



Full Length Article

Regulating at the AI frontier: The collision of policy, regulation, and nursing practice

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ABSTRACT

Background: Artificial intelligence (AI) is rapidly transforming clinical decision-making and healthcare delivery, yet state-level legislation addressing AI integration in patient care often lacks alignment with nursing-specific regulatory frameworks.

Purpose: This policy analysis examines enacted and proposed AI-related legislation across the United States, with specific attention on implications for nursing practice, licensure, and professional accountability.

Methods/Results: Using a structured review and thematic categorization of state legislation, eight major policy domains were identified, such as “AI in Clinical Decision-Making,” “Nursing Scope-of-Practice or Autonomy Protections,” and “AI Governance via Task Forces or Commissions.” While development of state-level AI policy is gaining momentum, few legislative efforts explicitly define nursing roles, responsibilities, or protections within AI-integrated environments. Furthermore, the majority of proposals addressing nursing autonomy are pending rather than enacted.

Conclusion: These findings highlight a growing regulatory gap that may expose nurses to increased liability, ambiguous role expectations, and reduced clinical authority in AI-augmented care settings. Key AI policy and regulatory priorities for the nursing profession focus on competencies in nursing education, updated licensure frameworks, and structured approaches for boards of nursing to assess disciplinary concerns arising from AI use. Foundational insights for nursing organizations seeking to proactively engage with AI policy development and ensure safe, ethical nursing practice in the digital era are provided.

Artificial intelligence (AI) is transforming the foundational approaches and authority structures of clinical decision-making in the delivery of patient care. The AI industry has quickly become an embedded facet of healthcare delivery infrastructure, with global investment projected to exceed \$51 billion by 2027 (Rudd & Igbrude, 2023). AI tools such as predictive algorithms, ambient scribes, and clinical summarization systems offer potential efficiencies across billing and coding, timely documentation of care, and improved care quality.

Conversely, these tools also introduce risks of algorithmic bias, decreased transparency, and inadequate accountability, especially in high-risk care settings such as acute care, mental health, and chronic disease management (Rajkomar et al., 2018).

Despite the nursing profession's pivotal role in the implementation and integration of these technologies into the clinical environment, nurses remain largely absent from the broader shaping of regulatory policy and legislative guardrails. Nurses, seen mainly as end users, have

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2155-8256/© 2025 National Council of State Boards of Nursing. Published by Elsevier Inc. All rights are reserved, including those for text and data mining, AI training, and similar technologies.

the potential to support the congruent design of these tools to the realities of the variability of care settings by which these tools will be deployed. Furthermore, nurses have the clinical expertise and adaptive mindset to help overcome the challenges that impede the creation of a unified regulatory framework for safe and ethical practice in the new era of nonhuman involvement in patient care (O'Connor et al., 2023). The nursing profession stands at a crossroads: unless nursing defines how its values, ethics, and identity are preserved in AI-mediated environments, it risks regulatory invisibility in a space where clinical authority is rapidly shifting (Johnson & Galatzan, 2025). While states assess their respective strategic positioning to write and pass legislation addressing algorithmic transparency, fairness, and governance, few efforts explicitly define how these laws intersect with nursing practice. This regulatory ambiguity leaves nurses exposed to uncertain new degrees of professional liability, varying stakeholder opportunities in AI product design, and unclear expectations for role and scope in AI-mediated care environments.

Background

Nurses are the largest group of healthcare professionals and are among the most frequent users of electronic health records (EHRs; Jedwab et al., 2023). However, few nursing-specific regulatory frameworks exist to guide safe, ethical, and effective integration of AI-enabled tools embedded in EHR systems or other care delivery documentation/information exchange platforms (Johnson & Galatzan, 2025). Nurses may be exposed to risk, both technological and professional in nature. They can be held responsible for outcomes influenced by AI outputs they did not design, do not fully understand, or do not have the authority to override. Given the nursing profession's historically high trust and visibility across the patient care continuum, patients overwhelmingly hold nurses accountable for decisions made with AI tools. However, varying degrees of automation create tension between what patients see and what nurses experience. From a patient perspective, AI-enabled care appears seamless, even simple. Yet for nurses, the “unseen” side often involves moral conflict, especially when education, training, and institutional support for using these tools are inconsistent (Benda et al., 2024).

Medical entities have recently released guidance related to AI. The American Medical Association adopted a policy on “augmented intelligence” that emphasizes human oversight, transparency, and clinician education (American Medical Association, 2025), and the National Academy of Medicine recently published an AI code of conduct (National Academy of Medicine, 2025). Nursing oversight entities, such as boards of nursing and professional organizations, share responsibility for developing an agile strategic plan. This plan must address education, licensure, practice, and discipline while remaining responsive to both innovation and regulation. Such action is necessary to protect and advance the profession's interests in the evolving AI industry. Nursing organizations, including the American Nurses Association (2022) and the International Council of Nurses (2023) have released statements on nursing's role in AI development and regulation. These statements create opportunities for the profession to help shape strong policy precedents and to strengthen nursing's position across state borders as a continuance of the profession's legacy in trust, innovation, and advocacy.

Purpose

The purpose of this mapping review was to identify and analyze state, territorial, and sovereign policies related to AI and their relevance to the regulation of nursing practice and healthcare delivery. With growing national attention on AI integration in clinical decision-making, this project aimed to examine the extent to which existing and proposed legislation explicitly considers the role, responsibilities, and safety of nurses in the rapidly evolving technological landscape. By categorizing policies according to their thematic and systemic impact, this review

provides a foundational understanding of the policy environment shaping nursing's involvement in AI development, implementation, and governance. The findings are intended to inform regulatory bodies, professional organizations, and educators seeking to proactively engage in policy development and advocacy at the intersection of nursing and AI.

Methods

A Big Picture approach using a mapping review methodology was selected to capture the complexity and evolving nature of policy activity related to AI and nursing practice in the United States. Unlike a scoping review, which synthesizes existing literature or evidence, the Big Picture approach emphasizes descriptive analysis across multiple policy initiatives that may generate cascading or interrelated effects (Campbell et al., 2023). The intent of this approach is not to provide closure but to prompt continued exploration and action. Mapping reviews are particularly well suited for high-stakes, stakeholder-engaged inquiries where visual, categorical, or networked representation is beneficial (Khalil & Tricco, 2022).

The present project drew on the conceptual framework proposed by Morley et al. (2020), who categorized ethical considerations in healthcare AI into three domains: epistemic, normative, and overarching. These categories guided content analysis and thematic grouping of state and federal policy priorities relevant to nursing. Legislative texts were initially coded using a concept coding approach, which involved assigning short phrases to segments of text to capture central regulatory meanings and priorities (Saldaña, 2016). Each identified policy was further appraised for its systems-level impact across six domains: individual, interpersonal (e.g., care team or nurse-patient relationship), group (e.g., department), institutional (e.g., health system), sectoral (e.g., state regulation), and societal (e.g., federal policy). For comparative analysis, states were thematically grouped, enabling subset analyses of common themes, policy trends, and legislative priorities (Kleinheksel et al., 2020).

Procedure

To harmonize our team members' interpretation AI-based policy across states and sovereign Tribal Nations, a defined bank of legal terminology was created. Table 1 provides the definitions used for enacted and proposed legislation documents.

Policies and legislation were identified for all 50 U.S. states, the District of Columbia, and sovereign Tribal Nations. Searches of federal and state legislative databases were conducted using key terms and derivatives, including “healthcare,” “nurse,” “nursing,” and “artificial intelligence.” All legislative searches and data reviews were completed by March 31, 2025, and the findings presented herein reflect the policy landscape as of that date. Policies were included if their content directly or indirectly affected the practice of nursing or the delivery of care.

Table 1
Glossary of terms.

Term	Definition	Mapping for this review
Proposed legislation	Bill introduced into legislation	Proposed
Pending or introduced legislation	Bill passed through both house and senate, pending the state Governor's signature	Proposed
Vetoed bill	Governor can veto the bill	Not included
Enacted as law	Governor has signed the bill	Enacted
Enacted as law	Governor takes no action on bill within a specific period	Enacted
Enacted as law	Legislature can override the Governor's veto	Enacted
Failed legislation	Bill does not pass both chambers of congress	Not included

Source: National Conference of State Legislatures. (n.d.). Learning the game: Legislative process. Retrieved May 30, 2025, from <https://www.ncsl.org/legislative-staff/civics-education/learning-the-game>

Policies unrelated to healthcare (e.g., voter registration laws) were excluded. Each policy was logged in a shared Excel database with detailed metadata, including the source, legislative cycle, reference number, bill title, current status (e.g., introduced, passed, enacted), and any relevant media coverage or organizational position statements. Policy review for each jurisdiction ceased once redundancy was reached across multiple independent reviewers.

Data management

All data were managed using a secure shared drive with audit tracking enabled. Researchers were assigned state jurisdictions for initial review, and an inter-rater reliability threshold of 90 % agreement was established. Regular stakeholder meetings were held among working group members to review findings and assess the relevance and utility of the included policies for the mapping review. Given the use of publicly accessible information, Institutional Review Board approval was not required.

Data analysis

Across both enacted and proposed legislation, eight major policy themes were developed using a concept coding process in which short phrases were assigned to legislative texts to identify recurring meanings, priorities, and structures (Saldaña, 2016). Researchers then used inductive thematic grouping to organize these codes into broader categories that reflect the diverse strategies that states are using to regulate AI integration in healthcare environments (Saldaña, 2016). The final themes were interpreted within the ethical framework proposed by Morley et al. (2020), aligning them with epistemic, normative, and overarching considerations in healthcare AI policy. Each theme is detailed in the sections below, with states classified by whether their policies were enacted or proposed at the time that they were retrieved (not later than March 31, 2025). Table 2 provides each theme, thematic definition, associated states, and the corresponding legislative bills.

Results

Tribal Nations and AI governance in healthcare

As sovereign entities, Tribes operate outside of state-level legislation and may establish their own AI governance approaches. Although Tribal Nations were included in the mapping review, no enacted AI-specific healthcare or nursing legislation were identified from sovereign Tribal governments or through the Indian Health Service (Ntsele, 2024). Current Tribal health policy priorities are addressing chronic underfunding, health information technology infrastructure gaps, and competing priorities such as workforce development, data sovereignty, and broadband access, as identified in the National Indian Health Board's 2025 Legislative and Policy Agenda (National Indian Health Board, 2025).

Enacted AI legislation in healthcare and nursing

Among the 51 jurisdictions analyzed, 12 states (23.5 %) had enacted AI-related legislation relevant to healthcare as of the review period ending March 31, 2025. Six states (11.8 %) California, Texas, Utah, Maryland, Colorado, and Virginia enacted legislation directly addressing nursing or healthcare delivery. An additional six states (11.8 %) Idaho, Alabama, Tennessee, New Jersey, Delaware, and West Virginia enacted laws with indirect relevance to nursing, primarily through governance mechanisms such as AI task forces, commissions, or general policy frameworks without explicit healthcare mandates. Fig. 1 provides a visual of the enacted and proposed legislation related to AI in nursing and healthcare delivery by legislation status and state.

Proposed AI legislation in healthcare and nursing

Proposed legislation reveals broader state-level engagement, with 50 of 51 jurisdictions introducing AI-related bills. Of these, 18 states (35.3 %) Arkansas, California, Connecticut, Georgia, Illinois, Indiana,

Kentucky, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Nevada, New York, Oregon, Pennsylvania, Rhode Island, and Vermont proposed legislation directly referencing nursing roles, healthcare delivery, or professional education. Another 32 states (62.7 %) introduced AI-related proposals with indirect relevance to nursing, such as through insurance regulation, education initiatives, or system-wide governance efforts. Only one state Nebraska, had no identifiable AI legislation pertaining to healthcare or nursing at the time of analysis.

Nursing scope of practice or autonomy protections

This theme was identified exclusively in proposed legislation and includes five states (9.8 %): Illinois, Minnesota, Oregon, California, and Maine. These proposals explicitly aim to preserve the integrity of nursing roles and protect clinical autonomy as AI systems become more integrated into healthcare delivery. Legislative language under this theme addresses concerns about algorithmic encroachment on professional boundaries, which is the substitution of clinical decisions by AI systems that would otherwise fall within the legal and ethical scope of professional nursing practice. Legislation in this theme asserts that the nursing process remains grounded in human clinical judgment. For example, Minnesota's S.F. 2775 (2025) and Minnesota's H.F. 2289 (2025) states:

A hospital shall not employ technology that limits a direct-care registered nurse from performing functions that are part of the nursing process, including full exercise of independent professional judgment in assessment, planning, implementation, and evaluation of care, including the use of artificial intelligence technology in lieu of the expertise of licensed health care professionals.

Such proposals reflect a growing awareness that without explicit protections, AI systems may inadvertently erode the scope of nursing practice. Collectively, this theme signals a policy shift toward asserting human oversight and professional accountability in AI-mediated care.

AI in clinical decision-making

This theme was identified in 3 states (5.9 %): California (enacted), Texas (enacted), and Maryland (proposed). These laws and proposals govern AI's role in medical decision-making, including diagnosis, treatment recommendations, and communication of care plans. Legislative efforts in this theme reflect concern over clinical risk, provider accountability, and the need to ensure that AI supports rather than substitutes human judgment.

AI governance via task forces or commissions

This theme was identified in 7 states (13.7 %): 6 with enacted laws (Alabama, Delaware, Maryland, New Jersey, Tennessee, and West Virginia) and 1 with proposed legislation (Mississippi). These policies establish formal AI task forces, commissions, or advisory councils designed to assess and shape state-level strategies for AI oversight. While some of these efforts are exploratory, they reflect a collective intent to institutionalize governance mechanisms that may ultimately influence AI use in healthcare delivery.

AI registration, disclosure, or transparency requirements

This theme was identified in 15 states (29.4 %), including 5 with enacted laws (California, Maryland, Texas, Utah, and Virginia) and 10 with proposed legislation (Connecticut, Illinois, Indiana, Georgia, Kentucky, Mississippi, New York, Pennsylvania, Rhode Island, and Vermont). These policies require providers, insurers, or systems to disclose the use of AI to patients, the public, or regulatory entities, particularly in contexts involving healthcare decision-making, insurance determinations, and

Table 2

Enacted and pending legislation relevant to nursing and AI domains.

Theme	Definition	States With Enacted Legislation	Enacted Bill Numbers	States with Pending Legislation	Pending Bill Numbers
Nursing scope of practice or autonomy protections	Nursing roles in the context of AI, focusing on protecting clinical autonomy, decision-making authority, or scope-of-practice from algorithmic encroachment.	None	NA	Oregon Illinois Minnesota California Maine	H.B. 2748 S.B. 2202 S.F. 2775/H.F. 2289 A.B. 489 L.D. 1281
AI in clinical decision-making	Laws govern AI's role in medical decision-making, including diagnosis, treatment recommendations, and communication of care plans.	California Texas	S.B. 1120/A.B. 3030 C.S.H.B. 149	Maryland	S.B. 987
AI governance via task forces or commissions	Establish formal structures such as AI task forces, commissions, or advisory councils to guide the development of AI policy and oversight.	Alabama Tennessee Maryland New Jersey West Virginia Delaware	Executive Order No 738 H.B. 2325 H.B. 333 N.J. Exec. Order No. 346 H.B. 5690 H.B. 333	Mississippi	Proposed (no bill number)
AI registration, disclosure, or transparency requirements	Require providers or systems to disclose the use of AI to patients, the public, and government agencies, particularly in contexts involving healthcare or public decision-making.	California Texas Utah Maryland Virginia	A.B. 3030 H.B. 149 S.B. 149 S.B. 987, H.B. 1240 S.B. 1214	Connecticut Illinois Indiana Georgia Mississippi Kentucky New York Pennsylvania Rhode Island Vermont	S.B. 2 H.B. 3529 H.B. 1620 H.B. 147 S.B. 2426 S.B. 4 A.B. 3265 Not specified S.B. 13 H.B. 341
AI use in insurance or coverage decisions	Proposes guardrails for the use of AI in insurance-related decision-making, including utilization review, claim denials, and coverage determinations.	California Maryland	S.B. 1120 S.B. 987, H.B. 1240	Arkansas Illinois Minnesota Maine Rhode Island South Carolina	H.B. 1297 H.B. 35 H.F. 1838, H.F. 2500 S.P. 531 S.B. 13 S.B. 443
Designation of AI as high-risk system	Laws designate certain AI technologies, particularly those used in healthcare, as “high-risk” systems subject to heightened regulatory scrutiny.	Colorado Texas Virginia Utah	S.B. 24-205 C.S.H.B. 149 H.B. 2094 S.B. 149	Illinois Kentucky Massachusetts New York	H.B. 3529 S.B. 4 H.B. 94 A.B. A3356
General AI governance references	General references to AI within digital policy frameworks, innovation strategies, or ethics guidelines.	Idaho Utah	H.B. 568 S.B. 149	Alabama Alaska Arizona California Colorado District of Columbia Florida Georgia Hawaii Idaho Illinois Iowa Kansas Louisiana Maine Maryland Michigan Mississippi Missouri Montana New Hampshire New Jersey New Mexico North Carolina North Dakota Ohio Oklahoma Oregon South Dakota Tennessee Utah Vermont	Not listed here for brevity

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Table 2 (continued)

Theme	Definition	States With Enacted Legislation	Enacted Bill Numbers	States with Pending Legislation	Pending Bill Numbers
AI use in education and workforce training	Incorporate AI content into educational curricula, including nursing programs, or to enhance workforce development in response to AI's projected impact on healthcare roles.	None	NA	Virginia	
				Washington	
				West Virginia	
				Wisconsin	
				Wyoming	
				Arkansas	H.B. 1297
				Connecticut	S.B. 2
				Mississippi	S.B. 2426
				Nevada	S.B. 1711
				New York	S.B. 7691

Note. AI = artificial intelligence; NA = not applicable. References for the listed bills can be found in the references.

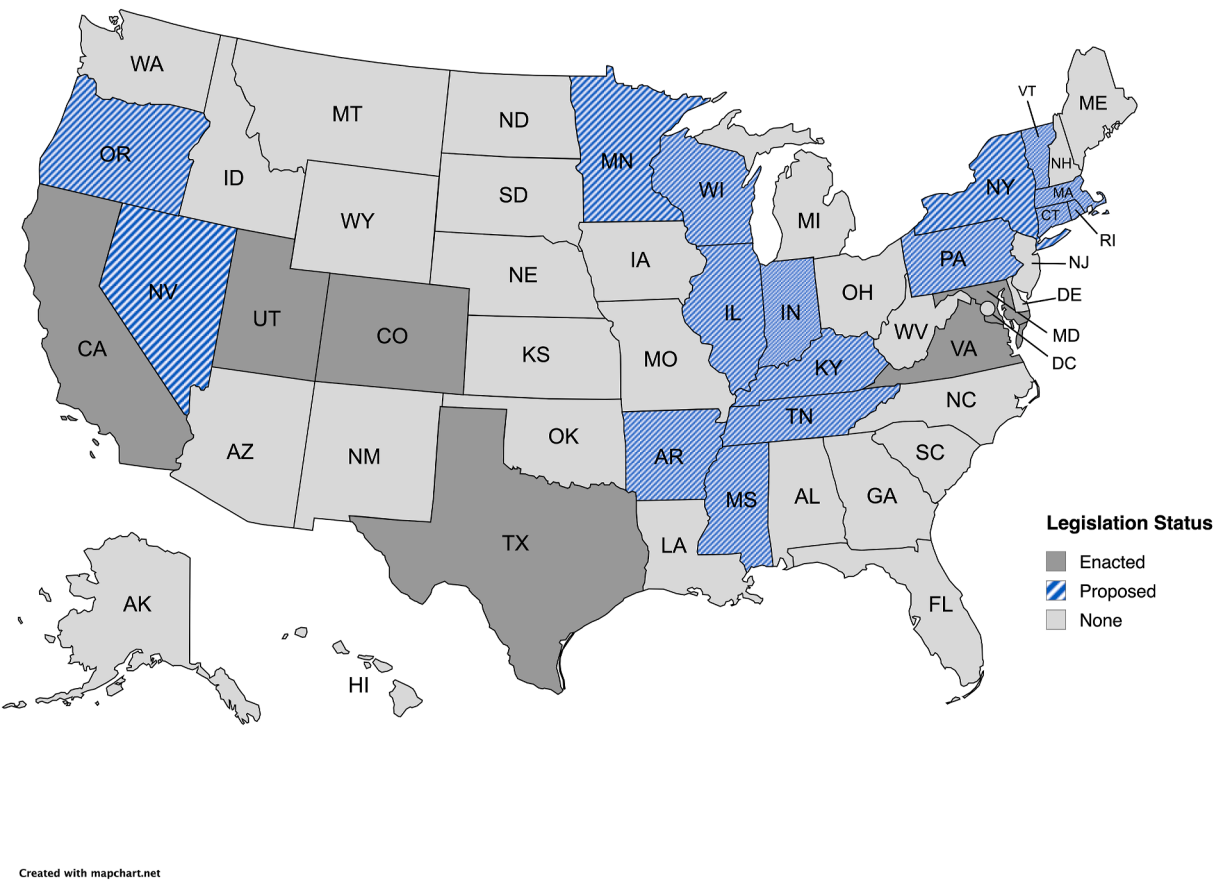


Fig. 1. Status of legislative bills related to artificial intelligence across the United States.

patient communication. Some states, such as Maryland, go further by requiring AI health software to be registered with a state agency (S.B. 987, 2025), while California mandates that any clinical information delivered by AI include a clear disclaimer (A.B. 3030, 2024). Proposed legislation reinforces the need for transparency by compelling health systems and insurers to publish data on how AI influences decisions, including error rates and audit results. Collectively, these laws aim to strengthen transparency, build public trust, and enhance institutional accountability, reflecting growing concern about the hidden nature of algorithmic processes in healthcare delivery.

AI use in insurance or coverage decisions

This theme was identified in 8 states (15.7 %), including 2 states in which bills were enacted (California and Maryland) and 6 where it was proposed (Arkansas, Illinois, Maine, Minnesota, Rhode Island, and South Carolina). These legislative efforts focus on regulating how insurers may use AI in healthcare-related decision-making, particularly for utilization review, claim denials, coverage determinations, and care approvals. Enacted laws in California and Maryland prohibit insurers from allowing AI to serve as the sole basis for medical necessity decisions and require

transparency, review mechanisms, and safeguards against biased or harmful outcomes (S.B. 1120, 2024; H.B. 1240, 2025). Proposed legislation in other states advances similar protections, aiming to establish guardrails that ensure algorithmic tools do not compromise quality, access, or equity in care delivery. These initiatives reflect growing recognition that insurance-related AI decisions can significantly impact nursing roles in discharge planning, care coordination, and patient advocacy, where delays or denials may challenge the nurse's ability to deliver timely and appropriate care.

Designation of AI as a high-risk or regulated system

This theme was identified in 8 states (15.7 %), with enacted legislation in 4 states (Colorado, Texas, Utah, and Virginia) and proposed legislation in another 4 states (Illinois, Massachusetts, New York, and Wisconsin). Enacted laws designate certain AI technologies, particularly those used in healthcare, as “high-risk” systems requiring enhanced regulatory scrutiny. These laws often mandate transparency, testing, or accountability measures to minimize harm in sensitive decision-making contexts. Proposed legislation follows a similar rationale, classifying AI systems as high-risk due to their influence on access, outcomes, or equity. While most state bills stop short of offering explicit criteria, their approaches align with boarder frameworks such as the European Union AI Act, which considers a system to be high-risk when it directly affects health, safety, or fundamental rights (Rolecki & Shah, 2025; Yadav, 2024). Consistent with this understanding, the 2025 AI Index similarly indicates that state-level legislation increasingly identifies healthcare AI as high-risk because of its potential to impact patient safety, access, and fairness (Stanford University Human-Centered Artificial Intelligence, 2025). These bills typically call for increased public oversight and mechanisms to ensure that AI tools do not exacerbate disparities or undermine ethical healthcare delivery.

General AI governance references

This theme was identified in 38 states (74.5 %), including enacted legislation in 2 states (Idaho and Utah) and proposed legislation in 35 states and the District of Columbia. These policies contain general references to AI within digital policy frameworks, innovation strategies, or ethical governance guidelines. While not focused explicitly on healthcare or nursing, they signal widespread state-level recognition of the need for foundational AI governance. These broad policy efforts reflect early-stage regulatory scaffolding that may evolve into sector-specific mandates, including those impacting healthcare and nursing practice.

AI Use in Education and Workforce Training

This theme was identified in 5 states (9.8 %) with proposed legislation (Arkansas, Connecticut, Mississippi, Nevada, and New York). These proposals seek to incorporate AI-related content into educational programs, including those for nursing and allied health professions, and to bolster workforce training in response to AI's anticipated impact on healthcare roles. Legislation in this category includes efforts to revise curricula, develop AI-literate faculty, and prepare healthcare workers to engage with AI systems responsibly. These initiatives reflect an emphasis on ensuring that both current and future professionals are equipped with foundational knowledge to navigate AI-integrated clinical environments.

Discussion

The legislative patterns identified in this mapped review illustrate a rapidly evolving regulatory landscape, one in which AI is reshaping the contours of healthcare delivery, professional accountability, and clinical decision-making. Against this backdrop, nursing regulation must similarly evolve to ensure nurses are prepared, protected, and positioned to lead within AI-integrated care systems. Framed around the core

regulatory functions upheld by the National Council of State Boards of Nursing (NCSBN) related to education, licensure, practice, and discipline, this discussion outlines key considerations for regulatory modernization. NCSBN plays a central role in shaping national licensure examinations and competencies, making it a pivotal stakeholder in aligning workforce preparation with emerging technologies.

State legislative efforts reflect a strong interest in defining ethical and operational guardrails for AI. At the same time, recent federal policy efforts highlight ongoing gaps in AI governance related to healthcare and nursing oversight. The One Big Beautiful Bill Act, which passed by the U.S. House in May 2025, initially proposed a 10-year moratorium on state-level AI legislation (Edinger, 2025). The Senate removed this provision before the bill was enacted, preserving state authority to regulate AI, including areas relevant to nursing oversight. A bipartisan group of senators expressed concern that, without a comprehensive federal regulatory framework, such a moratorium would create a governance gap during the very decade that AI is poised to advance exponentially (O'Connor et al., 2025). The release of America's AI Action Plan in July 2025 similarly acknowledged healthcare's slow adoption of AI and called for national standards, yet those standards remain vaguely defined (The White House, 2025) and may not address the policy domains identified in this review. Additionally, the “AI Whistleblower Protection Act,” recently introduced as a proposed Senate bill, seeks to provide protections for those who report concerns or unethical behavior related to the development and deployment of AI systems (U.S. Senate Committee on the Judiciary, 2025). Together these developments underscore the regulatory uncertainty at both the state and federal levels, thus reinforcing the need for nursing leadership to proactively shape AI governance and ensure that the profession's role in an AI-driven future is both protected and clearly defined.

Education

AI is reshaping healthcare delivery, but nursing education has not yet fully adapted to this shift. As noted previously, although NCSBN does not set curricula, it influences nursing education through licensure examinations and practice standards. Consequently, NCSBN and state boards of nursing are in a prime position to advocate for the integration of AI-related competencies into prelicensure and advanced nursing education. Foundational AI literacy covering algorithmic bias, model limitations, interpretability, and ethical application should be a baseline competency for all graduating nurses (Johnson & Galatzan, 2025; American Nurses Association [ANA], 2022). At the graduate level, this expands to include the ability to appraise, supervise, and collaborate with AI-based decision support systems (Anderson, 2025). This vision aligns with the *Essentials* (American Association of Colleges of Nursing, 2021), particularly Domain 8, which calls for embedding informatics and emerging technologies into the core of nursing education.

AI-powered tools such as chatbots, virtual assistants, and adaptive learning platforms are emerging in nursing education. However, the integration of AI into nursing curricula remains limited and inconsistent (El Arab et al., 2025). Concepts related to the responsible and ethical use of AI such as transparency, bias mitigation, and clinical accountability are largely absent from both undergraduate and graduate nursing programs (El Arab et al., 2025). Consistent with ANA's ethical guidance, nursing education must also cultivate discernment reinforcing that nurses, not algorithms, bear the responsibility for ethically grounded clinical care (ANA, 2022). These educational imperatives align with legislative themes around “AI Use in Education and Workforce Training,” which several states have proposed to ensure that healthcare professionals, including nurses, are equipped to safely and effectively engage with AI technologies. NCSBN's leadership is essential in translating such legislative direction into regulatory action.

Licensure

As AI becomes integral to clinical reasoning and patient interaction, licensure frameworks must evolve to reflect new competencies. State boards of nursing, with guidance from NCSBN, should assess whether jurisprudence examinations and continuing licensure requirements adequately address ethical AI use, model oversight, and decision-making in augmented environments. Organizations like the Coalition for Health AI (CHAI) offer regulatory scaffolding (Shah et al., 2024). Their draft frameworks promote transparency, safety, fairness, and explainability in health AI systems, values that resonate with nursing's foundational principles. CHAI's development of independent quality assurance laboratories, nutrition label-style model disclosures, and model report cards could help guide licensure updates, especially around defining minimal competence in AI-supported environments (Shah et al., 2024).

As AI applications diversify, licensure standards should include the ability to evaluate system limitations and document AI interactions in clinical records. Nurses must be prepared to report adverse events related to AI failure, especially when autonomous recommendations conflict with clinical reasoning. For nurses, the classification of AI as high-risk often translates into heightened regulatory expectations, such as documenting AI-assisted decisions, meeting audit requirements, and reporting adverse events when AI outputs conflict with nursing judgment (Yadav, 2024). These obligations mirror international criteria that view healthcare AI as high-risk due to its direct impact on patient care, safety, and equity (Rolecki & Shah, 2025). The recommendation of updating licensure standards to include evaluation of AI system limitations, documentation of AI interactions, and reporting of adverse events reflects the themes observed in this analysis, such as “AI Registration, Disclosure, or Transparency Requirements” and “Designation of AI as High-Risk Systems.” Licensure mechanisms must adapt to these classifications, ensuring that all licensed nurses are prepared to function within increasingly AI-reliant systems while maintaining professional accountability.

Practice

The practice of nursing is undergoing a profound transformation in AI-integrated clinical environments. Nurses are no longer merely users of technology; they are ethical stewards, patient advocates, and system translators who must bridge algorithmic output and human-centered care (ANA, 2022; Johnson & Galatzan, 2025). As AI takes on more active roles in clinical triage, diagnostics, and risk assessments, the nurse's responsibility becomes more complex, not diminished. El Arab et al. (2025) stressed the importance of embedding critical thinking about AI's ethical, social, and clinical consequences into practice, especially to prevent dehumanization and depersonalization of care.

CHAI reinforces this model by emphasizing participatory governance, equity, and the importance of clinician involvement in AI tool oversight. Guidance generated from CHAI supports the nurse's evolving role to document their observations pertaining to AI's influence on patient care, question opaque or biased algorithms, and collaborate with interdisciplinary teams to ensure that patient safety and autonomy are upheld. These expectations are codified in enacted and proposed laws under the “AI in Clinical Decision-Making” and “Nursing Scope of Practice or Autonomy Protections” themes. These policies reinforce the nurse's centrality in ensuring that AI serves as a support, not as a substitute, for professional judgment. As states regulate AI's use in insurance or coverage decisions, nurses must understand how such determinations affect discharge planning, patient advocacy, and access to services, expanding the scope of AI's influence on everyday practice.

Discipline

The increasing presence of AI in clinical care presents a challenge to traditional disciplinary frameworks. In many states, nurse practice acts

(NPAs) do not currently account for shared decision-making with nonhuman agents. Without updated definitions, boards may struggle to investigate or adjudicate cases involving overreliance on AI, insufficient scrutiny of algorithmic errors, or harm caused by AI-driven decisions (El Arab et al., 2025). Incorporating AI accountability into nurse practice acts is critical to embed heightened vigilance to non-human involvement in patient care and to enforce continuing education and training in AI tool and system appraisal. Disciplinary reviews must distinguish between errors arising from clinician misjudgment and those stemming from AI system failures while reinforcing that ethical and legal accountability remains with the human practitioner, not the algorithm (ANA, 2022; Anderson, 2025). CHAI's model documentation checklists and proposed model auditing tools can serve as practical instruments in disciplinary contexts. If adopted, these tools can guide investigations by providing traceable evidence of model performance, documentation quality, and clinician interaction with AI tools. Boards should also establish principles for “co-produced” decisions—that is, clinical choices that emerge jointly from algorithmic recommendations and human professional judgement (human-in-the-loop). This regulatory need mirrors the “AI Transparency and Disclosure and High-Risk Designation” themes found in state-level legislation.

In disciplinary contexts, the high-risk designation amplifies liability considerations: a nurse may be held to stricter standards of oversight when using AI tools already classified as high-risk, but when they are seamlessly embedded, AI tools may not always be obvious to the practicing nurse (Rolecki & Shah, 2025). Boards may expect clearer evidence of how practitioners documented AI involvement in care, demonstrated clinical judgement in response to AI outputs, and challenged flawed recommendations when appropriate (Tilala et al., 2024). Boards of nursing must be able to use structured frameworks for accountability and investigate complex interactions between clinical judgment and AI recommendations. These aspects are particularly important when evaluating whether a nurse appropriately challenged flawed AI output or relied on systems without sufficient oversight.

Limitations

This policy review is subject to several limitations. First, the analysis represents a snapshot in time, reflecting enacted and proposed legislation as of March 31, 2025. Given the dynamic nature of legislative cycles and varying state workflows, it is possible that some bills passed, failed, or were revised after the data collection period. State legislative calendars differ significantly, and not all jurisdictions were in session during the same time frame, potentially affecting which bills were actively under consideration. Second, the scope and accuracy of the reviews were influenced by the specificity of the search terms and the search platforms used. Although efforts were made to apply consistent and comprehensive search strategies, there is a possibility that some relevant legislation may have been missed or misclassified due to variations in terminology or indexing. For example, legislation that used colloquial terms such as machine learning or predictive analytics instead of AI may not have been consistently captured. Finally, the review relied on publicly available legislative databases and reporting platforms, which may contain lags, inconsistencies, or errors in documentation. Accessibility and transparency also vary significantly across state legislatures, further influencing the completeness of publicly available records. These limitations underscore the need for continuous monitoring and future research as the policy landscape evolves in response to advances in AI and healthcare delivery.

Looking forward: securing nursing's seat at the AI table

This analysis reveals distinct patterns in policy priorities across states, often shaped by cultural and ideological commonalities. Yet, many states remain silent on the intersection of nursing, healthcare, and

AI, raising critical questions about whether policy inertia will give way to reactive legislation prompted by other states' precedents. In this vacuum, industry-led self-regulation dominates, leaving nurses without the necessary guidance to safely and effectively navigate the integration of AI tools into clinical practice.

The trend of pending rather than enacted nursing-related AI legislation reflects both professional and structural factors. Nursing organizations are underrepresented in AI policy development despite the profession's size and central influence in the conduct and design of healthcare delivery (Ronquillo et al., 2021). Although the ANA seeks to influence AI regulation, its impact is constrained by the fragmented nature of nursing advocacy, which is spread across clinical, educational, and professional pillars in contrast to the unified lobbying power of the AMA. Nursing voices remain as a minority in multistakeholder AI policy forums, where technology developers, health systems, attorneys, and physician organizations are largely dominant. AI policy discussions are shaped by technology companies and institutional stakeholders given the self-regulation of the industry, while nursing remains underrepresented, limiting the advancement of nursing focused provisions (Wei et al., 2025).

Notably, it has been nurses, through strikes, advocacy, and direct engagement with legislators, who have elevated these concerns and catalyzed public attention (Azar, 2021; Berry, 2023; Pinkerton, 2025). Still, significant questions remain regarding how the nursing profession will shape, rather than merely respond to, the development of AI policy at the interface of human expertise and algorithmic decision-making. Future inquiry will examine the responsiveness of state boards of nursing and national professional organizations to AI-related legislation. A key distinction to explore is between dynamic engagement, defined as efforts that extend beyond traditional constituencies, and static responses limited to internal membership or discipline-specific frameworks.

Conclusion

The nursing profession stands at a pivotal crossroads. Our broad scope, diverse entry points, and expanding roles have been leveraged by innovators but often without our leadership or a nursing-derived ethical framework at the table. Without the guiding influence of our professional values, the promise of AI may fall short or, worse, displace the essential human elements of care. The call to action is clear: Nurses must actively engage in shaping AI policy. Not as adversaries or uncritical adopters, but as informed collaborators and advocates. "With loyalty, will I endeavor ..." is our enduring oath (Nightingale pledge, n. d.), and this promise resonates today more than ever. Let us bring our voice, our values, and our vision to the forefront of this Fourth Industrial Revolution, ensuring that AI enhances rather than erodes the human touch at the heart of nursing practice.

CRedit authorship contribution statement

Galatzan and Johnson contributed to the design and concept of the paper. All authors contributed to the data collection. Galatzan, Johnson, and Baker completed the data analysis (Galatzan and Johnson lead). Galatzan and Johnson were the lead writers. The co-authors provided edits, proofing, and revisions. Galatzan and Johnson were leads in the revisions.

IRB statement

This manuscript does not report findings from human subjects research and therefore did not require Institutional Review Board (IRB) approval. The paper is a policy review and analysis of existing artificial intelligence legislation relevant to nursing practice.

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