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Nursing Informatics AND Nursing Ethics: Addressing Their Disconnect Through an Enhanced TIGER-vision

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Abstract

All healthcare visions, including that of The TIGER (Technology-Informatics-Guiding-Educational-Reform) Initiative envisage a crucial role for nursing. However, its 7 descriptive pillars do not address the disconnect between Nursing Informatics and Nursing Ethics and their distinct communities in the clinical-disciplinary landscape. Each sees itself as providing decision support by way of information inputs and ethical insights, respectively. Both have reasons – ideological, professional, institutional - for their task construction, but this simultaneously disables each from engaging fully in the point-of-(care)-decision. Increased pressure for translating 'evidence-based' research findings into 'ethically-sound', 'value-based' and 'patient-centered' practice requires rethinking the model implicit in conventional knowledge translation and informatics practice in all disciplines, including nursing. The aim is to aid 'how nurses and other health care scientists more clearly identify clinical and other relevant data that can be captured to inform future comparative effectiveness research.' A prescriptive, theory-based discipline of '(Nursing) Decisionics' expands the Grid for Volunteer Development of TIGER's newly launched virtual learning environment (VLE). This provides an enhanced TIGER-vision for educational reform to deliver ethically coherent, person-centered care transparently.

Keywords:
Nursing Informatics; Nursing Ethics; Clinical Decision Making; Decision Support; Cognitive Continuum; Multi-Criteria Decision Analysis.

Introduction

The TIGER (Technology-Informatics-Guiding-Educational-Reform) summit website states, 'Our vision is to enable nurses to use informatics tools, principles, theories, and practices to make health care safer, more effective, efficient, patient-centered, timely, and equitable by interweaving enabling technologies transparently into nursing practice and education, making information technology the stethoscope for the 21st century'[1].The 7 key pillars of The TIGER Initiative in the outlined action plan are Management and Leadership; Education; Communication and Collaboration; Informatics Design; Information Technology; Policy; and Culture. Clinical decision support is one of 8 categories of Development in the Grid for Volunteer Development of TIGER's recently launched Virtual Learning Environment [2]. A matrix maps these, as vertical columns, with 7 horizontal Categories of Development (Web-Resource, Case Studies, Decision Tree, Develop Modules, Competency Matching, Simulation-Based, and Second Life). The TIGER Phase III goal is to Educate Nurses and Interdisciplinary Providers about Evidence-Based Practice Benefits of Health IT Adoption. 'Nurses, along with physicians and other interdisciplinary providers need to: Understand more about Comparative Effectiveness Research (CER); How Electronic Health Record (EHR) data can be used for research purposes; How EHR data in the future can inform practice through CER; and become aware of, and where relevant, develop expertise in; Research Methodologies used in CER, Privacy Requirements related to use of clinical data; Possibilities of changes in Evidence-Based Practice with increase of CER; and more clearly identify clinical and other relevant data that should be captured to inform future CER research' [2].

What seems to be lacking explicit attention in TIGER pillars and VLE matrix is the current disconnect between Nursing Informatics and Nursing Ethics. This is a common feature of other recent summary statements from Nursing groups e.g. the AMIA Nursing Informatics Working Group [3]. A search on Medline and Cinahl (from 2000) returned hundreds of hits for 'Nursing Informatics' and 'Nursing Ethics' individually, but combining the searches with 'AND' returned no results. Some of the papers with 'nursing ethics' as title/abstract keyword address 'informatics issues' from the ethical perspective and some with 'nursing informatics' address 'ethical issues' from the informatics perspective. But few, if any, focus on the decision itself, since both fields see themselves as primarily providing what they see as decision *support*, by way of information inputs and ethical insights respectively. Each of the distinct communities has reasons – ideological, professional, institutional - for maintaining this *supportive* construction of their function, but it is a significant source of the disconnect since both hold back from fully engaging in the point-of-(care)-decision.

Increased pressure for the translation of 'evidence-based' research findings into 'ethically-sound', 'values-based' and 'patient-centered' practice requires rethinking of the model implicit in conventional knowledge translation and informatics practice in all disciplines, including nursing [4].

Translation requires more than mastering one language. The ethical implications of enabling those in nursing care are most exposed in multi-disciplinary settings where decisions involve multiple parties – such as in the real case story of an 88-year-old woman in intensive care. The case exposes the implicit choices made in such contexts and acts as an exemplar of the challenge to make decisions that are coherent with respect to a variety of ethical principles, as well as transparent in regard to diagnostic and prognostic evidence [5].

While the (decision) point is being made here in relation to Nursing Informatics and Nursing Ethics, it also applies to Medical, Clinical and Health Informatics and Ethics which display similar disconnects. The focus on nursing should therefore not be misinterpreted as suggesting the situation is exclusive to nursing, but there are features of nursing that

make it of particular interest and concern. The lack of transparent decision making structure e.g. in intensive care settings as shown in the case [5], compromises what nursing can contribute at the individual, as well as at the policy level.

The argument can be made in only truncated form here. For the historical background and definitions of the field of (nursing) informatics see 'Health and medical informatics education: perspectives for the next decade exemplified by case stories and a specific address to health service managers [6,7]; following 'What Every Nurse Should Know About Computers' published in 1984, the year of WHO's launching 'Health for All 2000'[1] [8,9]. For the 21st century of globalization, an editor's 'column serves as a clarion call to the discipline of nursing for value-specific, theory-guided knowledge […] that highlights the discipline of nursing as accountable to society for the quality of nursing services. […] May we begin the journey afresh and anew. Nurses must understand and face possible challenges and opportunities, and examine the efficacy and worth of their practices in light of the values and beliefs set forth in nursing's theories' [10].

The aim of this paper is to take up that call and provide food for thought and further debate by proposing a prescriptive theory-based addition to the TIGER VLE Grid. This incorporates Cognitive Continuum Theory applied to nursing [11] with prescriptive weight elicitation in Multi-Criteria Decision Analysis [12] toward a new discipline of '(nursing) decisionics'. In the spirit of 'perspectives for the next decade,' an example from the multicultural clinical landscape of health visiting and critical care is used to explore the value of applying a particular form of analysis at the health care team's point of care for that particular decision. This is done at a given point of time and is always situation-, condition-, position-, and resource-specific in terms of age, sex, literacy, numeracy, knowledge, language, power, and culture.

Methods

Decision making

Whether by individual practitioner or practice team and whether shared or not, decision making in patient-centered healthcare - as opposed to following a rule or algorithm - is a matter of integration. It involves integrating evidence and expert judgments concerning the outcomes and other considerations relevant to the patient (typically characterised by significant uncertainties), with the relative importance of those considerations to that patient (typically characterised by internal conflicts, for instance professional-patient disagreements).

The synthesis and integration of the evidence/judgments and the patient's values/preferences can be carried out in three main ways, as well as in various combinations of the three. One is clinical or professional judgment. The second, currently the dominant form, is some type of verbal argumentation or deliberative discourse that processes the benefits and harms (informally, the pros and cons) to arrive at a conclusion, often in a social or interpersonal setting. It is useful to characterise this way of making decisions as 'verbal multi criteria decision deliberation', since then it can be clearly differentiated from the third method, multi-criteria decision analysis, which arrives at a conclusion through numerical calculation, albeit a calculation based on extensive deliberation about the inputs.

In the following diagram (Figure 1) we use the sandwich as a metaphor for an evidence-informed and value-based decision. By combining the bread (the evidence) with the filling (the preferences) one produces the sandwich, or decision. The clear implication from this construction is the need for a prime focus on the sandwich-making/decision-making process with the supportive/input supplying activities operating in a way that is decision driven, (what should we do?), not only evidence-driven (what do we know?) or value-driven (what do we prefer?). It follows that we need a *decisionics* discipline to complement the *informatics* discipline and a transformation (or expansion) of the ethics discipline into a '*valuematics'* one, in order to ensure that the resulting decision is of high quality. A high quality decision would be coherent, transparent, and necessarily prescriptive [11,12,13].

Transparency is a necessary condition for effective communication between nurse and patient at the clinical level, and between nurses and other stakeholders at the policy level. This is especially true when facing increasingly scarce resources in the context of new drugs being marketed within a fixed or reduced health budgets and competing guidelines for evidence-based practice [14].

However, there is a missing piece in this argument. To supply it we will refer to a metaphorical map of the world of judgment and decision-making (Figure 2) [15]. *Judemakia* enables us to better comprehend and acknowledge the nature of the task of making patient-centered care decisions, and to both identify and meet the challenges of connecting ethics and informatics in a transparent and coherent way via what may be named 'decisionics' in order to distinguish it from informatics.

Judemakia has two bases, one longitudinal and one latitudinal.

The longitudinal base is the assumption that decisions (which are always taken in the central Decision-land) require inputs from the two distinct flanking and supporting provinces of Belief-land (where we address the question the likelihood of something, such as an adverse event) and inputs from Preference-land (where we address the question the undesirability of something, such as an adverse event).

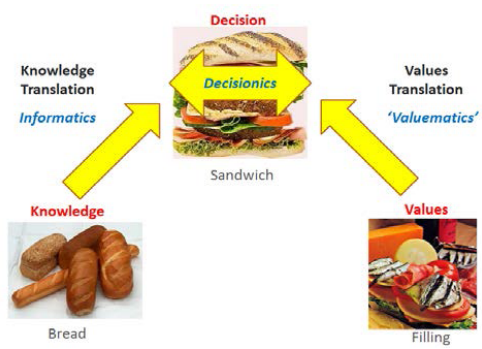

Figure 1 – Decision as sandwich

The orientation of the map has no significance, north (i.e. a higher analysis to intuition ratio) is not better than south, *per se*. Quality is a third, altitudinal dimension.

[1] Translated by The Danish Nurses Association in 1987 [9]

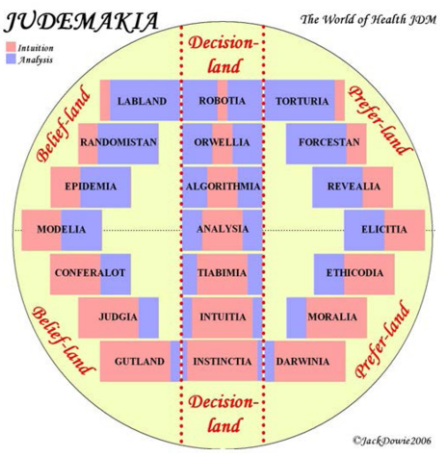

Figure 2 – Judemakia

Judemakia's latitudinal base is derived from the Cognitive Continuum framework of Hammond [16]. Based on empirical evidence, knowledge of the Cognitive Continuum Theory has been found highly relevant to understanding the decision-making tasks and processes of nurses in the clinical environment [11,17]. Cognitive Continuum Theory suggests that a variety of possible balances between intuition/fast thinking and analysis/slow thinking exist in relation to any judgment and decision-making task. Applying that idea in all three 'lands' creates a set of regions within each to locate various activities and methodologies on the basis of their analysis-to-intuition ratio. For example, ranging from Gutland to Labland in Belief-land. The map is the result of a prolonged search for a way of communicating the intrinsic complexities of decision-making at different levels, and depicting the multiple locations relevant to an increasingly multi-cultural clinical landscape. (Dowie, personal communication).

Implications for decision-making (nursing) practice

Benner, Schön and others have extolled the virtues of intuitive expertise in nursing [17,18,19]. In Intuitia the separation of the three lands is minimal, perhaps non-existent, in practice. Nursing clinical judgment almost instantly supplies both the evidence and values and integrates them. However, beyond the practitioner deciding and acting alone, most nursing decision-making takes place in Tiabimia (derived from Taking-Into-Account-and- Bearing-In-Mind), what others would call verbal argumentation or deliberative discourse. Evidence-based nursing says TIABIM *should* rely on 'scientific' evidence coming via informatics processes from the 'north' of Belief-land, with its higher analysis-to-intuition ratio. This would be supplemented by clinical expertise from its 'south' and then integrated with preferences coming largely from the 'south' of Prefer-land.

We can now see that the problem of connecting Nursing Informatics and Nursing Ethics requires two things: (i) focusing on the decision in Decision-land and (ii) ensuring that the essential informatics inputs from Belief-land and ethical insights from Prefer-land enter Decision-land in a way that enables them to be synthesised transparently and coherently. At the moment, that is being done in the 'taking into account and bearing in mind' decision technology of Tiabimia. Whatever its advantages, this location perpetuates the disconnect since the informatics inputs are coming from different and (at least normatively) much higher analysis-to-intuition ratios than the ethical ones.

A partial remedy (not a panacea) involves bringing the connection nearer to the equator with the decision also being made at that level, or at least having the decision analysed and supported at that level. It may, however be essential for legal or socio-psychological reasons to move to deliberative discourse in Tiabimia to finalise thedecision [20].

The patient and the placing of the apostrophe

The final link in the argument involves introducing the patient, who is the pre-eminent concern of the nurse, and thus of nursing ethics as a scholarly and scientific discipline. The ultimate purpose of both Nursing Informatics and Nursing Ethics is to help improve the patient's care, which inherently involves making the best possible decisions. If we also accept that we are delivering patient-centered care, this means that those decisions must be heavily influenced, if not determined entirely, by the patient's preferences. The placing of the apostrophe in patients –'s or s' - is crucial in these discussions.

The treatment of patient's/s' preferences in preference-sensitive decisions in nursing contexts is analytically weak and non-transparent, especially in relation to the multiple and conflicting concerns and trade-offs frequently present. While lists of nursing informatics competencies usually mention the use of decision support, they rarely refer to the *systematic elicitation* of patient's preferences or values. This is in marked contrast to the situation in nursing ethics where this becomes almost the sole object of concern. This gap needs to be addressed via a revised framework for complementing nursing informatics teaching and practice with formal attention to values and preferences and their elicitation, accompanied by explicit focus on their integration into decisions. Attempts to tackle these tasks exclusively in Tiabimia (i.e. by Taking-Into-Account-and-Bearing-In-Mind) seem unlikely to achieve the necessary transparency. Thus the nurse's portfolio is here suggested to be extended 'north' to include a technique like Multi-Criteria Decision Analysis (MCDA), and, necessarily, an implementation of it which makes it clinically practical at the point of decision care.

The Nurse's Dilemma: an example

With roots in multi-cultural health visiting and intensive care, the chosen example presents a dilemma familiar to nurses in these contexts: responding to questions of parents or other caregivers concerning the prognosis for a child or increasingly ill and demented relative, which is known to the nurse to be very poor; often in the literal sense of the word as well. The specific details of the case will vary enormously. Its framing will always be influential, but a number of ethical principles are always in play - beneficence, non-maleficence, justice, autonomy, veracity, and confidentiality, to name the six used in Wilson and Dalgliesh [21]. To keep the example simple, the options are limited to two: disclose the prognosis fully, or in some way deny possessing significant information about it. There will be many variations on each in practice, but including them would add nothing to the point being made here.

Results and Discussion

The different options within a given decision context will impact in different ways on how the ethical principles translates into a real time scenario. As neither action is best or equally best on all, the principles will have to be weighted. Some deontologists will argue for 100% weight to one of them, but most ethicists will argue that several, if not all, should be 'taken into account'. The power of Multi-Criteria-Decision-Analysis lies in the way nurses, either individually or as part of a care team, can make their assessments of the impact of

the options on the principles (their ratings) separately from their views on the relative importance of the principles (their weightings), and then explore the effect of both - and variations in them - on the case for each option. Using purely hypothetical ratings and weightings, some combinations may favour 'denial' (Figure 3), some 'disclosure' (Figure 4). (The figures are screen captures from the Annalisa© implementation of MCDA).

Without suggesting this approach is appropriate in all cases, its transparent structure could help focus deliberation in many. If each patient, and their designated significant others, is given a chance to express individually what matters to him or her in obtaining a quality decision, then under- as well as over-informing the involved parties can be reduced. A shared 'decisionics' language with common grammar and vocabulary can provide the required novel structure for the future multi-disciplinary teams in which each individual participant – regardless of which side of the table they are on – can make an optimal input to, and impact on, the decision, including transparent 'voice' for the usually speechless part. Being web-based, this can include those who cannot attend due to distance by providing access in their own home setting. For those who can express themselves only via trained computers e.g. if they have speech difficulties such as aphasia, this offers an excellent solution . The 'medical home' provides an ideal setting [22].

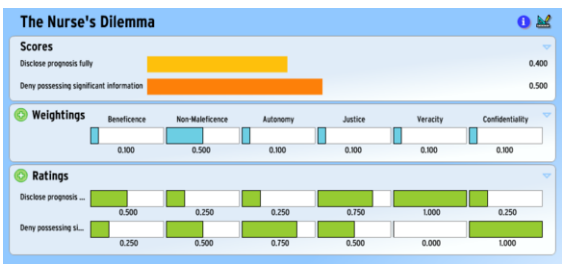

Figure 3 – 'Denial' favoured

Figure 4 – 'Disclosure' favoured

Care-ful decision making: a new discipline

There is opportunity and need to develop Nursing Decisionics as a discipline, complementary to Nursing Informatics and Nursing Ethics. Nursing Decisionics focuses specifically on the Point of Decision rather than on the knowledge translation (synthesising, exchanging, disseminating) mechanisms on the one hand and ethical discourses on the other, each of which acts to *support* the decision process. The practical curriculum for Nursing Decisionics will introduce the three main 'decision technologies' – (clinical) judgment, multi-criteria decision deliberation, and multi-criteria decision analysis – as essential components of the nursing professional's competency portfolio. They will be presented at different levels depending on the nurse's roles and responsibilities. As we have seen, all three vary in their intuition-analysis balance and all three should be available for deployment, depending on the decision setting and task structure. This is equally true whether the context is community, primary, secondary, or tertiary care, and whether the focus is on the individual patient or on patient populations. The specific and transparent use of the simple weighted-sum approach of Multi-Criteria Decision Analysis (MCDA) is proposed as an additional row and column in the TIGER VLE matrix, and also as a possible overarching framework for integration.

It is important to see MCDA as a useful technique for approaching clinical decision making, and not simply as a clinical decision support tool, though it is also, and very importantly, the basis for such tools. It may act as a catalyst for the translation of The TIGER Phase III goal into prescriptive practice: 'To Educate Nurses and Interdisciplinary Providers about Evidence-Based Practice Benefits of Health IT Adoption' [1,2]; by acknowledging the human factors [13].

It is, of course, not sufficient to simply throw a Multi-Criteria Decision Analysis-based aid into an existing decision process. A framework for evaluating and documenting the decision process, as well as aiding it, is needed and this is the aim of the MyDecisionSuite template (Figure 5). It comprises a set of elements that provide navigation and preparation segments (the latter providing the opportunity for a variety of multi-media links) before the aid, and decision quality assessment and follow-up elements after it. While it cannot be expounded on this occasion, the framework is adaptable to any specific set of organisational circumstances, nursing arrangements, and patient's preferences regarding decision style.

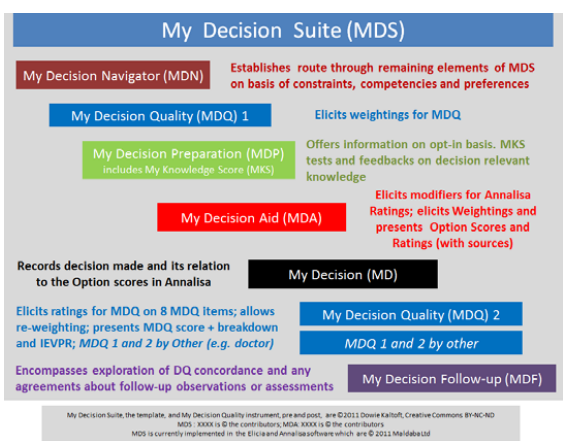

Figure 5 – MyDecisionSuite structure

Conclusion

The lack of literature addressing Nursing Informatics AND Nursing Ethics since the 'expiry' of Health for All 2000 vision is a symptom of their persistent disconnect within the clinical-disciplinary landscape of 21st century health care despite the emergence of new concepts like 'translation`. Multi-Criteria Decision Analysis has been applied to a case to show how it can help acknowledge and better comprehend the nature of the task of making person-centered care decisions as well as meeting the challenges of connecting ethics and informatics in a

transparent and coherent way within a theory-based discipline of '(Nursing) Decisionics'. This has been proposed as an expansion of the Grid for Volunteer Development of TIGER's virtual learning environment (VLE), as well as an enhanced vision for educational reform that can help deliver ethically coherent, evidentially-transparent person-centered care for, if not all, then more, by 20??!

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