Development of the Loose Canon Model of Nursing Interventions
Represented Using the Unified Model Language (UML)
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An information model is a representation (often graphical) of a set of domain-specific concepts-of-interests, along with the valid syntactic and semantic relationships that link those concepts. A well-defined information model facilitates explicit understanding of, and reasoning about domain knowledge, and is often used as the basis for representing domain knowledge in a computable form. In information system development, models are developed to explicate the structure and behavior of a proposed system. Domain experts and modelers collaborate to build models that reveal the essential concepts and desired functionalities. This model insures that a concept-based terminology is constructed so that the benefits identified by Henry can be realized: non-ambiguous representation of concepts, lossless data transformations, facilitation of mapping among terminologies, data re-use in different contexts, and automated classification of new concepts with multiple inheritance of defining characteristics.

AIMS OF THE STUDY
The purposes of this study were to (1) develop a terminology model for nursing interventions and (2) evolve the model using a training set of domain knowledge selected from the Nursing Intervention Classification (NIC). This model was iteratively developed by four domain experts working with an expert UML modeler, who works on the HL7 Reference Information Model through “story boarding”. Next, the domain knowledge embedded in NIC was used as a training set. Forty five, randomly selected, nursing intervention definitions were semantically marked-up by the members of the modeling team. Consensus was achieved and definitions were evolved to reflect the new understanding.

The Loose Canon Model of Nursing Interventions defines an intervention to be composed of a Recipient, a Delivery Mode, and an Activity Focus. Recipient is the person, family, organization, or aggregate to whom the intervention is delivered. The Patient is the implicit recipient of all interventions unless otherwise specified. Delivery Mode is the manner in which the intervention is applied to the recipient. Activity Focus is the phenomenon upon which the intervention is centered. The following is an example of an intervention as marked up by the domain experts:

NIC CODE 3520
PRESSURE ULCER CARE
<Delivery Mode>Facilitation</Delivery Mode> of <Activity Focus>healing</Activity Focus> in \ pressure ulcers
<Recipient>implied patient</Recipient>

DISCUSSION
The value of formal modeling techniques as a methodology of formalizing semantic concepts for building computable terminologies has been demonstrated. The Loose Canon Model can lead to a compositional grammar needed to created the representation language for a concept-based terminologic system. Modeling is also useful for managing the informational complexity in the practice of nursing.

REFERENCES

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