Development of Pain Flowsheet Based on Electronic Nursing Record System

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Abstract. Pain assessment and control is the most important issue in medical fields. To manage patient pain effectively with high quality, we need a Pain flowsheet to share patient information of pain between staffs. Nurses already input more information into their electronic nursing record. We focus how to integrate each data and show appropriately without nurse's duplicated work. Finally we develop the Pain flowsheet based on nursing record, that includes the pattern of pain, influential factors, how to implement previously, what to do pain control. This study shows that well designed structured nursing records is an essential basement to advance medical process. In addition, we expect to develop more helpful functions through how to reorganize and combine each data

Keywords. Pain, EMR, Nursing record

Introduction

Pain is an unpleasant sensory and emotional experience related to the actual or potential damage and non-verbal or verbal express itself whenever people experience pain. Pain is called as the 5th vital sign. Mostly it is associated with disease, and also can be occurred during medical treatment, examination [1]. Pain is one of symptoms that effect on human quality of life in physical, emotional, social, economic, even spiritual aspect [2].

To effective pain control, the Pain management guideline of International and National guideline that establish the principle how to monitor and manage the patient pain with recording, how to educate and explain each content to patient and family [3]. In order to better pain management, healthcare professionals should get at changes in the patient's pain and what is implementing to control [4]. Therefore, we thought it is necessary to help make accurate judgments by integrating view of dispersed information related to pain. This study is to develop and apply the integrated pain management system for medical staff based on electronic medical record.

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1. Methods

Subjects

With more than 2000 beds and 7000 to 8000 outpatients daily, Severance hospital, runs by Korea's Yonsei University Health System (YUHS) [5], is the world's largest JCI-accredited hospital. It has successfully implemented in 2005 a sophisticated EMR system, incorporating computerised physician order entry (CPOE), picture archiving and communication system (PACS). EMR was consist of medical record ITEM (MR ITEM) unit in form not form unit to manage information. Especially, ENR of severance nursing is based on severance nursing process model systematically organized 3N (NANDA, NIC, NOC) .

Severance Hospital' EMR system has been developed on the Environment of C#.NET and Windows XP with Microsoft Framework v. 4.x and MS SQL2008 for DBMS. Developing Language tool is a MS Visual studio 2008. And as materials for Client, we used Windows XP, Win7 environment.

System design

The postulated steps are as followed:
1. Analysis of nursing record related to Pain
2. Select target protocols and nursing diagnosis for the integrated pain management system
3. Screen nursing activities for Pain assessment and select range of pain management to present the Pain flowsheet
4. Design the prototype of Pain flowsheet
5. Apply the Pain flowsheet

2. Results

We developed the Pain flowsheet to access and monitor on changes in the patient's pain and pain management so that clinical staffs can easily integrate information in 2010. Target nursing diagnoses and protocols were composed of the administrative functions related to pain assessment and professional nursing activities.

1)   Analysis of nursing record related to Pain

We collected and retrieved nursing activity, intervention, diagnosis, and protocol by using MS SQL and CDW system.

2)   Select target protocols and nursing diagnosis for the integrated pain management system

Perform simulation, rearrange items and evaluate clinical utilization several times according to the screen prototype.

Finally we selected "Acute Pain", "Chronic Pain" as target nursing diagnosis, "Pre-Post Operation Care", "Pre-Post Examination Care", "Visiting ER" as target nursing protocols.

3) Screen nursing activities for Pain assessment and select range of pain management to present the Pain flowsheet

"Pain assessments" includes which site, location, degree of strength, evaluation tool (eg, Numerical Pain Intensity Scale), pattern, behavior pattern, related symptom.
"Pain management or control" includes non-drug or drug therapy, which materials, contents, time, educator, and listener, achieve level, drug dosage, frequency, purpose.
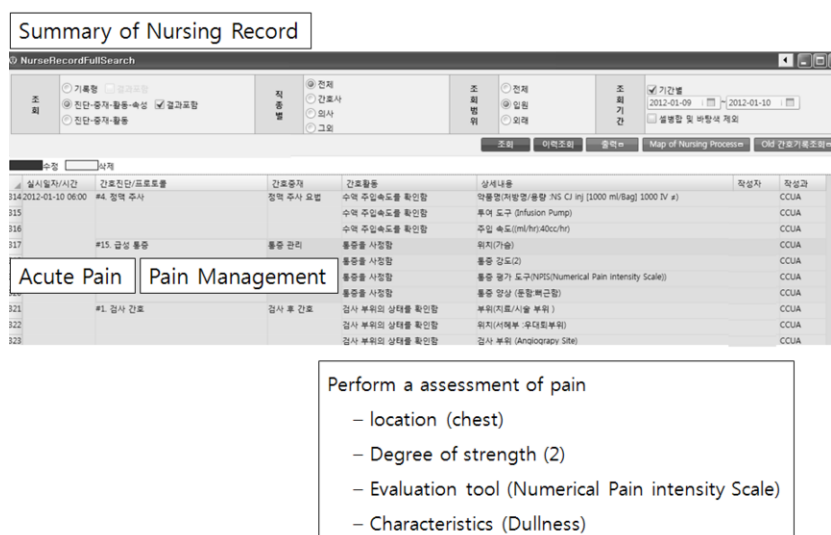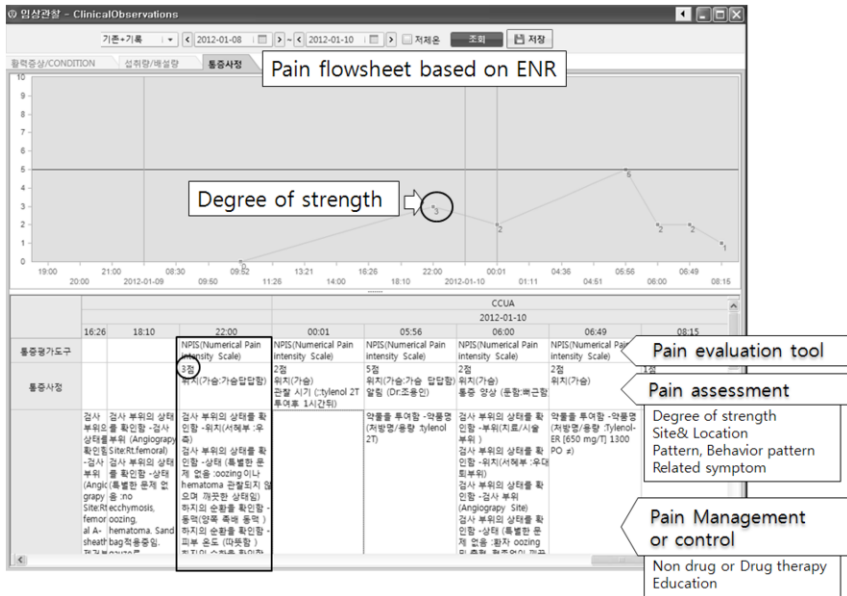

Figure 1. Nursing Record and Target Nursing Diagnosis and Activity

4) Design the prototype of Pain flowsheet

X axis is for date and time that nurse access and monitor, and shows combined target contents in detail. Y axis is for degree of strength of Pain, it shows the graph of broken line between each degree.

Figure 2. Nursing Record and Pain flowsheet

5)   Apply the Pain flowsheet

Pain flowsheet set in closely with clinical observation record and Intake & Output record.

3. Discussion

To effective pain management, pain in patients with varying characteristics, related factors, and a description of interventions should be integrated to determine what should do. In addition to real-time information access and data sharing, this kind of Pain flowsheet could also streamline communications among medical staffs [6].

This is not final solution. We are planning upgrade Pain flowsheet based on not only well-structured nursing process, as well as clinician's medical record or pain report by patients themselves [7,8].

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