981). *The costs and effectiveness of*

*nurse practitioners.*Washington, DC: US Government Printing Office.

United States Congress, Office of Technology Assessment (1986). *Nurse practitioners, physician assistants, and certified nurse-midwives: A policy analysis.* Washington, DC: US Government PrintingOffice.

US Department of Health and Human Services, Health Resources and Services Administration, Healthcare Integrity and Protection Data Bank (2010). *HIPDB reports submitted by state agencies and health plans*. Retrieved from: <http://www.npdb-hipdb.hrsa.gov/resources/reports/HIPDBStateAgencyAndHealthPlanIndividualSubjectSummaryReport.pdf>

US Department of Health and Human Services, Health Resources and Services Administration, Healthcare Integrity and Protection Data Bank (2010). *HIPDB reports submitted by federal agencies*. Retrieved from: <http://www.npdb-hipdb.hrsa.gov/resources/reports/HIPDBFederalAgencyIndividualSubjectSummaryReport.pdf>

US Department of Health and Human Services, Health Resources and Services Administration, National Practitioner Data Bank (2010). *NPDB summary report*. Retrieved from:<http://www.npdb-hipdb.hrsa.gov/resources/reports/NPDBSummaryReport.pdf>

Ventura, M., Feldman, M. & Crosby, F. (1991). An information synthesis to evaluate nurse practitioner effectiveness. *Military Medicine, 156,* 286–291.

**Appendix**

The eight categories of reasons for discipline were established based on themes identified in the data, and are defined as follows:

1. **Practice Issues**—reasons included in this category: issues related to assessment, diagnosing, ordering and interpreting tests, and plan of care issues (collectively referred to as compromised patient safety), scope of practice issues, documentation issues, and failure to follow hospital policies.

2. **Prescribing Issues**—reasons in this category include prescribing for people who were not patients, overstepping scope of prescribing authority, compromising patient safety, and prescribing for purposes of drug diversion.

3. **Licensing Issues**—this category includes disciplinary actions related to maintaining compliance with the licensing rules. Reasons for discipline in this category include: practicing with an expired license, unable to provide proof of meeting continuing education requirements, practicing prior to licensure and practicing with expired national certification (collectively referred to as Practicing without Board Approval). Other licensing issues include collaborative practice violations, and making false statements on licensing applications (initial or renewal).

4. **Criminal Conviction, No Contest or Guilty Plea**

5. **Failure to Comply with Board Order**—examples of reasons related to failure to comply include: failure to maintain license, failure to submit employer reports, and chemical dependency relapse.

6. **Chemical Dependency**—reasons for discipline include practicing while impaired, drug diversion (removing drugs from a Pyxis machine or anesthesia cart), and resigning position in lieu of providing specimen for drug screen

7. **Other/Unknown**—this category includes boundary issues, confidentiality violations, submitting forged documents to employers, and other reasons that could not be classified in one of the other main categories.