

# Development of Nursing Protocol for Preventing Interruptions during Clinical Examinations and Treatments in the Early Days of Hospitalization for Acute Exacerbation of Chronic Heart Failure in Patients with Impaired Cognitive Function

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## Abstract

The purpose of this study is to prepare a nursing protocol for preventing interruptions during clinical examinations and treatments performed in the early days of hospitalization for acute exacerbation of chronic heart failure in patients with impaired cognitive function. For the first stage of the research, we prepared a draft of the nursing protocol based on a basic survey. For the second stage, semi-structured interviews were conducted with 5 nurses specialized in chronic heart failure and 11 nurses in dementia care to ensure content validity of the draft protocol. For the third stage, we examined the possibility of clinical application of the revised version of the protocol draft prepared in the second stage of the study. For assessment items, significant points of nursing care, and specific nursing care practice in this revised version, 73 subjects (84.9%) considered effective for patients, in terms of prevention of interruptions during clinical examinations and treatments in the early days of hospitalization. All items and contents were considered useful by more than 60% of the nurses. Considering that the nurses working in the clinical setting

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reported 84.9% of usefulness, we concluded that this nursing protocol remained valid at a certain level. We consider that this nursing protocol will be useful especially for newly graduated/employed nurses as a procedure manual which can reduce their anxiety or stress caused by lack of knowledge or experiences.

## Keywords

Dementia, Cognitive Impairment, Acute Exacerbation of Chronic Heart Failure, Early Days of Hospitalization, Nursing Protocol

## 1. Introduction

Dementia patients with physical disorders are more likely to develop behavioral psychological symptoms of dementia (BPSD) and delirium during acute exacerbations of the physical disorders. Therefore, it was reported that nurses felt difficult to deal with patients with dementia [1]. Nurses who provide care for demented patients at emergency medical units find it difficult to deal with them for their particular features; they are not very cooperative in treatments, and they become too aggressive to get properly treated [2]. Similarly, nurses working in general wards also feel burdened to manage elderly patients with dementia in the environment where they are very busy taking care of other patients requiring emergent care especially when there is a shortage of staff members [3].

In the acute exacerbation phase of heart failure, patients with left heart failure develop pulmonary congestion, low cardiac output, and low perfusion of systemic organs along with elevation of the left atrial pressure. Then they fall into a hypoxic state, resulting in dyspnea and shortness of breath. Patients with right heart failure have elevated right atrial pressure and systemic congestion which includes symptoms such as loss of appetite and edema. Therefore, patients with right heart failure often present with impaired level of consciousness and physical distress [4]. In addition to the physical suffering, patients with dementia feel anxiety about hospitalization and struggle to adapt themselves to the new environment; their physical distress due to aggravation of illness and failure to adapt to the hospital environment increase risk of developing BPSD and delirium [1] [5]. They tend to show hyperactive and restless behaviors especially at hospital admission or at night time [6], making it difficult for nurses to respond. However, there is no standard established yet for nursing care in patients with impaired cognitive function hospitalized for acute exacerbation of chronic heart failure. In this study, we introduce a nursing protocol which allows patients with impaired cognitive function to receive appropriate tests and treatments at the time of hospitalization for acute exacerbation of chronic heart failure and to adapt themselves to the hospital life as soon as possible so that they will be able to continue their treatments.

## 2. Methods

For the first step of the research, a draft of the nursing protocol was prepared based on a basic survey [7] for patients with chronic heart failure with impaired cognitive function. For the second stage, semi-structured interviews were conducted with 5 nurses specialized in chronic heart failure and 11 nurses in dementia care to ensure the content validity of the draft protocol. In the interviews, we asked their opinions on characteristics of patients with impaired cognitive function with acute exacerbation of chronic heart failure [7] as well as on the draft of the protocol. Then we revised the draft according to their opinions. Each interview lasted for about 120 minutes, and was conducted in a private room.

For the third stage, we examined the possibility of clinical application of the revised draft proposed in the second stage. We confirmed usefulness of the revised draft through actual cases that they experienced and completed the nursing protocol. The subjects had been working at 70 hospitals with cardiovascular ward, where they had a delirium prevention team and nurses specialized either in chronic heart failure or dementia. They all had experiences of nursing care in patients with impaired cognitive function with acute exacerbation of chronic heart failure. We requested nursing administrators of these hospitals in a written form to cooperate with us in this study, and for those who agreed, we asked them to send us replies regarding the number of copies of the survey forms that they need to distribute. The investigation was conducted during October and November 2017. The subject were asked to select all the items that they felt useful when assessing interruptions during the treatments as well as the care that they provided in order to successfully prevent the interruptions during the treatment. At the clinical site, regardless of the nurse's years of experience, there is a need to provide the best nursing to the patient, so we did not set the years of experience of the nurse specially.

### Analysis Method

In the second stage of the study, we conducted an analysis using qualitative induction on data obtained by the interviews. We created verbatim records and extracted descriptions concerning the evaluation of the draft protocol. The extracted contents were coded and classified into similar semantic contents.

In the third stage, we performed a simple tabulation and counted the numbers of assessment items and nursing care contents selected by the nurses as useful. The items and contents selected by more than 60% of nurses were considered valid to be included in the nursing protocol.

## 3. Ethical Consideration

In the second and third stages, we explained the purpose, method, research contents, voluntariness of participation in the study, and protection of personal information to the nurses and nursing administrators in a written form. We conducted the investigation under the subjects' voluntary agreement. This research

was approved by the Ethics Committee of the Graduate School of Health Sciences, Hirosaki University (Reference Number: 2015-047).

## 4. Results

### 4.1. Results of the First Stage

A draft of the nursing protocol was prepared based on the basic survey [7] and the guidelines for treatments of acute heart failure [8] in order to prepare a nursing protocol for patients with chronic heart failure with impaired cognitive function. In the basic survey [7], we revealed issues in nursing care which make it difficult for patients with impaired cognitive function to continue treatments for acute exacerbation of chronic heart failure or to go through monitoring of symptoms. These issues included the following: 1) inadequate adaptation to the environment due to sudden hospitalization, 2) anxiety due to insufficient understanding regarding clinical examinations and treatments, 3) delay in recovery due to interruption of treatments and monitoring in the acute phase, 4) difficulty in capturing symptoms associated with deterioration of heart failure, 5) difficulty in monitoring symptoms when using diuretics, 6) difficulty in adhering to diet and fluid-intake restriction. Assuming that these problems would occur in time series through the process of hospitalization, clinical examination, treatment, and symptom monitoring, we created a chronological flowchart. On the left side of the flow chart, we assumed the problems in nursing care which could occur at the beginning of hospitalization and conducted an assessment following the assessment items. In case where there was a possibility of having problems or risks, we created a summary of specific nursing care to be conducted following the significant points of nursing care on the right side of the chart. Regardless of the number of years of nursing experience, we listed specific nursing care contents to be conducted so that they could at least provide minimum nursing care.

### 4.2. Results of the Second Stage

We asked the nurses specialized in chronic heart failure and/or dementia care to evaluate the protocol draft prepared in the first stage of the study. The evaluation included 30 codes and 21 categories. The categories which contained a large number of codes were “oxygen therapy, pharmacotherapy, and resting therapy should be the priority” and “We should divided it into three phases: immediately after hospitalization, acute phase, and recovery phase”.

#### 4.2.1. Outline of Target

**Table 1** shows the outline of the certified nurses who were the subjects of this study. A total of 16 people, including 5 certified chronic heart failure nurses and 11 nurses with dementia nursing care experience, were eligible. Age was  $42.2 \pm 9.5$  years for chronic heart failure nurses and  $44.4 \pm 5.4$  years for certified dementia nurses. Average years of experience as a nurse was  $18.4 \pm 10.5$  for chronic heart failure nurses and  $21.1 \pm 5.1$  years for certified dementia nurses. The years of experience of certified nurses was  $3.4 \pm 1.5$  years for certified chronic

**Table 1.** Outline of target.

Nurse	Sex	Type of certified nurse	Age	No. of years of experience (years)	No. of years of experience as a certified nurse (years)
A	Female	CHF nursing	37	13.3	3
B	Female	CHF nursing	47	13	4
C	Female	CHF nursing	48	27.5	5
D	Female	CHF nursing	51	31.5	4
E	Male	CHF nursing	28	6.8	1
F	Female	Dementia nursing	35	13.4	8
G	Female	Dementia nursing	51	26.5	3
H	Female	Dementia nursing	51	30.3	3
I	Female	Dementia nursing	42	21.5	5
J	Female	Dementia nursing	49	21.5	5
K	Female	Dementia nursing	44	14.7	3
L	Male	Dementia nursing	48	23.3	3
M	Male	Dementia nursing	48	24.7	4
N	Female	Dementia nursing	40	19.8	3
O	Female	Dementia nursing	41	19.6	4
P	Female	Dementia nursing	39	16.7	8

heart failure nurses and  $4.5 \pm 1.9$  years for certified dementia nurses. Sex in certified chronic heart failure nurses was 5 females and for certified dementia nurses, it was 9 females and 2 males.

#### 4.2.2. Evaluation of the Draft of the Nursing Protocol by Nurses Specialized in Chronic Heart Failure and/or Dementia Care

The opinions of nurses specialized in chronic heart failure regarding the entire protocol draft are shown in **Table 2**. It included 11 codes and 7 categories.

The opinions of nurses specialized in dementia care regarding the entire protocol draft are shown in **Table 3**. It included 51 codes and 28 categories.

The opinions of nurses specialized in chronic heart failure and/or dementia regarding the possibility of maladaptation to the new environment for patients with impaired cognitive function after sudden hospitalization are shown in **Table 4**.

The opinions of nurses specialized in chronic heart failure and/or dementia care regarding difficulty understanding or anxiety that the patients with impaired cognitive function might have when they go through tests, management, or treatments are shown in **Table 5**.

Based on the above evaluation made by the specialist nurses, we revised the original draft of the nursing protocol and created the revised version of the nursing protocol draft.

**Table 2.** The opinions of nurses specialized in chronic heart failure regarding the entire protocol draft.

Categories	Number of codes
We should divide the nursing protocol into three phases: the early days of hospitalization, acute phase and recovery phase.	3
The nursing protocol is useful for new staff. It is hoped to be completed at an early date.	2
They are awaiting to use the nursing protocol; they think it will be very helpful in the clinical setting.	2
We should have priority order for contents of the nursing protocol.	1
We should not limit the place where they use the nursing protocol.	1
The contents should be simple.	1
The subjects in the nursing protocol should include those who cannot have a conversation or those with disorientation.	1

**Table 3.** The opinions of nurses specialized in dementia care regarding the entire protocol draft.

Categories	Number of codes
We should divide the nursing protocol into three phases: the early days of hospitalization, acute phase and recovery phase.	9
It will be easier to implement the nursing protocol in the clinical setting if it is described in detail.	6
We should divide the nursing protocol into two parts: significant points and implementation procedure in detail.	6
The simpler it is, the easier to read and follow.	5
The contents of the draft were satisfactory in general.	4
Once a decision is made by a patient and the family, the nursing protocol should be used to provide active treatments and achieve recovery.	4
In the assessment, nurses should ask patients, not only the families, about how they feel.	4
We believe that this is the direction and the flow of assessment and nursing care.	4
The contents of the nursing protocol should be expressed in an applicable way.	4
We need descriptions regarding how to cope with memory impairment in the nursing protocol.	3
We should have priority order for contents of the nursing protocol.	3
It will be useful to have such a nursing protocol in the clinical setting.	2
Patients may experience maladaptation to the environment. Hence, we should include this as an assessment item in the nursing protocol.	2
We should have a summary of the nursing protocol to show significant points.	1
It is good to make assessments based on yes or no, and advance nursing care.	1
We should distinguish the patient's difficulty understanding from their being in the state of stress	1
Anxiety and stress should be in the priority to be resolved at an early stage.	1
We should organize the parts where the contents overlap.	1
We should make a summary of the significant points for the goal and support.	1
The term "family" should be "caregiver".	1
Abstract contents may be easier to apply to the practice.	1
We should not limit the place where they use the nursing protocol.	1
We should include contents which encourage physicians to spend more time on explanations for patients.	1
We need to decide how far we treat the patients before implementation of the nursing protocol.	1
We should include basic contents regarding nursing care for new staff.	1
We should create a nursing protocol along with the time course of symptoms observed and treatments provided after hospitalization.	1
Adaptation to the new environment and alleviation of physical symptoms should be promoted simultaneously in the nursing protocol.	1
The nursing protocol appears practical in general.	1

**Table 4.** The opinions of nurses specialized in chronic heart failure and/or dementia care regarding the possibility of maladaptation to the new environment for patients with impaired cognitive function after sudden hospitalization.

Nurses specialized in chronic heart failure
In order to prevent patients from being readmitted to the hospital, we should include a description stating that we are in short of social resources before hospital admission, to the assessment items.
In order to alleviate patients' anxiety, it is important to establish good relationships between patients and nurses.
We need to consider the issue that patients may not be able to adapt themselves to the new environment due to the sudden hospitalization.
Nurses need to observe aggravation of the patients' symptoms not only objectively but also directly.
Nurses should correct patient's electrolyte balance and circulatory dynamics as soon as possible to prevent aggravation of dementia and delirium.
They should have a clock/calendar at the reception so that patients will know the time and date of admission.
Nurses specialized in dementia care
They may need to provide support after deciding the direction of treatments, taking into consideration the perspectives of physicians, families and patients themselves on how actively the patients will be treated.
Patients may feel stress, which could eventually induce cardiac stress, when they cannot adapt themselves to the new environment; nurses need to consider this as an issue.
The contents regarding nursing support for patients' maladaptation to the environment appear satisfactory.
Patients with heart failure may feel uneasy at the time of admission, which could eventually induce cardiac stress; we should include contents concerning anxiety in nursing protocol.
Nurses should explain procedures briefly rather than in details when patient are admitted to the hospital.
We should include reality orientation (RO) in the nursing protocol as a nursing aid to inform patients of how they spend the day in the hospital.
By including RO in the nursing protocol, nurses will be aware that RO is also a type of care.
It is important for nurses to encourage patients even more to adapt themselves to the new environment as they have dementia.
We should include the contents regarding support for patients' disorientation so that it will be easier for nurses to understand.
They should know the patients' life rhythm before considering the use of sleeping pills.
We should include contents that encourage nurses to inform their patients of current situation through posters, etc.

**Table 5.** The opinions of nurses specialized in chronic heart failure and/or dementia care regarding difficulty understanding or anxiety that the patients with impaired cognitive function might have when they go through tests, management, or treatments.

Nurses specialized in chronic heart failure
Patients always go through tests after being transferred from ICU to the ward; this flow should be maintained in the nursing protocol.
Any descriptions related to treatments and clinical examinations are important; these are properly included in the nursing protocol.
Assessment items and nursing care related to clinical examinations are necessary; these are included in the nursing protocol.
We should put more focus on clinical examinations and management common to many patients.
Nurses specialized in dementia care
We should include specific descriptions of methods, such as using a sentence or using a writing board, in the nursing protocol for demented patients.
We should rather include stress-relief methods appropriate for individual patients.
The nursing protocol contains detailed information and appears very practical. We should keep it as it is.

### 4.3. Results of the Stage 3

#### 4.3.1. The Number of the Survey form Distributed and Collected

Aiming for clinical application of the revised draft of the nursing protocol created in the second stage of the study, we requested in a written form the nursing administrators of 70 medical institutions to cooperate with us in this

study. Thirty-one medical institutions participated in this study, and we requested the nursing administrators to distribute the survey form to a total of 152 nurses. A total of 92 copies, with the response rate of 60.5%, were collected from the subjects. The number of valid responses was 86 (effective response rate 56.6%).

#### **4.3.2. An Overview of the Participants**

As for the number of years of nursing experience, 5 nurses (5.8%) had 1 year experience, 16 nurses (18.6%) had 2 - 3 years, 6 nurses (7.0%) had 4 - 5 years, 16 nurses (18.6%) had 6 - 10 years, 24 nurses (27.9%) had 11 - 20 years, 16 nurses (18.6%) had 21 - 30 years, and 3 nurses (3.5%) had over 31 years of experience. The subjects included 78 females (90.7%) and 8 males (9.3%).

#### **4.3.3. Evaluation of Usefulness of the Revised Draft of the Nursing Protocol**

Seventy-three subjects (84.9%) responded that the revised draft of the nursing protocol was effective for patients for each assessment item, the significant point of nursing care, and specific nursing care practice, in terms of prevention of interruptions by patients during clinical examinations and treatments in the early days of hospitalization. The number of nurses who judged nursing protocols useful is shown in **Table 6**. All items and contents were considered useful by more than 60% of the nurses.

The nursing protocol (significant points of assessments and nursing care) created in this study for prevention of interruptions during clinical examinations and treatments in the early stages of hospitalization for acute exacerbation of chronic heart failure in patients with impaired cognitive function is presented in **Figure 1**. This protocol is supposed to be used on the day of hospital admission and when the patients receive clinical examinations or treatments. For the significant points of nursing care, a list of specific nursing cares to be practiced is presented below **Figure 1**.

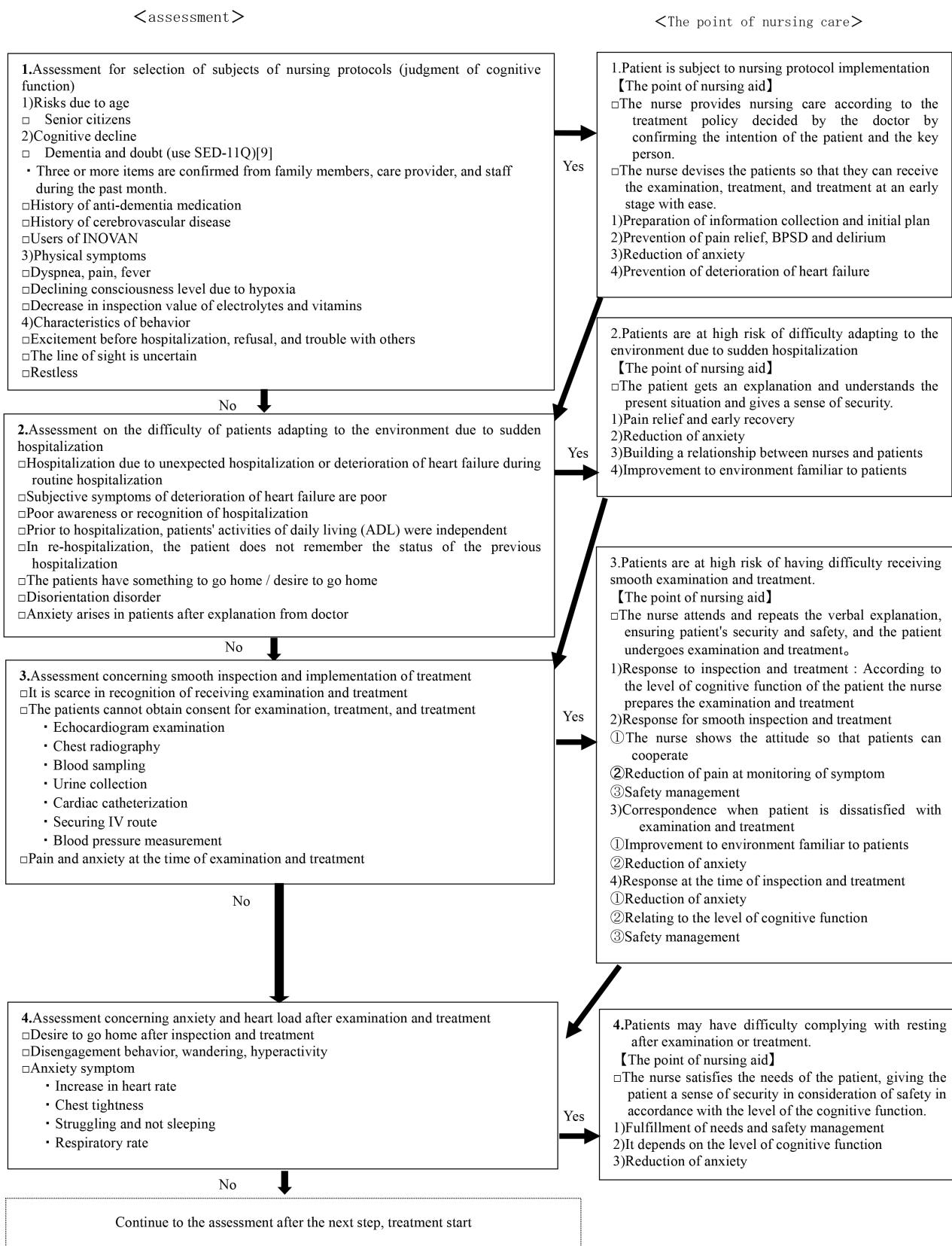
Specific nursing care contents in the nursing protocol to prevent interruptions during clinical examinations and treatments in the early days of hospitalization.

1) Assessments for selection of subjects in the nursing protocol (judgment of cognitive function)

[The significant point of nursing aid] The nurses provide care according to the treatment policy decided by the doctor based on the patients' and the key persons' will, and make efforts so that the patients will be able to go through clinical examinations, management, and treatments in the early stage of hospitalization.

**Table 6.** The number of nurses who judged nursing protocols useful.

	assessment	The point of nursing care	Specific nursing care contents
Number of nurses judged useful (%)	69 (80.2)	55 (63.9)	63 (73.3)



**Figure 1.** Nursing protocol to prevent interruptions of clinical examinations and treatments in the early days of hospitalization (the significant points of assessments and nursing care).

- a) Preparation for information collection and the initial plan
    - Prepare the initial plan by obtaining information from the families and care providers on the patients' personality and behavioral characteristics before the hospital admission as well as how they feel about hospitalization.
    - Receive information about cognitive function of the patients from the ICU nurses when they are transferred from ICU to the ward.
  - b) Pain relief and prevention of BPSD and delirium
    - Alleviate physical symptoms of patients in the early stage and oxygenate them.
    - Even if the patients were independent in terms of ADL before hospitalization, nurses ask family members and care providers to stay with the patients at the time of admission until their conditions become stabilized.
    - When the patients are re-admitted to the hospital, nurses obtain information from the first admission and deal with them while predicting their possible patterns of delirium and BPSD.
    - The sudden onset and deterioration of BPSD could be delirium; early detection and management are important.
  - c) Reduction of anxiety
    - Perform reality orientation.
    - Actively communicate with their families and care providers and make the patients believe that they are safe to stay with, by showing how close they are to the patients' families and care providers.
    - Ask families to show that they do not feel that the patients have been causing a trouble for them.
  - d) Prevention of deterioration of heart failure
    - Assist patients so that they do not experience excessive cardiac stress while observing appropriate timing with other staff members.
    - For patients on Aricept, nurses check the doctor if they need to take the drug and monitor the arrhythmia symptoms.
- 2) Patients are at high risk of difficulty adapting themselves to the new environment due to sudden hospitalization
- [The significant point of nursing aid] The nurses provide information to the patients so that they can understand the current situation and feel secure.
- a) Pain relief and early recovery
    - Do not rely solely on objective clinical indicators for the symptoms of heart failure deterioration, but also pay attention to subjective symptoms such as "feeling exhausted" and "painful" and try to alleviate their distress.
    - Coordinate with the doctors for early discharge in order to reduce the patients' stress associated with the environmental changes.
  - b) Reduction of anxiety
    - Check the patients' visual acuity and hearing ability; they can wear glasses or hearing aids to receive information.
    - At the time of admission, nurses ask the doctor to explain patients in an easy way about their conditions and treatments.

- Keep explaining the patients about the treatments.
  - Tell the patient how long they are expected to be hospitalized.
  - For patients with mild memory impairment, nurses should not tell the patients persistently what happened but post a history of hospitalization at a place where they can see.
  - Write down the contents that the patients always ask and post them at a place where they can see.
  - Do not make them feel alone, the nurse should stay close to them as much as possible and give a sense of security.
  - Adjust temperature, humidity, sound, bedding, and relationship with the others in the same room so that they can have a comfortable environment.
  - Uses a clock and a calendar for the patients to have a sense of time.
  - Attempt to relieve stress by methods appropriate for individual patients. For example, to apply a hot towel around the neck, etc.
  - Ask the families to tell the patients to devote themselves to treatments for early discharge.
  - If patients are not aware of deterioration of their conditions, or on the first or the second day of hospitalization, they tend to leave beds after seeing their families and caregivers; reinforce observation.
- c) Establishment of relationships
- Though nice communication, deal with patients with calm and positive attitudes so that they can establish a reliable relationship with the patients.
  - Spend some time with patients and listen well to their complaints; stay close to the patients as much as possible even if it is a short time (the most important point).
  - Exchange information and provide care which is standardized among the staff.
- d) Preparation of an environment familiar to patients
- Prepare a comfortable environment, which is close to the one they had before hospitalization as much as possible, so that they can feel familiar with this new place.
  - Ask families and caregivers about how the patients used to be called or about their life patterns, and utilize the information to support the patients.
  - Patients with mild dementia are cared by nurses who they feel comfortable with or primary-care nurses.
  - The patients with Lewy body dementia are particularly taken care by the same nurse as in the previous hospitalization.
  - Do not move patients to another room as much as possible during the hospitalization.
- 3) Patients are at high risk of having difficulty receiving smooth examinations and treatments
- [The significant point of nursing aid] The nurses attend and repeat the verbal explanations, ensuring patients' security and safety so that they can receive examinations and treatments.

- a) Before examinations and treatments: prepare for the examinations and treatments according to the level of cognitive function of the patients
- Talk gently to the patients with smiles and body contacts, so that they will recognize the nurses' faces at the early stage.
  - Always talk to patients before examinations and treatments.
  - Introduce themselves and explain to the patients clearly what they are going to do; repeat if needed according to the level of their comprehension.  
“We will check your heart, please stay asleep.”  
“We will check your blood. You'll feel a little prick so please do not move.”
  - If the patients are asleep, tell them after they wake up.
  - Do not only use oral explanations but also use visual methods such as letters, pictures and a writing board, if necessary.
  - Avoid holding patients tightly with many people, but rather talk to the patients during treatments.
- b) For smooth examinations and treatments
- ① Create an atmosphere which makes patients feel like cooperating
  - Tell patients sincerely to receive examinations and treatments.
  - Ask questions such as “what happened” to understand what they think, and do not deny what they say.
  - ② Reduction of pain when monitoring symptoms
  - Continuously monitor the electrocardiogram; when measuring blood pressure and percutaneous arterial oxygen saturation ( $\text{SpO}_2$ ), explain the procedures to the patients each time.
  - ③ Safety management
  - Ask the doctor to use the blood vessels in the upper limb rather than the lower limb for the safety purpose after a cardiac catheter examination.
- c) When patients are feeling unsatisfied with examinations and treatments
- ① Prepare the environment so that it will be familiar to the patients
  - Stay away from the patients in terms of time and distance, and ask other staff or those who patients feel familiar with to take care.
  - ② Reduction of anxiety
  - If patients are not satisfied with the explanations given by the medical staff, ask families and care providers to explain instead.
  - Try to change the mood and explain again.
  - If the patient cannot stay bed-rested even with a sedative, it is likely that the examination is going to be interrupted.
- d) During examinations and treatments
- ① Reduction of anxiety
  - Stay close to the patients as much as possible and talk to them to give a sense of security.
  - Respond at the appropriate pace for the patient.
  - ② Involvement according to the level of cognitive function
  - If nurses hold the patients too tight during the treatments, they may have a bad memory about the procedures; ask their families or caregivers who are in

good relationships with the patients to stay next to the patients.

- Wait for a while to cool down and try again.
  - During blood collection/IV insertion or examinations, try to shift their attention to something else.
  - When nurses leave the patients, write down the information that the patients always ask about and leave it at a place where they can see.
- ③ Safety management
- When nurses leave the patients, try to know their behavioral patterns and arrange for the next visit.
- 4) Patients may have difficulty complying with bed-resting after examinations or treatments

[The significant point of nursing aid] The nurses attempt to satisfy the patients' need and provide safety according to the level of their cognitive function so that they can have a sense of security.

a) Fulfillment of needs and safety management

- Takes some time to communicate with patients and listen well to their complaints so that they will feel satisfied.
- For patients wandering around, help them to achieve their goal.
- If patients are asleep during nurse visit, do not disturb them as long as they have stable vital signs.
- In order to prevent them from falling, provide them with a low bed, an exit sensor, and a safety mat.

b) Involvement according to the level of cognitive function

- Explain each time with a language easy for the patients to understand.
- Talk to the patients slowly and do not give too much information at a time.
- If patients cannot stay bed-rested, try to extend their level of resting as much as possible while checking the vital signs.

c) Reduction of anxiety

- Pay attention to the voice tone when talking to the patients, and try to make them feel comfortable.
- Respond appropriately to the patients at their pace (in terms of feeling and emotion), according to their behavioral pattern.
- Stay close to the patients as much as possible when moving together so that they will feel calm.
- Always pay attention to the patients; if nurses need to leave the patients, tell them what time they will return so that the patients can feel secure.
- Approach patients with a calm and positive attitude in a standardized manner.

## 5. Discussion

### 5.1. The Process of Nursing Protocol Preparation

Based on the evidence from the previous study (original draft) and opinions of certified nurses specialized in chronic heart failure and/or dementia care, we

prepared a revised draft of the nursing protocol using a mail survey on nurses working in clinical settings for the effects of assessment items and specific nursing care practice. The nursing protocol was considered useful by 84.9% of these nurses, suggesting that it is valid to a certain level.

## 5.2. Usefulness of the Nursing Protocol

### 5.2.1. For Improving Quality of Nursing Care

The nursing protocols created in the previous studies include the protocol for the elderly demented patients with wandering behavior [10], the nursing protocol for safe and efficient increase of the resting level in acute stroke patients [11], and the protocol for safe and easy step-wise change in the posture angle in acute stroke patients [12].

For dementia patients complicated by physical disorders, BPSD and delirium are likely to develop in the acute exacerbation phase of the physical disorders. Hence, nurses felt it difficult to deal with patients with dementia [1]. However, no one has ever attempted to create a nursing protocol aiming for conducting clinical examinations and treatments smoothly in patients with impaired cognitive function and physical diseases so that they can have a speedy recovery. The nursing protocol created in this study appears to contribute to the standardization of nursing care for patients with physical disorders with impaired cognitive function.

### 5.2.2. For Anxiety Relief in Nurses

In the second stage of the study, we received a comment from the nurses specialized in chronic heart failure that they were awaiting for the nursing protocol to be completed very soon as it would be helpful for young nurses. In addition, we also had a comment from the nurses specialized in dementia care that we should include basic contents about nursing care for young nurses. Hence, we considered that this nursing protocol would be useful especially for newly graduated/employed nurses as a procedure manual. Newly graduated nurses can do what they are supposed to do. However, they feel anxious about working independently especially when they still have lots of things to learn [13]. In acute hospitals, anxiety and tension are regarded as factors associated with incidents and accidents that nurses can have repeatedly [14]. It has been reported that one of the most common reasons for newly graduated nurses to leave their job is their concerns for medical accidents [15]. We consider that this nursing protocol will be useful especially for newly graduated/employed nurses as a procedure manual which can reduce their anxiety or stress caused by lack of knowledge or experiences.

## 5.3. For Clinical Application of the Nursing Protocol

### Consideration of Content Validity

If a patient with impaired cognitive function is suddenly hospitalized, he or she may experience a difficulty adapting him/herself to the new environment. The nurses specialized in chronic heart failure reported that early adjustment of the

electrolyte balance and circulatory dynamics would prevent deterioration of dementia and delirium. Meanwhile, the nurses specialized in dementia care stated that we should include a reality orientation in the protocol as a nursing aid to inform a patient of how he/she will spend the day in the hospital. In other words, the nurses specialized in chronic heart failure had focused on early recovery of the patient's circulatory dynamics. While the nurses specialized in dementia care had paid more attention to the reality orientation which could be the core for dementia care. We believe that we could create a nursing protocol which is highly specialized in nursing care for patients with chronic health failure and dementia, by incorporating viewpoints from specialty fields for both chronic cardiac failure and dementia.

## 6. Conclusions

This nursing protocol was confirmed to be useful to preventing interruptions during clinical examinations and treatments in the early days of hospitalization for acute exacerbation of chronic heart failure in patients with impaired cognitive function. In addition, this nursing protocol will be useful especially for newly graduated/employed nurses as a procedure manual which can reduce their anxiety or stress caused by lack of knowledge or experiences.

There was a limit in the number of nurses. Therefore, it is necessary to increase the number of subjects and improve nursing protocols by repeated practice.

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