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The Nurse-Driven Informatics Change Theory

—A Clinical-Digital Model for Evidence-Informed Nursing Practice

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Abstract

Background: Nurses continuously apply evidence, professional standards, clinical assessment, and patient preferences into practice in an increasingly digital environment. However, having access to evidence, education, or electronic health record (EHR) functions does not automatically lead to the reliable integration of evidence-informed nursing practice. Achieving sustainable practice change requires a consideration of both clinical judgement and the digital workflow of nursing decisions. This is an increasing area of focus within implementation science, normalization theory, and sociotechnical research. Purpose: This paper introduces the Nurse-Driven Informatics Change Theory (NDICT). This is a pre-empirical theory that describes the process by which nurses can transition from recognizing the need for practice change to achieving sustained evidence-informed nursing action. It describes a recursive pathway from practice need recognition, through nursing readiness and workflow visibility, to structured action, meaningful clinical response, and reinforcement to Normalized Evidence-Informed Nursing Practice. Structured action represents defined workflow expectation. Execution represents performing the expected action. Theoretical Model: The theory proposes a recursive pathway: Practice-Need Recognition → Nursing Readiness × Workflow Visibility → Structured Action → Meaningful Clinical Response → Reinforcement → Normalized Evidence-Informed Nursing Practice. The readiness is supported by education. The action to be taken is made visible at the right time through a digital workflow. The expected actions are supported by defined workflow expectations and can still be executed with professional judgement. The execution allows for meaningful clinical reasoning and response. The learning, adaptation, and sustainability are supported by reinforcement. Conclusion: NDICT frames the informatics configuration as a component of the nurse-driven clinical change, rather than a documentation intervention. It is suggested that sustainable nursing practice occurs when there are digital structures to support professional judgement and clinical preparation through visible, timely, meaning-

ful and repeatable evidence-informed action while continuing to provide person-centered care.

Keywords

Nurse-Driven Informatics Change Theory, Nursing Practice, Nursing Informatics, Electronic Health Records, Workflow Visibility, Nursing Readiness, Evidence-Informed Practice, Quality Improvement, Patient Safety

1. Introduction

1.1. Problem Description

In contemporary nursing practice, there is a need for clinicians to integrate assessment, evidence, professional standards, patient goals, interdisciplinary information, and organizational processes while juggling multiple competing demands at the point of care. These activities are increasingly mediated by electronic documentation and clinical information systems. The use of digital systems for nursing practice offers many opportunities to improve access to information and to standardize care. However, simply having an electronic field, screening tool, care pathway, reminder or order set does not mean that it is being used in practice in a meaningful way.

This problem affects many areas of practice in nursing including falls prevention, pressure-injury prevention, discharge planning, chronic disease management, mental health assessment, health teaching, advance care planning and many other evidence-informed nursing activities. In some cases, the activity is clinically important but not consistently performed. This may be due to the nurse relying on memory, poor timing of activities within the workflow, excessive documentation or inability to link assessment findings to appropriate action.

1.2. Theoretical Gap

There are existing change theories that describe readiness, transition, implementation, and stabilization [1] [2]. Lewin's work describes change in terms of forces that maintain or alter the existing equilibrium [3]. Change theory has been applied to electronic clinical documentation within nursing informatics [4]. Implementation research in healthcare is broad and recognizes that implementing human, social, contextual, organizational and technological factors [3]-[8].

There is a theoretical gap. How can we understand the interaction between clinical judgment of nurses and their digital workflow to enable routine practice of evidence-informed nursing care? Education may increase knowledge, but it does not necessarily lead to action. An electronic requirement may lead to increased completion of tasks but does not necessarily lead to increased interpretation, communication and care. We need a nurse-driven informatics theory that describes

the integration of clinical meaning, workflow design, professional judgment, action and learning.

1.3. Purpose and Specific Aim

The purpose of this paper is to introduce the NDICT as a general theory of nurse-driven, digitally supported practice change. The specific aim is to describe the process of how an evidence-informed nursing action can transition from the recognition of a practice need to normalized clinical practice, when there is deliberate coupling of clinician preparation and digital workflow design. The propositions are presented for scholarly critique and future empirical testing.

2. Theoretical Foundations and Distinct Contribution

NDICT represents a synthesis and extension of readiness, workflow design, professional judgment and reinforcement. Lewin's description of movement and stabilization in terms of change and reinforcement can be applied to existing practice as well as to new practices introduced by means of electronic documentation in the context of digitally supported transformation of practice. This is exemplified in the context of nursing informatics applications [4]. The healthcare implementation literature further highlights the importance of context and the interaction of people, processes, technologies, and organizational systems in influencing practice adoption and sustainability [7]-[15].

The NDICT overlaps with Normalization Process Theory (NPT) and sociotechnical approaches to health information technology [5] [16]. NPT describes the processes of coherence, cognitive participation, collective action, and reflexive monitoring, through which new technologies, practices and ways of working are routinely embedded in everyday clinical care [5]. Another example of a sociotechnical model is that developed by Sittig and Singh [6] to describe the many dimensions of health information technology: hardware and software, clinical context, human-computer interfaces, people, processes for workflow and communication, organizational characteristics, external policies and regulations, and system measurement and monitoring.

The NDICT is relevant to broader implementation and sustainability frameworks such as the Normalization Process Theory (NPT), the Nonadoption, Abandonment, Scale-up, Spread and Sustainability (NASSS) Framework, the Consolidated Framework for Implementation Research (CFIR 2.0), the Systems Engineering Initiative for Patient Safety (SEIPS), and the Dynamic Sustainability Framework [5] [9]-[13] [16]. These frameworks highlight the importance of context, adaptability, workflow integration, user engagement and sustainability in healthcare implementation. The NDICT extends these models by identifying a specific nursing-focused explanatory pathway linking readiness, workflow visibility, clinical action, response and reinforcement.

The NDICT does not replace existing implementation frameworks; it complements them. These frameworks emphasize context, adaptation, sustainability,

complexity, and interactions between human and technological systems [7]-[15]. NPT is primarily focused on the social work involved in implementing and sustaining practice change. Models of sociotechnical systems consider interactions between the human, the organization, and the technology. The NDICT narrows down these perspectives to propose a clinical-digital pathway for nursing. It is proposed that the readiness and workflow visibility collectively support the execution of defined workflow expectations. The execution needs to result in meaningful clinical response to have clinical value. The repeated meaningful response, with reinforcement, contributes to normalization.

The distinctive contribution of the NDICT is therefore the proposed coupling of nursing clinical judgement and digital workflow architecture. Nursing readiness provides the evidence-informed action with clinical meaning. Workflow visibility provides a timely opportunity for that meaning to be translated into action. The structured action helps to reduce avoidable reliance on memory and individual variation. The meaningful clinical response helps to maintain the purpose of assessment and documentation by connecting the information to patient care. Subsequently, reinforcement allows the experience to be fed back to both the clinicians and the system design, enabling continued refinement and sustainability.

In the NDICT, normalization is not necessarily about rigid standardization. It is proposed that practice is normalized when there is consistent workflow support for clinically meaningful action, while maintaining the professional judgement required to individualize the care. If the electronic completion is done without the interpretation, decision-making, or appropriate clinical response, then it is incomplete integration, rather than successful implementation.

2.1. Integration-Specific Predictions

The integration-specific predictions of the theory are formally described in the Propositions P9-P12 (Section 5). These propositions are the primary location of the predictive claims of the NDICT. They describe the proposed relationships between nursing readiness, workflow visibility, structured action, meaningful clinical response, reinforcement, and Normalized Evidence-Informed Nursing Practice.

2.2. Theory Development Process

The NDICT was developed through a process of reflection. This reflection was informed by practice experience in nursing practice quality improvement, clinical leadership, and digital workflow redesign. The practice experience was the source for identifying recurring challenges at the intersection of evidence-informed nursing care and digitally mediated workflow, rather than purely empirical evidence for the proposed theory. The initial observations were reflected on in general, rather than focusing on the specific clinical interventions, to the broader theoretical question of how evidence-informed nursing actions can be made visible, meaningful, repeatable, and sustainable in routine practice.

The literature was selected to explore relevant concepts to this topic. This included implementation, normalization, practice change, nursing informatics, sociotechnical interaction, clinical workflow, professional judgement, reinforcement, and sustainability. Concepts were developed and compared based on relevant implementation, normalization, sustainability, complexity science, and sociotechnical frameworks. These frameworks were identified: NPT, NASSS, CFIR 2.0, SEIPS, and other related implementation theories [7]-[13] [16]. The literature review was not an exhaustive systematic review of implementation theories. Rather, it supported the concept development and theoretical refinement. Concepts were kept based on authors' direct clinical experience and evidence base that linked them logically to the theory pathway.

Literature on implementation, sustainability, sociotechnical, and human factors were also reviewed for the actual application to improving outcomes towards evidence-based practice. This included NPT, NASSS, CFIR 2.0, SEIPS, and Dynamic Sustainability perspectives. These frameworks were used to compare with NDICT to see if the theories had a distinct explanatory function in NDICT.

Relationships between the constructs (concept definitions and key elements in NDICT) were developed through step-by-step comparative refinement of the theoretical perspectives and practice-based observations. This involved reflecting on what conditions are required for the evidence-informed knowledge to be an observable workflow activity, what is required for the activity to generate an appropriate clinical response, and what is required for the repeated responses to be sustained clinical practice. This was done with a particular focus on identifying potential mechanisms for transitioning from awareness and readiness to routine integration in everyday nursing work.

The development of initial concepts of practice-need recognition, nursing readiness, workflow visibility, structured action, meaningful clinical response, reinforcement, and Normalized Evidence-Informed Nursing Practice was informed by direct practice and a literature review. These concepts were then compared with existing theories in order to explore concept overlap, convergence and the unique contribution of NDICT [7] [10]. The resulting theory propositions represent relationships that are proposed for empirical testing, rather than established as valid. Thus, NDICT is a pre-empirical theory that requires further refinement and testing in different healthcare environments, with different nursing roles and with different evidence-informed practice interventions.

3. The Nurse-Driven Informatics Change Theory

3.1. Central Theoretical Claim

Nurses are most likely to sustain evidence-informed nursing practice when they understand the reason for the action, see the desired action at a clinically relevant point in their workflow, have the opportunity to use professional judgment, use information to enact a meaningful clinical response, and receive reinforcement that supports learning and system improvement. The proposed pathway is:

Practice-need recognition → Nursing Readiness × Workflow visibility → Structured action → Meaningful clinical response → Reinforcement → Normalized Evidence-Informed Nursing Practice

The multiplication symbol (×) indicates a proposed interaction of nursing readiness and workflow visibility (rather than the additive relationship of these predictors). Specifically, each is proposed to have a stronger positive relationship with execution of the defined Structured Action workflow expectation when the other is greater. This is a recursive pathway (not strictly linear). Reinforcement and Normalized Evidence-Informed Nursing Practice can reveal new needs, workflow barriers, inequities, unintended consequences or opportunities for redesign. Context is a variable across the entire pathway. This is consistent with contemporary implementation frameworks that consider context to interact dynamically with mechanisms of change (not as an independent variable) [8]-[10] [13]. **Figure 1** displays the coupled clinical-digital pathway, the recursive learning and the cross-cutting nature of context.

In NDICT, meaningful clinical response is primarily conceptualized as a mediator (rather than a moderator) of the relationship between execution of the defined Structured Action workflow expectation and normalization. The expectation creates a reliable opportunity for evidence-informed practice. Execution of the expectation can lead to clinically meaningful reasoning and response. It is proposed that normalization is partially driven by this response (and not just by electronic task completion). Factors of context can strengthen or weaken the translation of execution to meaningful response [8] [10] [13].

3.2. Visual Model of NDICT

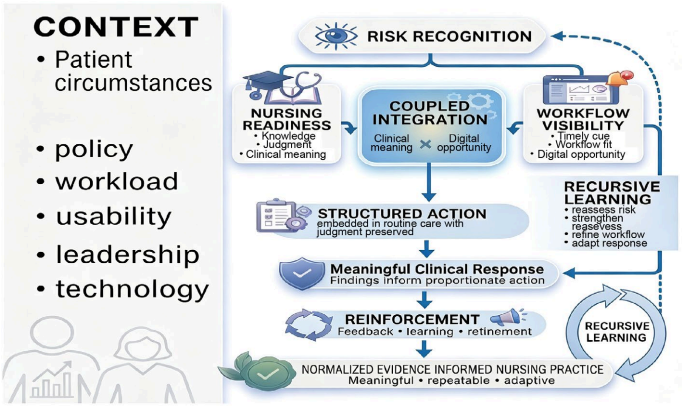

Figure 1. Nurse-Driven Informatics Change Theory: coupled clinical-digital integration for Normalized Evidence-Informed Nursing Practice.

Figure Interpretation: Practice-need recognition is the initiating step. Nursing readiness and workflow visibility are then in parallel (rather than sequential) operation. Their convergence is coupled integration, the unique mechanism of the theory. Clinical meaning is coupled with a timely digital opportunity for action. Coupled integration supports structured action (the defined workflow expecta-

tion). Execution of the expectation links assessment/documentation/other evidence-informed nursing activities to meaningful clinical response. Reinforcement feeds clinical experience and learning about the workflow forward into Normalized Evidence-Informed Nursing Practice and back into subsequent practice-need identification, clinician preparation, workflow design, and clinical response. Context is present across the entire model, rather than as a separate stage.

Note: The multiplication symbol (×) represents the theory's prediction that the relationship between nursing readiness and execution of the defined workflow expectation will be stronger as workflow visibility increases, and vice versa. It does not represent an established mathematical equation. Solid arrows indicate proposed theoretical relationships. The curved return pathway indicates recursive learning. Context is conceptualized as a cross-cutting moderator. This is a pre-empirical model, not one that implies established causation.

3.3. Core Constructs and Illustrative Observable Indicators

In order to facilitate conceptual clarity and future empirical testing, the core constructs are defined below with illustrative observable indicators. These are intended to be illustrative (not prescriptive) indicators that should be refined for the specific clinical context, intervention and workflow of interest. Table 1 summarizes the core constructs with definitions, illustrative measures and indicators, and alignment with the theoretical propositions.

Table 1. NDICT constructs, illustrative measures, and alignment with propositions.

Construct	Definition	Illustrative Measure/Indicator	Primary Proposition Alignment
Practice-Need Recognition	Identification of a gap, risk, patient need, quality concern, or evidence practice discrepancy requiring deliberate nursing attention.	Number or proportion of identified clinical gaps, risks, quality concerns, or evidence-practice discrepancies triggering consideration of intervention.	**P1, P12**
Nursing Readiness	Preparedness to understand the purpose of an intervention, recognize relevant clinical information, interpret findings, communicate appropriately, and select a response.	Competency assessment scores, knowledge-test results, simulation performance, confidence measures, training completion rates, audit findings, or observed practice behaviors.	**P2, P4, P9, P12**
Workflow Visibility	Extent to which the clinical information system presents an evidence-informed action at a meaningful point in care.	Percentage of eligible encounters in which prompts, reminders, decision-support tools, or documentation elements are presented and acknowledged at the intended point of care; workflow usability measures.	**P3, P4, P9, P12**
Structured Action	Defined workflow expectation that supports reliable performance while preserving professional judgment regarding when, how, and why an action applies.	Proportion of clinically eligible encounters in which the defined evidence informed workflow action is completed at the intended point in care, measuring execution of the workflow expectation. Examples include completion of assessments, documentation activities, screening tools, risk assessments, care pathways, or other evidence-informed workflow steps.	**P4, P10, P12**

Continued

Meaningful Clinical Response	Appropriate nursing reasoning and action following assessment or documentation, including intervention, communication, escalation, education, reassessment, referral, monitoring, or care-plan modification.	Percentage of clinically significant findings followed by documented and appropriate intervention, communication, escalation, reassessment, education, referral, monitoring, or care plan modification.	**P5, P7, P10, P12**
Reinforcement	Feedback and system processes that support maintenance, learning, adaptation, and improvement of practice.	Audit frequency, feedback cycles, leadership review activities, peer learning sessions, outcome reviews, workflow modifications, governance actions, or quality-improvement initiatives.	**P6, P7, P11, P12**
Normalized Evidence-Informed Nursing Practice	Sustained integration of evidence-informed actions into routine nursing care because they remain clinically meaningful and operationally supported.	Stable adherence rates across clinicians, units, and measurement periods; sustained workflow use under routine conditions; incorporation into standard nursing care processes.	**P7, P8, P10, P12**

Practice-Need Recognition: Identification of a gap, risk, evidence-practice discrepancy, patient need, quality concern or opportunity for improvement that requires deliberate nursing attention. This is the initiating condition that prompts consideration of evidence-informed action.

Nursing Readiness: Nurse's preparedness to understand the purpose of the action, recognize relevant clinical information, interpret findings, communicate appropriately, and select a response. While education supports readiness, it is not assumed to be sufficient for sustained change. Illustrative observable indicator: Proportion of nurses who demonstrate accurate understanding of the purpose and appropriate response requirements of the intervention, as assessed by competency assessment, simulation, knowledge evaluation, audit, or observed practice.

Workflow Visibility: Extent to which the clinical information system presents the evidence-informed action at a meaningful point in care. Visibility is important to prevent an important practice from being technically available, but functionally peripheral to the clinical work. Illustrative observable indicator: Proportion of clinically eligible encounters in which the workflow prompt, reminder, or documentation element is presented at the appropriate point in care and acknowledged by the nurse.

Structured Action: A defined workflow expectation that supports reliable performance but allows professional judgment about when, how, and why an action applies. Structure should be clinically justified and minimally burdensome. The expectation and the execution of the expectation are different. The expectation specifies the intended activity. The execution is whether the activity is performed. Illustrative execution indicator: Proportion of clinically eligible encounters in which the expected evidence-informed workflow action is completed at the intended point in care. For example, documented completion of fall risk assessment after a digital prompt within the designated timeframe is execution of the expectation.

Meaningful Clinical Response: Nursing reasoning and action after assessment or documentation. This could be intervention, communication, escalation, edu-

cation, care-plan modification, reassessment, referral, monitoring, or shared decision-making, depending on the practice context. Illustrative observable indicator: Proportion of clinically significant findings followed by documented and appropriate nursing response. For example, identification of elevated fall risk can be followed by implementation of individualized fall prevention interventions, patient education, environmental modifications, or increased monitoring.

Reinforcement: Feedback, reflection, leadership support, peer learning, audit processes, usability review, outcome review, and governance activities that strengthen, sustain, or appropriately modify practice over time. Illustrative observable indicator: Frequency of feedback cycles, audit reviews, performance reporting, workflow refinements, or leadership-supported learning activities related to the intervention.

Normalized Evidence-Informed Nursing Practice: Sustained integration of the evidence-informed action into routine nursing care because it is clinically meaningful and operationally supported (not just an electronic task that is completed). Illustrative observable indicator: Sustained and consistent use of the evidence-informed practice across clinicians, units and measurement periods in routine clinical conditions (not just during initial implementation or during periods of active prompting). For example, stable adherence rates and routine incorporation into standard nursing care processes.

4. Theoretical Mechanisms

4.1. Mechanism 1: Education Creates Readiness (Not Permanence)

Education can create knowledge, common language, confidence, and understanding of evidence. However, implementation scholarship consistently demonstrates that knowledge acquisition alone is not sufficient to ensure sustained practice change [7].

NDICT differentiates readiness and normalization. Even with knowledge, it is still necessary to translate knowledge into action (amid workload, interruptions, patient complexity, competing priorities).

4.2. Mechanism 2: Informatics Converts Intention into Workflow Opportunity

Digital design can make an expected nursing action visible at the point where it is clinically relevant. The EHR is cognitive and workflow support (not a substitute for nursing judgment). This is consistent with sociotechnical and human factors approaches that consider technology as one component of the broader clinical work system [6] [11] [12] [15].

4.3. Mechanism 3: Structure Reduces Unwarranted Variation

When important care processes rely entirely on recall, there can be uneven opportunities for clinicians to perform them. Appropriate structure can improve re-

liability. Similar concepts are reflected in SEIPS and related human factors frameworks that emphasize design of work systems to support safe, efficient, and reliable performance while preserving clinician expertise and judgment [11] [12]. NDICT distinguishes purposeful structure from indiscriminate mandatory documentation. Requirements should be evidence-informed, context-sensitive, usable, and proportionate to clinical benefit.

4.4. Mechanism 4: Clinical Response Prevents Documentation from Becoming the Endpoint

Documentation is not the desired clinical outcome. Assessment and documented information should inform reasoning and care. Linking findings to an appropriate response prevents superficial completion; supports person-centred nursing practice.

4.5. Mechanism 5: Reinforcement Makes Change Adaptive

Healthcare environments change. New evidence, technology, patient populations, staffing, and policies can change what is useful practice. Feedback must support adaptation. This includes identifying burden, workarounds, inequities, alert fatigue, unintended consequences, and opportunities for improvement. Sustainable implementation requires adaptation, not static maintenance. This is especially true as clinical, organizational, and technological conditions change over time [8] [13] [14].

5. Propositions

P1. Practice-Need Recognition

Practice-need recognition will trigger the consideration of evidence-informed nursing action. This occurs by identifying a gap, risk, patient need, quality concern, or discrepancy between evidence and practice that requires deliberate consideration.

P2. Nursing Readiness

Nursing readiness will be enhanced through education and professional development. However, readiness alone may not result in sustained workflow integration or practice change.

P3. Workflow Visibility

Evidence-informed nursing actions that are available at clinically relevant points in digital workflow are more likely to be integrated into routine care than actions that are technically available but peripheral to the workflow.

P4. Structured Action

Nursing readiness and workflow visibility will increase the likelihood that nurses will execute the defined Structured Action workflow expectation as part of routine clinical workflows. This will be done while retaining professional judgement regarding when, how, and why the action applies; and how findings are interpreted and addressed. Structured Action is the workflow expectation. Execu-

tion is demonstrated by completion of the expected evidence-informed activities.

P5. Meaningful Clinical Response

Execution of the defined Structured Action workflow expectation will be more clinically meaningful when the resulting assessment, documentation, or workflow completion leads to a meaningful clinical response through nursing reasoning, communication, intervention, escalation, education, reassessment, referral, monitoring, or care plan modification.

P6. Reinforcement

Feedback, reflection, leadership support, outcome review, and workflow evaluation will enhance maintenance and adaptation of evidence-informed practice. It is proposed that these reinforcement processes will be more effective when clinicians perceive a meaningful relationship between assessment, reasoning, action, and patient or system outcomes.

P7. Normalized Evidence-Informed Nursing Practice

Repeated meaningful clinical responses that are supported by reinforcement will increase the likelihood of Normalized Evidence-Informed Nursing Practice being integrated into routine care delivery.

P8. Sustainability and Adaptation

Normalized Evidence-Informed Nursing Practice will be adaptive and sustainable when governance processes allow for refinement in response to emerging evidence, patient context, clinician experience, workflow data, and changes in the care environment.

P9. Readiness-Visibility Interaction

Nursing readiness and workflow visibility will interact in predicting execution of the defined Structured Action workflow expectation. The positive relationship between nursing readiness and execution will be stronger when workflow visibility is greater. The positive relationship between workflow visibility and execution will be stronger when nursing readiness is greater.

P10. Mediated Normalization Pathway

Meaningful clinical response will partially mediate the relationship between execution of the defined Structured Action workflow expectation and Normalized Evidence-Informed Nursing Practice. It is proposed that execution will contribute to normalization through the clinically appropriate nursing reasoning and response it generates. This is as opposed to workflow completion alone.

P11. Reinforcement as a System-Level Influence

Reinforcement that informs both clinician learning and workflow redesign will predict greater adaptive normalization than reinforcement that is focused on individual compliance alone.

P12. Distinctive Contribution of NDICT

The integrated pathway of practice-need recognition, nursing readiness, workflow visibility, defined Structured Action workflow expectation and execution, meaningful clinical response, reinforcement, and Normalized Evidence-Informed Nursing Practice will more effectively explain sustained nurse-driven informatics

change than education, electronic availability, structured documentation, or workflow completion on their own. The integration-specific contribution will also be tested against a model with the same component predictors but without the proposed interaction, mediation, and reciprocal feedback relationships.

6. Application to Nursing Practice

NDICT can be applied to various nursing practices, not just a single clinical problem. For example, the pathway and the potential for interruptions in the pathway can be illustrated with falls prevention. Practice-need recognition may come from evidence, patient assessment, or quality data. Nursing readiness enables accurate risk interpretation. Workflow visibility ensures assessment and reassessment occur at appropriate points in care. The defined workflow expectation provides consistency. Execution of the defined workflow expectation generates findings that require an individualized prevention response. Reinforcement uses outcomes and clinician feedback to refine practice. However, even with strong readiness and visibility, the required assistance, individualized prevention measures, reassessment, or timely response may be limited due to inadequate staffing or competing urgent care demands. In this case, the transition from execution to meaningful clinical response is weakened by context, not just by an individual clinician's deficit. Implementation frameworks recognize the relevance of staffing, workload, organizational capacity, and contextual conditions to implementation success and sustainability [7] [8] [13]. Therefore, completion of electronic tasks should not be interpreted as evidence of clinically meaningful or Normalized Evidence-Informed Nursing Practice.

The same logic can be applied to pressure-injury prevention, medication reconciliation, pain reassessment, recognition of sepsis or deterioration, infection prevention, discharge readiness, chronic-disease education, mental-health screening, advance care planning, and other nurse-sensitive processes. While the specific assessment, timing, response, and outcome will vary depending on the practice area, the theoretical relationship between readiness, visibility, structure, response, and reinforcement can be tested.

This model is especially relevant when there is a persistent gap between evidence and practice despite education, or when an EHR function is available but underused. NDICT suggests first asking whether nurses understand the clinical purpose, whether the action occurs at an appropriate time, whether the workflow is overly burdensome, and whether the completion leads to an observable care response. Digital configuration is only justified if it supports meaningful care and maintains individualized judgement.

7. Implications for Nursing Leadership, Education, and Informatics

NDICT positions nurses as active participants in the design, implementation, evaluation, and refinement of digital clinical systems. This is consistent with soci-

otechnical and human-factors approaches that emphasize the importance of clinician involvement in technology design and workflow optimization [9] [11] [12] [15].

Frontline nurses provide essential knowledge about patient needs, timing of workflow, burden of documentation, communication, and the practical effects of digital design. This knowledge can be utilized by nurse leaders, educators, quality specialists, and informatics professionals to align technical configuration with clinical purpose.

In NDICT, "nurse-driven" does not mean that nurses have unilateral authority over all technical configuration, procurement, organizational policy, or vendor-controlled functions. Rather, it refers to the meaningful authority that nurses have over the clinical purpose, requirements, interpretation, and evaluation of the nursing workflow. Nurses identify the clinical need; define what information and actions are meaningful at the point of care; participate in the design and testing of workflows; and have a defined role in governance to recommend, approve, reject, or request revision of configurations that affect nursing practice within the authority granted by the organization. This is based on the principle that clinical users have essential knowledge about workflow, usability, patient care requirements, and safety implications [11] [12] [15].

Technical implementation may involve informatics teams, organizational leadership, privacy or safety governance, or external vendors. Therefore, an intervention is still nurse-driven if nursing judgement substantively determines the clinical requirements, and nurses retain a formal role in evaluating and revising whether the resulting workflow supports safe, evidence-informed, person-centered nursing care.

For nursing education, the model suggests that informatics competence should go beyond learning how to document. Nurses need to be prepared to understand the influence of digital tools on clinical reasoning, visibility of information, communication, safety, and care processes. Reflective practice can assist clinicians in distinguishing meaningful digital support from task-focused compliance.

For leadership and governance, completion rates should not be the sole measure of implementation success. Evaluation should include clinical interpretation, person-centered response, workflow burden, equity, safety, workarounds, usability, and outcomes. The focus should remain on person-centered and culturally safe care. Structured workflows should not replace patient preferences, contextual assessment, therapeutic relationships, or professional accountability.

8. Research Agenda

As NDICT is pre-empirical, the first step is to research the conceptual distinctiveness, understandability, and relevance of the constructs across nursing settings. Qualitative studies can explore how nurses experience practice-need recognition, nursing readiness, workflow visibility, structured action, meaningful clinical response, reinforcement, and Normalized Evidence-Informed Nursing Practice in

acute care, community care, long-term care, primary care, mental health, rural and remote care, and other settings.

Empirical testing should differentiate the workflow expectation, execution, clinical response, reinforcement, and normalization with separate measures. The existence and clarity of an expectation should not be inferred solely from completion rates. Similarly, normalization should be assessed by the sustained integration in routine conditions over specified measurement periods, independent of the clinical-response indicators used to test mediation. Clinical meaningfulness is a conceptual requirement, but using the same indicator for both the mediator and outcome would make it difficult to independently evaluate the proposed pathway.

Subsequent research should operationalize the constructs and test their relationships. Factorial and longitudinal studies can evaluate whether nursing readiness and workflow visibility interact in predicting execution of the defined workflow expectation. Mediation analyses can examine whether meaningful clinical response partially mediates the relationship between execution and later Normalized Evidence-Informed Nursing Practice. Measurement should establish the temporal sequence of execution, response, and normalization, and account for relevant contextual confounding. Statistical mediation alone would not establish causation. These studies would test the proposed mechanisms of nursing workflow integration and whether NDICT adds explanatory value beyond existing implementation theories [4] [10] [16].

Moderation analyses can separately evaluate whether contextual conditions such as staffing, workload, leadership support, resources, or workflow constraints affect the strength of the relationships in the proposed pathway [3] [7] [8] [13]. Comparative implementation studies can assess whether reciprocal feedback that affects both clinician learning and workflow design adds explanatory value beyond education or electronic prompts alone.

Research should also examine unintended effects such as burden of documentation, alert fatigue, workarounds, automation bias, inequitable application, overstandardization, and task-focused completion. Similar concerns regarding alert fatigue, workflow burden, usability issues, and unintended consequences are commonly identified in sociotechnical approaches to technology design and workflow optimization [9] [11] [12] [15].

Patient and family perspectives should be included when digital workflow changes affect assessment, communication, shared decision-making, or care experiences. The theory should be refined or rejected if its integrated mechanisms do not explain sustained practice beyond established change and implementation frameworks.

9. Limitations

NDICT is a conceptual, pre-empirical theory. Its propositions have not been validated, and the model should not be interpreted as demonstrating that any specific EHR configuration improves outcomes. The theory does not assume that one

workflow, frequency, or documentation requirement is appropriate across populations, settings, or nursing practices.

The theory originated from reflection on a practice-based quality-improvement problem involving nursing workflow and informatics. Although that experience stimulated theory development, project-specific findings are not evidence for the broader theory. Abstraction from an originating context may have privileged certain workflow characteristics; independent refinement across diverse settings is therefore necessary.

The model intentionally emphasizes the interface between nursing practice and digital workflow. Broader determinants—including staffing, workload, organizational culture, leadership, resources, policy, health equity, social conditions, patient preferences, and interprofessional relationships—remain essential and may moderate every component of the pathway. This position is consistent with implementation, sustainability, and complexity-science perspectives that view change as shaped by interacting contextual influences [3] [7] [8] [13].

10. Conclusions

The Nurse-Driven Informatics Change Theory proposes that sustainable evidence-informed nursing practice emerges through alignment among practice-need recognition, nursing readiness, workflow visibility, structured action, meaningful clinical response, and reinforcement. Its central contribution is the proposition that digital workflow can support change without becoming the change itself. Technology provides structure and visibility; nurses provide interpretation, judgement, relational care, and action.

By conceptualizing implementation as a recursive relationship between nursing judgement and digital design, NDICT offers a testable framework for studying how evidence-informed actions may become normalized across nursing practice. Its distinctiveness rests on an empirical question: whether the coordinated pathway among nursing readiness, workflow visibility, structured action, meaningful clinical response, and reciprocal reinforcement explains Normalized Evidence-Informed Nursing Practice beyond its individual components. Future research should refine the constructs, operationalize measurable indicators, test the integration-specific propositions, identify contextual moderators, and determine whether NDICT provides explanatory value beyond established implementation, normalization, sociotechnical, sustainability, and human-factors frameworks [3] [4] [7]-[16].

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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