

Applicability of the Omaha System in Acute Care Nursing for Information Interoperability in the Era of Accountable Care

KAREN A. MONSEN, PHD, RN, FAAN; ELIZABETH SCHENK, PHD, MHI, RN;
RUTH SCHLEYER, BSN, MSN, RN-BC; AND MARTIN SCHIAVENATO, PHD, RN

ABSTRACT

OBJECTIVES: To improve the interoperability and exchange of electronic healthcare data, methods are needed to specify healthcare interventions across disciplines and settings. To that end, this study evaluated the applicability for acute care of a multidisciplinary interface terminology commonly used in community settings: the Omaha System.

STUDY DESIGN AND METHODS: Descriptions of acute care nursing from interviews and the literature were mapped to 121 defined Omaha System terms and were validated by clinical and terminology experts.

RESULTS: Mapping results showed that 86% of Omaha System terms were applicable in acute care for medical-surgical and intensive care unit settings. Phrases were also identified that were not represented by an Omaha System term, such as "presence," "critical thinking," and "rapid response."

CONCLUSIONS: Further research is needed to evaluate additional phrases identified during the mapping process and to determine the acceptability and usefulness of the Omaha System for nursing documentation in acute care electronic health records. Use of the Omaha System as a multidisciplinary terminology may bridge acute and community care settings and serve as a strategy for improving healthcare information interoperability and exchange in the era of accountable care.

The US healthcare system is experiencing rapid changes in business models, reporting requirements, and regulatory oversight.^{1,2} Drivers of this change are high costs of healthcare and governmental regulations designed to reduce cost, leverage the benefits of technology, and improve quality.¹⁻⁴ As evidence of this changes under the Affordable Care Act, government reimbursement becomes linked to healthcare facilities, contingent on quality indicators such as: 1) improved health outcomes, 2) prevention of hospital readmissions, 3) improved patient safety and reduced medical errors, and 4) promotion of wellness and health.³ Similarly, the American Recovery and Reinvestment Act of 2009 has driven healthcare delivery to adopt electronic health records (EHRs).⁴

Collectively, these concerns for efficiency and improvement of healthcare delivery and outcomes highlight the need for standards and platforms for documenting healthcare interventions. Within this context, nursing leaders assert the need to more clearly specify and evaluate the impact of nursing care.^{5,6} This is essential to promoting data-driven decision making, interoperability across systems, and the exchange of data across clinical settings, healthcare systems, and clinical data repositories for research, such as those funded through US Clinical Translational Science Awards.^{7,8}

Specific to nursing, there has been a growing movement over the last few decades to construct, apply, and evaluate standardized nursing terminologies. There are 4 interface terminologies that have been recognized by the American Nurses Association for documenting nursing interventions: Nursing Interventions Classification, the International Classification for Nursing Practice, the Clinical Care

Table 1. Examples of Omaha System Problems With Definitions¹² and Narrative

PROBLEM	DEFINITION	NARRATIVE
Interpersonal relationship	"Associations or bonds between the individual/family/community and others."	On the same page with the patient; need to have good rapport. Same thing with doctors and staff
Pain	"Unpleasant sensory and emotional experience associated with actual or potential tissue damage."	Pain management
Consciousness	"Awareness of and responsiveness to stimuli and the surroundings."	Assessing level of consciousness
Skin	"Natural covering of the body."	Look at patient—skin color
Neuro-musculoskeletal function	"Ability of nerves, muscles, and bones to perform or coordinate specific movement, sensation, or regulation."	Check range of motion
Circulation	"Pumping blood in adequate amounts and pressure throughout the body."	Check vital signs
Bowel function	"Transporting food through the gastrointestinal tract to eliminate wastes."	Visual assessment very important; looking in the toilet
Urinary function	"Production and excretion of urine."	Visual assessment very important; looking in the toilet
Communicable/infectious condition	"State in which organisms invade/infest and produce superficial or systemic illness with the potential for spreading or transmission."	Checking for sepsis
Sleep and rest patterns	"Periods of suspended motor and sensory activity and periods of inactivity, repose, or mental calm."	How did they sleep?
Healthcare supervision	"Management of the healthcare treatment plan by healthcare providers."	Review the plan of care. Share the plan for the day. Be the expert bringing it to the patient level.

Classification, and the Omaha System.⁵⁹ Of these, the Omaha System is the only multidisciplinary terminology.

The Omaha System is a standardized interface terminology that exists in the public domain.¹⁰ It was developed beginning in 1975 with the support of 4 federally funded grants and was first published in 1992 (later revised in 2005). It originated at the Visiting Nurses Association in Omaha, Nebraska, and is widely used in community care EHRs to document patient care.¹⁰⁻¹² The Omaha System is organized around a structured "Problem" list, and is suitable for documentation at the point of care; its use has been explored and evaluated in various community and outpatient settings for multiple disciplines.¹³⁻²⁰ Numerous studies describe use of the Omaha System for clinical decision support, including dissemination of clinical guidelines for evidence-based practice in diverse populations and varied clinical settings.²⁰⁻²³ Exchange of Omaha System data in continuity of care documents (CCDs) using the consolidated-clinical document architecture has been demonstrated in working CCDs, demonstrating interoperability and exchange across systems.^{2,24} The ontological structure of the Omaha System is unique among interface terminologies, and its central problem list concept enables relational data collection of assessments, interventions, and outcomes.¹⁰

The Omaha System consists of 3 relational components: the Problem Classification Scheme, the Intervention Scheme, and the Problem Rating Scale for Outcomes (as shown in **Figure 1**).^{10,11} The Problem Classification Scheme consists of 42 problems that comprehensively and holistically describe health. Each Problem has a definition and unique signs/symptoms. The Intervention Scheme of the Omaha System is a 3-level hierarchical arrangement of terms that relate to a patient Problem.^{10,11} The Problem Rating Scale for Outcomes measures Problem-specific Knowledge, Behavior, and Status using a Likert-type ordinal scale (1 = lowest, 5 = highest). The Omaha System terms and outcome measures may be used on paper or embedded within software with emphasis on avoiding customization of the hierarchy or defined terms in order to maintain the taxonomic structure to ensure rigor and interoperability.¹²

The following description of the Intervention Scheme with a nursing intervention example is provided for demonstration purposes. In the Omaha System, interventions are related to a single Problem concept. The example addresses the "Skin" Problem, which includes signs/symptoms such as a lesion or rash (definition in

Table 1). As shown in **Table 2**, at the first level, a "Category" term specifies the action of the intervention. There are 4 Category terms: 1) Teaching, guidance, and counseling; 2) Treatments and procedures; 3) Case management; and 4) Surveillance (definitions in **Table 2**). In this example, a nurse might perform "Treatments and procedures" for a wound. At the second level of the Intervention Scheme, 75 defined "Target" terms further specify the nature of the intervention. In this example, the applicable Omaha System Target is "dressing change/wound care" (definition in **Table 3**). At the third level of the Intervention Scheme are suggested care description terms. This level is fully customizable, and therefore, the facility protocol or other evidence-based wound care guideline may be referenced as needed at the care description level with the appropriate granularity for clinical guidance. Thus, the intervention in this example consists of 4 linked terms that are data points (Problem [1]-Category [2]-Target [3]-Care description [4]): "Skin-Treatments and procedures-dressing change/wound care-guideline name." The linguistic syntax of these 4 linked terms/data points may be expressed in sentence form as follows: "I (the nurse) addressed the *Skin* Problem (1) by performing *Treatments and procedures* (2)-*dressing change/wound care* (3), and I used the *facility guideline* (4)."²⁵ In any software that enables

Table 2. Omaha System Categories¹² With Narrative

CATEGORY	DEFINITION	NARRATIVE
Teaching, guidance, and counseling	“Activities designed to provide information and materials, encourage action and responsibility for self-care and coping, and assist the individual/family/community to make decisions and solve problems.”	Education on plan of care. When doing wound care, educating about what to do at home. On the same page with the patient; need to have good rapport. Same thing with doctors and staff. Help with family situations.
Treatments and procedures	“Technical activities such as wound care, specimen collection, resistive exercises, and medication prescriptions that are designed to prevent, decrease, or alleviate signs and symptoms of the individual/family/community.”	Pain management. Wound care. Pass meds.
Case management	“Activities such as coordination, advocacy, and referral that facilitate service delivery, improve communication among health and human service providers, promote assertiveness, and guide the individual/family/community toward use of appropriate resources.”	Check chart for orders. Communication with pharmacy - pretreatments, when chemo is ready. Coordinated arrangement with Central Supply to bring CPM machine up on day of surgery.
Surveillance	“Activities such as detection, measurement, critical analysis, and monitoring intended to identify the individual/family/community’s status in relation to a given condition or phenomenon.”	Assessing level of consciousness; Look at patient–skin color. Check bed alarms.

CPM indicates continuous passive motion.

Omaha System documentation, these 4 terms may be aggregated and abbreviated for single-click documentation of the intervention’s 4 linked terms/data points that can then be stored or used in predictive algorithms. Numerous studies highlight uses of the Omaha System Intervention Scheme for practice, education, and research.^{11,26} Evidence-based Omaha System guidelines have been developed by experts, are available online, and have been incorporated in clinical software for clinical decision support and documentation.²⁰⁻²²

There are few studies evaluating the Omaha System within the acute care setting, despite the trend toward the use of multidisciplinary healthcare teams, the critical need for data interoperability, and the move toward integration of standard terminology in EHRs.^{13,27} Two seminal studies about use of the Omaha System in acute care are described in detail below. First, Bowles’ study mapped acute care and discharge planning patient Problems and nurse interventions from narrative notes to Omaha System terms.¹³ Second, Zhang and colleagues mapped common nursing actions in a medical-surgical setting to the Omaha System to form the conceptual basis for a digital time and motion study.²⁸ Additionally, there is a recent report that the Alberta Health Services—a large, provincewide health system in western Canada—is integrating the Omaha System into all care settings including acute care.²⁹ These 2 seminal studies of the Omaha System in acute care settings emphasized the importance of using structured and standardized data to understand nursing care for hospitalized patients.^{13,28}

Patients in Bowles’ study had the following diagnoses: angina, percutaneous transluminal coronary angioplasty, myocardial infarction, congestive heart failure, valve replacement, and/or

coronary artery bypass graft.¹³ These patients averaged 8 Problems that required nursing attention. Only the most frequent Problems were reported: Circulation, Mental health, Medication regimen, Pain, Neuro-musculo-skeletal function, and Respiration. Bowles included “discharge planning” as an additional Problem-level concept.¹³ Patients in Zhang’s study were adult surgical patients on a medical-surgical unit of a major university hospital. The most frequent Problems in the observational study were Bowel care, Healthcare supervision, Medication regimen, Personal care, Physical activity, and Skin.²⁸ Variation between Problems found in these 2 studies likely reflect the needs of patients in surgical units versus cardiac units. Both studies noted the use of all Omaha System Categories (ie, Teaching, guidance, and counseling; Treatments and procedures; Case management; and Surveillance); as well as numerous Targets.^{13,28} These studies demonstrate the usefulness of the Omaha System to describe problems and interventions of various populations, including patients in

Figure 1. Diagram of the Relational Structure of the Omaha System¹² Consisting of 3 Components Sharing a Central Concept of “Problem”

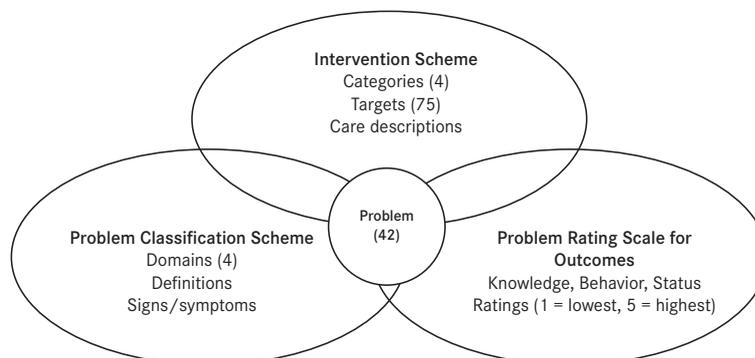


Table 3. Examples of Omaha System Targets¹² With Narrative

TARGET TERM	DEFINITION	NARRATIVE
Communication	“Exchange of verbal or nonverbal information between the individual/family/community and others.”	They have a communication board that they keep up. The key is good communication with patients.
Continuity of care	“Communication of information among providers/organizations to provide safe and effective care and decrease duplication of efforts/services.”	Start day with report for 5 patients. Consults with other team players.
Coping skills	“Ability to effectively manage challenges and changes such as illness, disability, loss of income, birth of a child, or death of a family member.”	[Patient] Feels more secure and in control [with call light within reach]
Dietary management	“Nourishment with balanced food and fluids that sustain life, provide energy, and promote growth and health.”	Ensure patient is NPO
Dressing change/wound care	“Activities that promote wound healing and prevent infection such as observing, measuring, cleansing, irrigating, and/or covering a wound, lesion, or incision.”	When doing wound care, educating about what to do at home
Durable medical equipment	“Nondisposable items used while providing care such as special beds, walkers, and apnea monitors.”	Coordinated arrangement with Central Supply to bring CPM machine up on day of surgery
Environment	“Physical surroundings, conditions, or influences in the residence, neighborhood, or community.”	Check bed alarms
Laboratory findings	“Results of fluid and tissue tests such as urine and blood analyses.”	Check labs
Medical/dental care	“Assessment and diagnosis and treatment provided by physicians, dentists, and their staff and assistants.”	Check chart for orders
Medication administration	“Activities that involve applying or giving medications and that are completed by clients, parents/caregivers, or healthcare providers.”	Pass meds
Mobility/transfers	“Body movements that change position or allow participation in activities such as walking.”	Bariatric patients—staff help them get up to walk
Signs/symptoms—physical	“Objective or subjective evidence of physical health problems, such as fever, sudden weight loss, or statement of pain.”	Assess patient. Sixth sense about patient changes—especially if you cared for them the day before.

CPM indicates continuous passive motion; NPO, nil per Os (nothing by mouth).

acute care settings.^{13,28} However, no studies to date have systematically evaluated the applicability of the Omaha System in medical-surgical and intensive care unit (ICU) settings.

In the era of accountable care, healthcare systems must work together to reach the national mandates of improved health outcomes, prevention of hospital readmissions, improved patient safety and reduced medical errors, and promotion of wellness and health. It is therefore critical to understand and communicate the work of acute care nurses using standards that are interoperable across settings and professions. The purpose of this study is to evaluate the applicability of Omaha System terms for acute care nursing interventions. The objective was to use the Omaha System to specify discrete observable interventions of medical-surgical and ICU nurses in a large urban, faith-based hospital. This practice-partner study was a precursor to a prepost EHR-implementation comparative time-motion study of the impact of a new comprehensive EHR on acute nursing care.

METHODS

A classification procedure for narrative content was developed

based on methods used in previous studies.^{28,30} Researchers interviewed 7 registered nurse content experts from the 3 study units in two 1-hour meetings (5 from medical-surgical and 2 from ICU settings) to elucidate discrete nursing activities in 3 acute, adult inpatient settings: 2 medical-surgical units and an ICU.

Sample

A convenience sample of registered nurse content experts was recruited by the managers of the selected units based on availability the day of the scheduled interviews. Each participant received a copy of the approved study Institutional Review Board proposal prior to the interview sessions. Participating units were selected by the organization's chief nursing executive, in collaboration with the nursing leadership team, based on expert knowledge of the units as generally representative of medical-surgical and intensive care.

Procedures

Interviews

The structured interviews consisted of 7 questions on the nature of everyday nursing work. The participants were asked to describe

important behaviors or activities in their work day. The interview questions were:

- Describe a typical day: What kinds of things do you do?
- What are the most important things you do that make a difference for your patients?
- What are the most important things you do that make a difference to the organization?
- What nursing acts might be missed by an observer?
- What are the most important patient needs that might be missed by an observer?
- What are components of multitask actions?
- What do you want to be sure we can capture?

The interviews were conducted in two 90-minute sessions: one with the medical-surgical nurses and the other with the ICU nurses. One researcher was physically present with the nurses and had the primary role of guiding the interview; 2 researchers participated via conference call and were active participants in the conversation, asking clarifying questions and responding to specific participant questions about study purpose and methods. All researchers captured typed transcripts of interview notes.

Interview Content Classification

Notes from the interviews were reviewed and classified according to definitions of Omaha System terms by an Omaha System expert (KM) and reviewed by the research team. Additionally, participants circled or highlighted terms considered relevant to their acute care settings in a comprehensive appendix of defined Omaha System Intervention Scheme Problem, Category, and Target terms.¹² Two researchers also circled terms that were considered relevant based on their participation in the interview discussion.

Validation of Interview Content Classification

Researchers combined into a spreadsheet the Omaha System terms identified from nurse interviews, included in the instrument developed by Zhang et al, and those reported in Bowles' study.^{13,28} The research team then reviewed the spreadsheet, the interview notes, and all source documents in their entirety. Finally, the team discussed differences and reached consensus on the final mapping.

RESULTS

A brief interview summary is provided as context for the applicability analysis results (Figure 2). Selected narrative phrases related to this description are also reported in Table 4. Nurses from both the medical-surgical and ICU settings described beginning their days with multifaceted information gathering processes, which included a universal emphasis on patient assessment, review of medical orders, and rapid prioritization. Nurses related the importance of reviewing, creating, and sharing the plan of care. Both the plan for the day and the ongoing plan of care were emphasized as important for patient understanding of their treatment and satisfaction with care. Mul-

Figure 2. Omaha System¹² Problems, Categories, and Target Terms Mapped to Researcher Notes

Describe a typical day: What kinds of things do you do?

Nurse A

- Start with report CM – continuity of care.
- Assess S – signs/symptoms physical; S – coping skills. Assessment becomes focused – identifies things to focus on; add to list during the day.
- Check orders.
- List guides the day – Pain – TP pain management, social services consult continuity of care, discharge placement continuity of care, plan of care sickness/injury care.
- Medication administration medication administration.
- Charting communication.

Nurse B

- Come to work; gets assignment & phone; gets report for 5 patients CM – continuity of care. Rounding – look at pt; check vital signs Circulation – S – signs/symptoms physical; talk to pt bonding/attachment; quick assessment S; how did they sleep – Sleep and rest patterns – S. Based on what they say and how they look. Go on to next pt – quick assessment.
- Checks labs S – laboratory findings; checks chart – check from previous night; looks at orders CM – medical/dental care. Looks for things to do. Based on report, prep pts for procedure – TGC – sickness/injury care, ensure pt is ready (NPO, reminds pt) – TGC – dietary management. Check meds to be administered medication coordination/ordering. In-depth assessment; prioritizes; passes med medication administration.
- Priorities – psychosocial support system, coping skills; health problems.
- Communication to doctors – leaves little note on front of chart; communicates to charge nurse. Continuity of care.

CM indicates case management; NPO, nil per Os (nothing by mouth; pt, patient; S, Surveillance; TGC, teaching, guidance and counseling; TP, therapeutic.

Mapped terms are underlined, Problem terms are capitalized, Category terms are abbreviated, and Target terms are lower case.

tiple comments described presence and listening as important for rapidly building relationships and establishing trust with the patient and family. Nurses described their alignment with the organization's mission and core values. They recognized patients and their families as at the center of their care and clearly linked the care experience to patient satisfaction, providing personal insights about the importance of values-driven care.

Interprofessional team-focused care, patient education, and preparation for discharge were threaded throughout responses from both the medical-surgical and ICU nurses. The reliance on team members within their units and the richness of the full interprofes-

Table 4. Phrases That May Represent Additional Concepts With Narratives

CONCEPT	NARRATIVE
Be present	Sitting in the room, presence, listening to the patient. Be present a lot—do it in a nice way. Be available for that patient—any time they need anything. Be in the moment.
Share compassion	Share compassion—it's part of our core values. We—and our family—are patients here. It's very grounding to be on the other side of the curtain.
Look at the patient holistically	Keep in mind our core values and implementing them in our daily care—unifies nurses and staff. It's the foundation of our care—look at the patient holistically.
Patient satisfaction, rapport	If the patient is satisfied with my care, that patient will come back to this hospital. On the same page with the patient; need to have good rapport. Same thing with doctors and staff.
Critical thinking: prioritizing and reprioritizing	Even before you touch the patient [you] look at the patient and think, "I'm in trouble." Have to individualize the priority. Prioritizes—psychosocial, health problems. The observer doesn't see continual reprioritizing.
Be the advocate	Be the advocate—if they [patient and family] need to understand more or they don't agree with something, speak up to the physician or others; the nurse advocates and helps be the gatekeeper.
Rapid response	Rapid Response Team—mostly called by nursing staff; families are made aware they can call.

sional team's contribution to the care process and the importance of communication among team members were mentioned multiple times. Patient and family education and anticipatory guidance were described as among the most important things that make a difference for patients.

An applicability analysis of the Omaha System terms in acute care showed that of 121 defined Omaha System Problem, Category, and Target terms, the majority were applicable in acute care in medical-surgical and ICU settings. Forty of 42 Problem terms were applicable (95.2%; Table 1). The most frequent Problems were "Consciousness," "Circulation," "Skin," and "Bowel function." All Category terms were applicable (100%; Table 2). Most Target terms were applicable (69.3%; Table 3). The most frequent Target terms across sources were "medication administration," "communication," "continuity of care," "dressing change/wound care," "durable medical equipment," "environment," and "signs/symptoms—physical." Phrases that may represent additional concepts are reported in Table 4. There were 2 Problems and 27 Targets not named in any source (see Table 5).

DISCUSSION

Acute care nurse interviews and the literature described complex nursing interventions provided in medical-surgical and ICU settings. These concepts mapped to Omaha System terms including all but 2 Problem terms, all Category terms, and the majority of Target

terms. Phrases that may represent additional concepts were identified. Further research is needed to define and validate these phrases before terminology refinement recommendations can be formulated.

In this study, 95.2% of Omaha System Problem terms were found to be applicable to acute care in medical-surgical and ICU settings. The exceptions were Pregnancy and Postpartum Problems, which would be relevant in a mother–baby or other obstetric unit. Thus, 100% of Omaha System Problems terms would be applicable in acute care settings. It is critical to maintain the ontological structure of the Omaha System to ensure interoperability. Bowles' study recommended adding "discharge planning" to the Problem list. The research team in this study mapped "discharge planning" to the Healthcare supervision Problem, defined as "Management of the healthcare treatment plan by healthcare providers."^{10,13} Given the emphasis on discharge planning and the national agenda for prevention of hospital readmissions, the term "discharge planning" should be evaluated as a possible Target term in future Omaha System revisions.³¹

This study confirms that 100% of Category terms are applicable in acute care settings, aligning with findings in previous studies.^{13,28} This finding may suggest that it is possible to generalize healthcare communication and actions across settings and aligns with the notion of the importance of standards that can enable such communication, including the interoperability and exchange of data.^{1,2,13}

Finally, this study identified 69.3% of Target terms as applicable in acute care. The fact that there were 27 Targets not named in any source may reflect the broad range of topics addressed in community care settings that may not be relevant in acute care. Some of these Targets, such as "respiratory therapy care," would be applicable in acute care, but may not have been named by nurses as a nursing-specific intervention. Others, such as "cast care," may be applicable in specialized units such as orthopedics, and less common in medical-surgical or ICU settings. Further research is needed to evaluate use of these unnamed Targets in acute care.

The percentage of Omaha System terms that are applicable in acute care is a meaningful finding because the Omaha System is a comprehensive, holistic, and finite ontology that describes, classifies, and relates concepts for all of health and healthcare. Its robust information structure is an ecological model that enables theoretical analysis and data capture; in other words, it is a model to conceptually link healthcare information across disciplines and settings. The applicability of acute care nursing interventions within this ontology demonstrates that it is feasible for acute care nurses to meaningfully communicate important healthcare information and to generate useful, interoperable data. This is consistent with Bowles' discharge planning study and the use of the Omaha System in CCDs.^{13,24} Fur-

ther research is needed to evaluate the acceptability and usefulness of the Omaha System for documentation in acute care EHRs.

Nurse interviews included phrases that did not precisely map to existing Omaha System terms. In general, the majority of these phrases described aspects of nursing actions related to the Intervention Scheme Category terms. For example, “Be present,” “Share compassion,” “Look at the patient holistically,” “Patient satisfaction,” and “Rapport” described aspects of a therapeutic, relationship-based approach to care (Teaching, guidance, and counseling); “Critical thinking—prioritizing and reprioritizing” related to vigilance in monitoring the patient situation (Surveillance); and “Be the advocate” and “Rapid response” related to aspects of managing the patient’s plan of care (Case management). Whether or not to include terms for such approaches to care within nursing documentation is an important question, because researchers examine nursing data to evaluate how nurses make a difference. These approaches to care may describe aspects of the essence of nursing and may apply to any setting in which nursing is practiced. Some may be intangible qualities that are difficult or impossible to describe and quantify, but unless they are documented, it will not be possible to use standardized nursing data sets to evaluate these concepts as contributors to patient outcomes.

Formal adoption of nursing phrases as Problem, Category, or Target terms would require additional review during a future Omaha System revision.^{10,11} However, given that the Care description level of the Intervention Scheme is customizable, it could be used to easily and immediately incorporate such phrases within nursing documentation using the Omaha System.

Implications

The implications of using the Omaha System to represent acute care nursing are considerable, especially for interoperability and exchange of data across settings. The Omaha System has the potential to be used in any EHR for clinical documentation and to disseminate evi-

dence-based clinical decision support. The study should be repeated in other acute care medical-surgical and ICU settings and should be extended to additional acute care areas, including behavioral health, perinatal care, and pediatric care. Implications for terminology development include evaluating phrases identified from nurse interviews to be considered included in a future revision of the Omaha System.

CONCLUSIONS

This study evaluated the applicability of a multidisciplinary interface standard—the Omaha System—for acute care nursing. Omaha System terms were broadly applicable in acute care nursing and therefore may be of value for measuring patient outcomes and improving healthcare quality before, during, and after hospitalization. Further research is needed to determine if additional phrases identified during the study should be incorporated in a future version of the Omaha System and to evaluate the acceptability and usefulness of the Omaha System in acute care EHRs. Use of the Omaha System

Table 5. Examples of Omaha System Terms Not Present in Any Source

TYPE OF TERM	TERM	DEFINITION
Problem	Pregnancy	“Period from conception to childbirth.”
	Postpartum	“Six-week period after childbirth.”
Target	Anatomy/physiology	“Structure and function of the human body.”
	Anger management	“Activities that decrease or control negative feelings and interactions, including violence.”
	Cast care	“Activities that promote cleanliness, dryness, support, alignment, and relief of pain, pressure, and constriction of an injured body part immobilized by a cast, splint, or other device.”
	Legal system	“Authority, rules of conduct, or administration of the law.”
	Other community resources	“Organizations or groups that offer goods or services not specifically identified in other targets such as exercise facilities, food pantries/distribution centers, or faith communities.”
	Respiratory therapy care	“Assessments/diagnosis and treatment provided by respiratory therapists and staff or assistants.”
	Screening procedures	“Evaluation strategies used to identify risk for conditions, diagnose disease early, and monitor change/progression over time.”
	Social work/counseling care	“Assessments/diagnosis and treatment provided by social workers, counselors, and staff or assistants.”
	Substance use cessation	“Activities that promote discontinuing use of harmful/addicting materials.”
	Support group	“Organized sources of information and assistance such as focused classes and organizations, telephone reassurance, and reliable Internet sites that address a specific topic such as parenting, alcoholism, obesity, and Alzheimer’s disease.”
Wellness	“Practices that promote physical and mental health such as exercise, nutrition, and immunizations.”	

as a multidisciplinary terminology may bridge acute and community care settings and serve as a strategy for improving healthcare information interoperability and exchange in the era of accountable care.

Author Affiliation: University of Minnesota (KAM), Minneapolis, MN; Washington State University College of Nursing (MS), Spokane, WA; Providence Health & Services (RS), Portland, OR; Providence St. Patrick Hospital (ES), Missoula, MT.

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Address correspondence to: Karen A. Monsen, PhD, RN, FAAN, University of Minnesota School of Nursing, 5-150 Weaver-Densford Hall, 308 Harvard Street SE, Minneapolis, MN, 55455. E-mail: mons0122@umn.edu.

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