The Development of Educational Tool to Support Disease Management for Nurses Preventing the Recurrence of Brain Infarction

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Background
Brain infarction has multiple risk factors that have to be controlled for inhibiting a high recurrence rate.
• For effective control of those factors, it is important to add lifestyle adjustments to the medication.
• From medical care delivery system's perspective, one of the methods to solve the recurrence of stroke is disease management (DM) system.

Previously we reported, that disease management in chronic heart failure, diabetes mellitus, chronic kidney disease and brain infarction is effective.

Japanese government recommended to provide disease management for preventing chronic disease aggravation in order to establish an integrated community care system, and suggested to effectively utilize nurses in the disease management.

What is DM?
DM is defined as a system of coordinated health care interventions and communications for populations with conditions in which patient self-care efforts are significant.

• Supports the physician or practitioner/patient relationship and plan of care.
• Emphasizes prevention of exacerbations and complications utilizing evidence-based practice guidelines and patient empowerment strategies.
• Evaluates clinical, humanistic, and economic outcomes on an on-going basis with the goal of improving overall health.

(Care Continuum Alliance, n.d.)

Developed nations such as United States, Germany and Australia adopt disease management as national strategy.

The problem when nurses performs DM
• DM nurses/DMNIs also need to acquire skills and high abilities. (Wide medical knowledge, effective interview methods, and communication skills to clients and physicians etc.)
• Long term education for nurses to acquire this skill.
• Difference in the disease management skill for each nurse.

Purpose
We have developed the educational tool to support nurses who newly came into the DM field to be able to practice evidence-based DM programs.

Process of the development of educational tool for DMN

Identification of the target
The tool users: Disease Management Nurses
Clients of receiving the education: Patient of the brain infarction (All subtypes) and modified Rankin Scale 0-3 (wholly that the self-management is possible).

Scheme and contents of the tool
Tool: “Management of Risk factors Criteria value
Hypertension Systolic blood pressure Under 140mmHg
Diastolic blood pressure Under 90mmHg
Hypothyroidism Total cholesterol Under 200mg/dl
Fatty liver/diabetes/dyslipidemia Under 150mg/dl
Obesity Body Mass Index (BMI) Under 25
Smoking Smoking cessation
Alcohol intake Amount of alcohol a day is pure alcohol more than 20g.

The goal setting, planning, and stratification
The goal setting: Each physiological indicators and self-management indicators were set to the proper value (Clinical guideline).

Planning: The individual diagnosis was performed.

Stratification: The previous physiological indicators and self-management indicators were set to the proper value (Clinical guideline).

Table 1. Main goal of physiological indicators and self-management indicators

Index Type
Systolic blood pressure
Diastolic blood pressure
Total cholesterol
Triglyceride
BMI
Smoking
Alcohol intake

The functional evaluation: The functional evaluation was performed.

The stratification groups: As the education subjects vary depending on the risk factors of each client, we set a stratification groups.

Algorithm set up
When input the abnormal data: The warning appears on the screen, and reminding function is added. The actions need to be done automatically (Figure 2-4).

Below are some of the functions of this tool.

Because the guideline recommend alcohol abstinence on high TG, the evaluation about the drinking is changed to alcohol abstinence.

For an explanation, the answer of the nurse(blue cell) open. The selected answers are based on transcultural model (Figure 2).

When there are input abnormal data which needs the report to the physician, a cell opens.

The confirmation of the report contents to the physician pushes this button. (Figure 4)

Tool verification
Checking the tool of clinical indicators and educational contents: The tool operators and clinical nurse specialists, checked validity. Compared the extracted indicators with the patients, and frequencies of the contents were examined by using medical records of brain infarction outpatient.

Proof of the concept
Discussion
There are two distinctive characteristics of this educational tool. 1. The reminding function automatically selects the necessary intervention which copes with the abnormal data.
2. As the stratification groups are based on the risk factors, this tool supports DMN understanding of the intervention. Those functions help the DMN to understand. Now, in the practicability of this tool, we are in the process of checking and proofing the function of this system.

Clinical consideration
This study was approved by the Ethics Committee of Hiroshima University.

Reference

Figure 1. The DM system use case

Figure 2. Tool response to abnormal data and lifestyle modification

Figure 3. Tool response about self-management

Figure 4. Tool suggesting for a report to the physician

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The functional evaluation: The functional evaluation was performed.

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Photo by Y. M.