A Standard for Nursing Process - Clinical Decision Support Systems (NP-CDSS)

Maria MÜLLER-STAUB[a] and Wolter PAANS[b]
[a]*Professor, Hanze University Groningen (NL*
maria.muellerstaub@waid.zuerich.ch)
[b]*Professor, Hanze University Groningen (NL)*

Abstract. A Nursing Process-Clinical Decision Support System (NP-CDSS) Standard with 25 criteria to guide future developments of Nursing Process-Clinical Decision Support Systems was developed. The NP-CDSS Standards' content validity was established in qualitative interviews yielding fourteen categories that demonstrate international expert consensus. All experts judged the Advanced Nursing Process being the centerpiece for Nursing Process-Clinical Decision Support System that should suggest research-based, pre-defined nursing diagnoses and correct linkages between diagnoses, evidence-based interventions and patient outcomes.

Keywords. Decision support, Electronic Health Report, Nursing Process - Clinical Decision Support Systems (NP-CDSS), Standard, Consensus Validation

1. Introduction

Nursing documentation is essential for safe patient care; as missing documentation and the lack of Standardized Nursing Language (SNL) endangers care continuity[1]. Most Electronic Health Records (EHRs) don't contain *Advanced Nursing Process* decision-support. The *Advanced Nursing Process*[2] "consists of defined, validated concepts. It includes assessments, nursing diagnoses, nursing interventions, and nursing outcomes that are rooted in scientifically based nursing classifications" [3][(p.13)].

Second Nursing specific Clinical Decision Support Systems (CDSS) do not exist and no "gold standard" is available for accurate nursing process documentation[4]. Nursing Process - Clinical Decision Support Systems (NP-CDSS) aim to support nurses in diagnostic reasoning in the *Advanced Nursing Process*. The study aim was to develop a standard for NP-CDSS.

2. Methods

In a literature review previous instruments[5, 6] and criteria were derived to develop the NP-CDSS Standard. Next, it was pilot validated and last, qualitative interviews

were performed with eight international experts to reveal categories[7] establishing the NP-CDSS Standards' content validity.

3. Results

The NP-CDSS Standard includes 25 criteria supported by expert consensus that revealed fourteen categories. The eight main categories are: 1) The Nursing Process is key to support the nurse in a NP-CDSS. A NP-CDSS has to contain: 2) SNL, 3) evidence-based nursing diagnoses and 4) evidence-based interventions, 5) standardized, knowledge based outcome-indicators, 6) connections between measurement instrument results and nursing diagnoses, interventions and outcomes, 7) it must support holistic nursing, and 8) it must contain coded, standardized concepts for data gathering and research.

4. Discussion

All experts were positive about the NP-CDSS Standard and considered it a necessity, and judged the *Advanced Nursing Process* to be the centerpiece for a NP-CDSS[8].

Second All experts agreed that a NP-CDSS must contain research-based assessment cues, pre-defined nursing diagnoses and correct linkages between diagnoses, interventions and patient outcomes, and that such a system can enhance nursing care quality. This finding is supported by the literature [2, 3, 9]. The experts also indicated that a NP-CDSS offers chances for future "big data" research were interoperable data are key for future meta-analyses and to compare outcomes across-settings and countries[9, 10]. The new NP-CDSS Standard is suggested for application and testing in EHRs.

References

[1] N.Wang, D. Hailey and P. Yu, *Quality of nursing documentation and approaches to its evaluation: a mixed-method systematic review.* Journal of Advanced Nursing, 2011. **67**(9): p. 1858-75.

[2] B.J. Ackley and G.B. Ladwig, *Nursing diagnosis handbook: An evidence-based guide to planning care*. 10 ed. 2014, St. Louis: Mosby/Elsevier.

[3] M. Müller-Staub et al., *Expert report on nurses' responsibility*. 2015, Bern: Swiss Nursing Science Association (ANS).

[4] M. Müller Staub, H. de Graaf-Waar and W. Paans, *Standard for Nursing Process Clinical Decision Support Systems (NP-CDSS) in EHRs*, in *ACENDIO*. 2015, Association for Common European Nursing Diagnoses, Intervention and Outcomes: Bern.

[5] M. Müller-Staub et al., *Testing the Q-DIO as an instrument to measure the documented quality of nursing diagnoses, interventions, and outcomes.* International journal of nursing terminologies and classifications : the official journal of NANDA International, 2008. **19**(1): p. 20-7.

[6] W. Paans et al., *D-Catch instrument: development and psychometric testing of a measurement instrument for nursing documentation in hospitals.* Journal of Advanced Nursing, 2010. **66**(6): p. 1388-400.

[7] P. Mayring, *Qualitative Inhaltsanalyse: Grundlagen und Techniken*. 11 ed. 2010, Weinheim: Beltz.

[8] American Nurses Association. *Nursing: Scope and Standards of Practice*. 2015.

[9] D. Jones et al., *Standardized nursing languages: essential for the nursing workforce.* Annual review of nursing research, 2010. **28**: p. 253-94.

[10] G. Keenan et al., *Challenges to nurses' efforts of retrieving, documenting, and communicating patient care information.* J Am Med Inform Assoc, 2013. **20**(2): p. 245-51.