


Linkages of Nursing Diagnoses, Outcomes, and Interventions Performed by Nurses Caring for Medical and Surgical Patients Using a Decision Support System

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Introduction

The necessity of standardized nursing language (SNL) systems to communicate the central elements of nursing practice (diagnoses, outcomes, and interventions) has been discussed for over four decades. SNLs provide a common language to describe nursing's contributions to healthcare. Many advantages of using SNLs are recognized, such as improved communication between nurses and other health-care professionals, increased visibility of nursing's contributions to patient care, improved quality of care, enhanced ability to evaluate outcome of care provided by nurses, and improved nursing documentation in electronic records (Clancy, Delaney, Morrison, & Gunn, 2006; Conrad & Schneider, 2011; Conrad, Hanson, Hasenau, & Stocker-Schneider, 2012; Laing, 2002).

In Brazil, the most widely known and used SNLs are the NANDA-International Nursing Diagnoses Classification (NANDA-I), the Nursing Outcomes Classification (NOC), and the Nursing Interventions Classifications (NIC). These classification systems are developed by three different groups, therefore their hierarchical structure of classification domains are different. Consequently, nurses utilizing these systems may have difficulty in identifying the interrelations between them (Bulechek, Butcher, Dochterman, & Wagner, 2012; Herdman & Kamitsuru, 2014; Moorhead, Johnson, Mass, & Swanson, 2012).

Accordingly, NANDA-I and the University of Iowa's Center for Nursing Classification and Clinical Effectiveness began efforts to harmonize NANDA-I, NOC, and NIC classifications in a common taxonomic structure that was

named NNN Alliance (Johnson, Moorhead, Bulechek, Maas, & Swanson, 2012). The harmonized structure provides a linkage that directs the relation or association of concepts (Johnson et al., 2012).

Such structure was used to build an electronic decision support system for the University Hospital of the University of Sao Paulo (HU-USP), through a project involving professors of the School of Nursing, University of Sao Paulo (EEUSP) and nurses from the Nursing Department of HU-USP, called Sistema de Documentação Eletrônica do Processo de Enfermagem da Universidade de São Paulo (PROcEnf-USP®), translated as "Nursing Process Documentation System of University of São Paulo" (Peres et al., 2009).

PROcEnf-USP® is a system to guide clinical nursing documentation, and to support nurses making clinical decisions on diagnoses, expected outcomes, and interventions during the patient's hospital stay. The system presents suggestions for expected outcomes based on each nursing diagnosis identified by the user and suggests interventions based on each expected outcomes the user chooses based on the nursing diagnosis (Martins, 2014; Peres et al., 2009).

Several researchers have shown interest in identifying the linkages between specific nursing diagnoses, outcomes, and interventions (Azzolin et al., 2012; Moon, 2011). Establishing NNN linkages is an important step in facilitating the use of SNLs in practice, education, and research, in addition to contributing content to plans of care for specific populations. However, studies that investigate linkages in real clinical environments are scarce.

Purpose

The aim of the study is to identify the most frequent nursing diagnoses (ND) and its respective linkages with nursing outcomes (NOC) and interventions (NIC) performed by nurses caring for medical and surgical patients.

Methods

This is a document analysis study with a quantitative approach, conducted in HU-USP, in Sao Paulo, Brazil. Patient admission assessments documented in PROCEnf-USP[®] within the medical (MC) and surgical units (SC) during 2013 were included in this study. Patient admission records that lacked complete data were excluded from the analysis.

The system *Business Objects* was used to identify the most frequent nursing diagnoses (Moraes, da Silva, & Caritá, 2010). For convenience, we included in this study the five most frequent NDs in each unit. The linkages were obtained from reports generated by PROCEnf-USP[®]. They contained the NDs indicated by the system and the ones that have been selected and/or indicated by nurses; the outcomes indicated for each ND; and the NICs selected for each outcome.

The data were gathered in one single Excel[®] worksheet and transported to the program Statistica 12[®] in order to filter the data. To analyze the data, descriptive statistics were used. Linkages were divided in quartiles and the results above the second quartile (i.e., 50 percentile or higher) are presented. The occurrence of the linkages is integrally presented to two diagnoses because they were the most frequent in only one of the units (*Risk for Unstable Blood Glucose* for MC and *Anxiety* for SC). This study is part of a project approved by the Ethics Committee of the School of Nursing, University of Sao Paulo (protocol number 1132/11).

Results

In 2013, there were 2,345 admissions (of 2,179 patients), of which 1,238 (53%) were admitted to the Medical Care Unit (MC). Briefly, the mean age of patients admitted to MC was 57 years (14-99 years) and that of patients admitted to the Surgical Care Unit (SC) was 47 years (15-97 years). In both units, over half of the patients were male (53%). The medical diagnosis profile of patients admitted to the MC unit included cardiovascular, respiratory, and metabolic diseases. In the SC unit, the most common medical diagnoses were related to orthopedic problems (fracture), gastrointestinal diseases (cholelithiasis, cancer), and hernias. Two admissions to the MC unit were excluded because of missing data (patient's age), therefore, a total of 2,343 admissions were analyzed for this study.

Nurses selected 84 nursing diagnoses for patients admitted to the MC unit and 66 diagnoses for those admitted to the SC unit. The five most frequent nursing diagnoses were selected 7,974 and 8,228 times in the MC and SC units, respectively.

Ineffective Tissue Perfusion (00024) was linked 1,101 times to 14 NOCs and 37 NICs for patients receiving care on the SC unit and 2,943 times with linkages to 22 NOCs and 66 NICs for patients in the MC unit. The total number of linkages (NNN) for *Risk for Falls* (00155) was 2,062 for SC including 13 NOCs and 30 NICs and 1,675 at MC for 19 NOCs and 37 NICs. *Acute Pain* (00132) was linked 3,281 times to five NOCs and 11 NICs for the SC unit and 1,358 times to four NOCs and 10 NICs for the MC unit. *Impaired Tissue Integrity* (00044) was selected by nurses 1,364 times with linkages to 4 NOCs and 16 NICs for patients on the SC unit and 1,065 linkages to 6 NOCs and 24 NICs for patients receiving care on the MC unit. The results for the NNN linkages above 50th percentile for each one of those nursing diagnoses are found in Table 1.

Anxiety (00146) was one of the most frequent nursing diagnoses only for patients at the SC unit. The linkages observed for this diagnosis were 420. This diagnosis linked 279 times to *Anxiety Self-Control* (1402); this ND-NOC was 100% linked to NIC *Anxiety Reduction* (5820). It was observed that the other 141 linkages occurred with the NOC *Coping* (1302); this ND-NOC linked to two NICs: *Anticipatory Guidance* (5210) ($n = 10$; 7.1%) and *Coping Enhancement* (5230) ($n = 131$; 92.9%).

Risk for Unstable Blood Glucose (00197) was among the five most frequent ND only for patients admitted to the MC unit. It was linked 933 times to the NOC *Glucose Level* (2300) and to two NICs: *Hyperglycemia Management* (2120) ($n = 841$; 90.1%) and *Hypoglycemia Management* (2130) ($n = 92$; 9.9%).

Discussion

Our results allowed us to identify NNN linkages that were selected by nurses in a real clinical environment, using an electronic clinical decision support system (CDSS). It is possible that PROCEnf-USP[®] has increased the possibilities of nursing diagnosis, outcomes, and interventions being selected by nurses, given that the system suggests these concepts based on the nurse's evaluation. Both primary and literature review studies have shown benefits in healthcare professionals performance when utilizing DSSs (Garg et al., 2005; Main et al., 2010; Peres et al., 2015; Randell, Mitchell, Dowding, Cullum, & Thompson, 2007), as well as improvements in clinical practice (Kawamoto, Houlihan, Balas, & Lobach, 2005).

It was observed that four out of five most frequent diagnoses were similar on both units. Considering the profile of patients admitted to the MC and SC units, the results for the most frequent diagnoses were as expected. In a previous study (Fontes & Cruz, 2007), conducted in the same hospital, the documentation of nursing diagnoses in the first 24 hr of the hospital stay were analyzed in 30 patient records admitted to the MC unit. The study identified that *Impaired Tissue Integrity* (00044) and *Acute Pain* (00132) had a prevalence above 50%; *Risk for Falls* (00155) was documented for 20% of the patients and *Anxiety* (00146) to 13.3%; prevalence of *Ineffective Tissue Perfusion* (00024) varied from

Table 1. Frequency of the Most Frequent Linkages for “Ineffective Tissue Perfusion” (00024), “Risk for Falls” (00155), “Acute Pain” (00132), and “Impaired Tissue Integrity” (00044) with Nursing Outcomes and Interventions at the Surgical and Medical Units

Nursing outcomes	Number of linkages		Nursing interventions	Number of linkages	
	Surgical unit n (%)	Medical unit n (%)		Surgical unit n (%)	Medical unit n (%)
			‘Ineffective tissue perfusion’ (00024)		
Vital Signs (0802)	460 (41.8)	^a	Vital Signs Monitoring (6680)	460 (100)	^a
Skin Integrity: Skin & Mucous Membranes (1101)	357 (32.4)	906 (30.8)	Wound Care (3660)	62 (17.4)	256 (28.3)
			Skin Surveillance (3590)	115 (32.2)	228 (25.2)
			Traction/Immobilization Care (0940)	10 (2.8)	^a
			Pressure Ulcer Care (3520)	10 (2.8)	^a
			Ostomy Care (0480)	7 (2.0)	39 (4.3)
			Oral Health Maintenance (1710)	74 (20.7)	29 (3.2)
			Pressure Ulcer Prevention (3540)	61 (17.1)	272 (30.0)
			Perineal Care (1750)	^a	32 (3.5)
Tissue Perfusion: Peripheral (0407)	169 (15.4)	137 (4.7)	Embolus Care: Peripheral (4104)	18 (10.7)	62 (45.3)
			Circulatory Precautions (4070)	124 (73.4)	48 (35.0)
			Circulatory Care: Venous Insufficiency (4066)	18 (10.7)	^a
			Neurologic Monitoring (2620)	^a	127 (88.8)
Tissue Perfusion: Abdominal Organs (0404)	50 (4.5)	^a	Intravenous (IV) Therapy (4200)	44 (88.0)	^a
Kidney Function (0504)	20 (1.8)	^a	Urinary Elimination Management (0590)	19 (95.0)	140 (16.8)
			Fluid Management (4120)	^a	516 (61.8)
			Nausea Management (1450)	^a	12 (1.4)
			Fluid/Electrolyte Management (2080)	^a	57 (6.8)
			Electrolyte Management (2000)	^a	67 (8.0)
			Hemodialysis Therapy (2100)	^a	12 (1.4)
Tissue Perfusion: Cardiac (0405)	9 (0.8)	406 (13.8)	Cardiac Care: Acute (4044)	5 (55.6)	219 (53.9)
Tissue Perfusion: Pulmonary (0408)	9 (0.8)	^a	Hemodynamic Regulation (4150)	^a	158 (38.9)
			Embolus Care: Pulmonary (4106)	4 (44.4)	84 (100)
			Acid-Base Management: Metabolic Alkalosis (1912)	3 (33.3)	^a
Tissue Perfusion: Cerebral (0406)	^a	143 (4.9)	Neurologic Monitoring (2620)	^a	127 (88.8)
Cardiac Pump Effectiveness (0400)	^a	95 (3.2)	Hemodynamic Regulation (4150)	^a	29 (30.5)
			Fluid Management (4120)	^a	19 (20.0)
			Cardiac Care (4040)	^a	36 (37.9)
Fluid Balance (0601)	^a	91 (3.1)	Fluid/Electrolyte Management (2080)	^a	61 (66.7)
Communication (0902)	^a	36 (1.2)	Communication Enhancement: Speech Deficit (4976)	^a	36 (100)
Fluid Overload Severity (0603)	^a	35 (1.2)	Hypervolemia Management (4170)	^a	30 (85.7)
Seizure Management (1620)	^a	30 (1.0)	Seizure Management (2680)	^a	30 (100)
			‘Risk for Falls’ (00155)		
Fall Prevention Behavior (1909)	759 (36.8)	649 (38.7)	Fall Prevention (6490)	756 (99.6)	647 (99.7)
Pain Level (2102)	557 (27.0)	149 (8.9)	Pain Management (1400)	450 (80.8)	142 (95.3)
			Analgesic Administration (2210)	99 (17.8)	^a
			Fall Prevention (6490)	^a	4 (2.7)
Mobility (0208)	440 (21.3)	278 (16.6)	Exercise Therapy: Ambulation (0221)	183 (41.6)	^a
			Exercise Therapy: Joint Mobility (0224)	100 (22.7)	^a
			Exercise Therapy: Muscle Control (0226)	73 (16.6)	^a
			Fall Prevention (6490)	^a	142 (51.1)
			Pressure Ulcer Prevention (3540)	^a	123 (44.2)

(Continued)

Table 1. Continued

Nursing outcomes	Number of linkages		Nursing interventions	Number of linkages	
	Surgical unit n (%)	Medical unit n (%)		Surgical unit n (%)	Medical unit n (%)
			'Ineffective tissue perfusion' (00024)		
Post-Procedure Recovery (2303)	154 (7.5)	^a	Pain Management (1400)	2 (1.3)	^a
Risk Control (1902)	86 (4.2)	81 (4.8)	Anesthesia Administration (2840)	150 (97.4)	^a
			Aspiration Precautions (3200)	60 (69.8)	6 (7.4)
			Bleeding Precautions (4010)	7 (8.1)	^a
			Behavior Modification (4360)	7 (8.1)	^a
			Self-Modification Assistance (4470)	6 (7.0)	^a
			Fall Prevention (6490)	^a	71 (87.7)
Knowledge: Fall Prevention (1828)	17 (0.8)	40 (2.4)	Fall Prevention (6490)	17 (100)	40 (100)
Sensory Function: Vision (2404)	15 (0.7)	74 (4.4)	Communication Enhancement: Visual Deficit (4978)	15 (100)	^a
			Fall Prevention (6490)	^a	45 (60.8)
Sensory Function: Hearing (2401)	^a	43 (2.6)	Communication Enhancement: Hearing Deficit (4974)	^a	23 (53.5)
Falls Occurrence (1912)	^a	162 (9.7)	Fall Prevention (6490)	^a	161 (99.4)
Ambulation (0200)	^a	48 (2.9)	Fall Prevention (6490)	^a	44 (91.7)
Cognition (0900)	^a	39 (2.3)	Reality Orientation (4820)	^a	5 (12.8)
			Neurologic Monitoring (2620)	^a	13 (33.3)
			Cognitive Stimulation (4720)	^a	15 (38.5)
			'Acute Pain' (00132)		
Pain Management (1605)	1711 (52.1)	633 (46.6)	Pain Management (1400)	1705 (99.7)	633 (100)
Pain Level (2102)	1498 (45.7)	392 (28.9)	Pain Management (1400)	1120 (74.8)	387 (98.7)
			Analgesic Administration (2210)	370 (24.7)	3 (0.8)
Comfort Level (2100)	51 (1.6)	^a	Nausea Management (1450)	30 (58.8)	^a
			Pain Management (1400)	13 (25.5)	^a
			'Impaired Tissue Integrity' (00044)		
Wound Healing: Primary Intention (1102)	790 (57.9)	17 (1.6)	Incision Site Care (3440)	689 (87.2)	^a
			Wound Care (3660)	^a	9 (52.9)
Wound Healing: Secondary Intention (1103)	^a	112 (10.5)	Wound Care (3660)	^a	112 (100)
Skin Integrity: Skin & Mucous Membranes (1101)	483 (35.4)	921 (86.5)	Wound Care (3660)	157 (32.5)	370 (40.2)
			Oral Health Maintenance (1710)	150 (31.%)	36 (3.9)
			Skin Surveillance (3590)	92 (19.0)	253 (27.5)
			Pressure Ulcer Prevention (3540)	34 (7.0)	156 (16.9)
			Ostomy Care (0480)	18 (3.7)	8 (0.9)
			Pressure Ulcer Care (3520)	^a	23 (2.5)
			Perineal Care (1750)	^a	19 (2.1)
			Pressure Management (3500)	^a	17 (1.8)
			Circulatory Care: Arterial Insufficiency (4062)	^a	8 (0.9)

Legend

^abelow 50th percentile

6.7 to 16.7% depending on the location of the diagnosis (renal, cerebral, and peripheral). At that time, *Risk for Unstable Blood Glucose* (00179) was not accepted as a diagnosis by NANDA-I.

Researchers searched for the most frequent nursing diagnoses in 60 patients in a medical-surgical ward in the south of Brazil (Oliveira & Freitas, 2009). They found that the prevalence of *Pain* was 50%. Among the other nursing diagnoses, only *Anxiety* (00146) and *Ineffective Tissue Perfusion* (00024) are similar to our findings.

Although there are pre-established linkages in the literature among diagnoses, outcomes, and interventions (Johnson et al., 2012), it is important to know how they are used in clinical practice. This type of study is important because it offers information about the contributions of nursing to patient care in real clinical environments and can be used to elaborate clinical guidelines, build databases of CDSSs, and support management decision-making. Validation of linkages among diagnoses, outcomes, and interventions has captured the interest of researchers around the world

(Azzolin et al., 2012; Lunney, McGuire, Endozo, & McIntosh-Waddy, 2010). Taken together, these findings may contribute to advancing existing nursing knowledge about possible linkages, although clinical validation studies are needed.

In the present study, the established linkages to the diagnosis *Ineffective Tissue Perfusion* (00024) seem to reflect the care for patients with neurologic, cardiopulmonary, abdominal organs, renal, and peripheral problems. Six outcomes were documented above the 50th percentile only on the MC unit; these results were linked to nine nursing interventions. Four outcomes were linked to three of these interventions and documented above the 50th percentile only for patients on the SC unit.

The linkage of the outcome *Tissue Perfusion: Cerebral* (0406) with the intervention *Neurologic Monitoring* (2620) and the outcome *Cardiac Pump Effectiveness* (0400) with the interventions *Hemodynamic Regulation* (4150), *Fluid Management* (4120), and *Cardiac Care* (4040) reflect the expected outcomes and the care needed by patients who have health-related conditions that affect blood circulation and heart function, which is in accordance with the MC unit's patient profile. In the same way, the outcome *Tissue Perfusion: Abdominal Organs* (0404) and the intervention *Intravenous (IV) Therapy* (4200) reflect the nursing care required for patients with acute abdominal problems or those who underwent abdominal surgery, conditions that could compromise the gut blood circulation and make up for the characteristics of SC unit's inpatients.

In relation to the linkages for *Ineffective Tissue Perfusion* (00024), the results identify that the outcome *Vital Signs* (0802) and the intervention *Vital Signs Monitoring* (6680) were not documented above the 50th percentile on the MC unit. We can infer that patients hospitalized on those units are clinically stable, and therefore, the activity of monitoring the vital signs would be prescribed as part of another nursing intervention.

Studies establishing linkages to the diagnosis *Ineffective Tissue Perfusion* (00024) were not found in literature. In the NNN linkage book (Johnson et al., 2012), the diagnosis *Ineffective Peripheral Tissue Perfusion* (00024) is not linked to the outcome *Vital Signs* (0802) and the intervention *Vital Signs Monitoring* (6680) is a suggested intervention rather than a main intervention (Johnson et al., 2012).

For the diagnosis *Risk for Falls* (00155) linkages between four outcomes and six interventions and between one outcome and two interventions were documented above the 50th percentile in both the MC and SC units, respectively. These linkages show the specifics of the patients' profiles hospitalized in each unit. The linkage between the diagnosis with the outcome *Knowledge: Fall Prevention* (1828) and the intervention *Fall Prevention* (6490), and with the outcome *Fall Prevention Behavior* (1909) with the intervention *Fall Prevention* (6490) for all patients in both units shows that nursing care is aligned with patient safety policies which highlight the importance that patients be aware of both risk factors for falls and personal strategies to be used to reach

the desired outcome (Miake-Lye, Hempel, Ganz, & Shekelle, 2013; Ministério da Saúde, 2013).

The nursing diagnosis *Risk for Falls* (00155) was linked to the outcome *Mobility* (0208) in the MC and SC units and with the intervention *Pressure Ulcer Prevention* (3540) in MC unit and *Exercise Therapy: Ambulation* (0221), *Exercise Therapy: Joint Mobility* (0224), and *Exercise Therapy: Muscle Control* (0226) in the SC unit. Although pressure ulcer prevention (Moraes et al., 2016) is a frequent concern when caring for patients with impaired mobility, this linkage needs further study.

The linkage among *Risk for Falls* (00155) with the outcome *Pain Level* (2102), the third most selected in both units, and the intervention *Pain Management* (1400), is not suggested in the NNN linkage book (Johnson et al., 2012). In another study, the linkage between *Risk for Falls* (00155) and the intervention *Pain Management* (1400) (Fontes & Cruz, 2007; Herrera, 2012) is documented. However, this finding caught our attention. While one could argue that this linkage does not make sense, others could think that pain should be a risk factor for falls. It is reasonable to suggest that this linkage should be further investigated to better understand the relationship between this nursing diagnosis and this intervention.

Regarding the diagnosis *Acute Pain* (00132), we observed that the intervention *Pain Management* (1400) was linked with three outcomes above the 50th percentile. The linkage among this diagnosis with the outcome *Pain Management* (1605) and the mentioned intervention was documented for all patients on the MC and SC units. This finding reflects the principles that guide pain management on these units, which includes nursing evaluation, and control and implementation of pharmacological and nonpharmacological interventions. Other authors found similar results regarding the linkages to this nursing diagnosis (Barros & Albuquerque, 2014). The outcomes *Pain Control* (1605) and *Pain Level* (2102) are proposed in the NNN linkage book (Johnson et al., 2012).

For the nursing diagnosis *Impaired Tissue Integrity* (00044), three outcomes were documented above the 50th percentile: *Wound Healing: Secondary Intention* (1103) only on the MC unit; the linkage to the intervention *Wound Care* (3660) was observed for all patients with this diagnosis. Although this linkage may seem unexpected, inpatients on the MC unit present complications of chronic diseases, such as diabetes and arterial and venous ulcers, that justify this finding. Interestingly, outcomes and interventions regarding infection control were not documented with high frequency as would be expected. Perhaps the wounds were already infected and infection prevention was not the focus of nursing care in these cases.

Wound Healing: First intention (1102) was the most documented outcome for patients admitted to the SC unit linked to the intervention *Incision Site Care* (3440). For patients on the MC unit, the most frequently documented outcome was *Tissue Integrity: Skin and Mucous Membranes* (1101). In another study, the authors observed the linkage of this outcome to the diagnosis *Impaired Tissue Integrity* (00044)

on a MC unit (Luzia, Almeida, & Lucena, 2014). The linkages of this nursing diagnosis with outcomes and interventions describe the different needs for professional practice in both units in this study.

Risk for Unstable Blood Glucose Level (00179) was linked only to the outcome *Blood Glucose Level* (2300) and, most frequently, with the intervention *Hyperglycemia Management* (2120). This linkage characterizes the care demands and the outcome evaluation measurements of patients with diabetes mellitus that are frequently hospitalized on the MC unit with decompensation of their illness. In an intervention protocol, the efficacy of glycemic control for diabetic patients with *Risk for Unstable Blood Glucose Level* (00179) was verified by means of the outcome indicators for *Blood Glucose Level* (2300) (Capellari & Figueiredo, 2016).

For patients on the SC unit, the linkages of the diagnosis *Anxiety* (00146) suggest its relationship to the surgical procedure performed during the hospitalization. The surgical anesthetic procedures are commonly related to the risk of death and complications by patients, which can be a source of anxiety (Grigoletto, Gimenes, & Avelar, 2011). In this sense, it requires preparation of the nursing staff to implement interventions aiming to control anxiety and improve coping strategies.

This study has limitations. It was conducted in one university hospital, which limits the generalization of our results. Besides, only admissions were included in our analysis, which did not allow us to verify the effectiveness of interventions in reaching the proposed outcomes. Despite the limitations, it is important to highlight that, as far as we know, this is one of the first studies that identified the linkages among nursing diagnoses, outcomes, and interventions in a large sample of patients in an acute care hospital clinical environment. Thus, our findings overcome the limitation of previous research that was based on the opinion of nurse experts. Other studies, especially multiorganizational ones, are needed in order to confirm whether the identified linkages are the same in different sociocultural contexts for different populations, as well as to verify their clinical validity.

Conclusion

PROcEnf-USP[®] allowed us to recover clinical information and identify the most frequent NNN linkages in a real clinical environment. These linkages represent part of the knowledge that nurses apply for caring of patients.

Implications for Nursing Knowledge and Language Development

The great diversity of linkages from the same diagnosis attests the potential that combination of classifications has to represent much more specific, individual situations than it would seem if diagnoses, outcomes, and interventions were analyzed separately. The identification of the linkages made by nurses in their usual clinical practice also of-

fer elements to guide clinical reasoning improvement, as well as evidences that could support nurses' therapeutic decisions.

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