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# Terminology Gap in Continuous Care Between Acute and Long-Term Care Hospitals

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**Abstract**

*This study aimed to elucidate the gap in terminology between acute and long-term care (LTC) hospitals. Fifty-seven hospital documents were analyzed using text mining. Each document contained a mean 194.2 terms. Acute care hospital documents often contain pharmacological information. LTC hospital documents often contain information related to patients' lives. Documents from both settings used local, non-standardized language. Our results suggest that expanding the national standard of nursing terminologies has potential for enhancing continuity of care.*

***Keywords:***
Long-Term Care; Electronic Health Records; Standardized Nursing Terminology

## Introduction

In a rapidly aging society, continuous care is becoming more and more important. Acute care hospitals are actively working to shorten the length of stay owing to health service reform initiatives. Acute care hospitals should provide patients with information using a "document for continuous care (DCC)" regarding the transition to long-term care (LTC) facilities (e.g. rehabilitation hospitals, nursing homes, and home care). Unfortunately, many LTC facility residents are readmitted to acute care hospitals because of changes in their general condition (e.g. loss of body water or inability to consume meals). LTC facilities therefore have to prepare DCCs for use by acute care hospitals.

The DCC content is not dictated by the Japanese government, but rather by local governments or public associations (local DCCs). However, local DCCs widely differ owing to the use of various formats, terminologies, or other items. Some DCCs are implemented as a component of the electronic health record (EHR).

In some areas, the DCC in the EHR is an effective means of sharing patient information with other settings [1-3]. Conversely, paper-based DCCs are more popular than electronic DCCs because most LTC facilities do not use EHRs. Most public sectors (e.g. local governments and/or public associations) prefer paper-based documents and forms compared with electronic documents, although paper-based documents are often generated using computer applications (e.g. Microsoft Office™).

Some public sectors provide a DCC template on their websites. These templates may prevent the expansion of the use of electronic DCCs as the national standard. This study aimed to elucidate the terminology gap in DCCs used in acute care and LTC hospitals.

## Methods

### 1) Data collection

Twenty-five local areas in Japan that provided a DCC template on their websites were enrolled in the study. We therefore collected and examined 57 DCC forms from these areas.

### 2) Data analysis

First, the 57 DCCs were classified based on document user (sender/receiver). Next, each DCC was analyzed using a text-mining tool (*KH-Coder 2.00f*, Japan), and terms contained within each DCC were numbered. These terms were then categorized and analyzed to elucidate the terms that were most often used, relative to each setting (acute care or LTC hospital). Finally, frequently used terms were matched with those in nursing practice standardized terminology (NPST). NPST was approved to contain national standard terminologies in Japan by the Ministry of Health, Labor and Welfare in 2016. The NPST, as the national standard, covers the widest range of terminologies.

## Results

### 1) Type of DCC forms

As for the sender of the DCCs, 26 of the 57 DCCs originated in medical settings (e.g. acute care hospitals), 22 originated from "care managers" (CM), and 21 in LTC settings. The total number includes common-use forms for both settings; thus, the total number is actually more than 57. A CM is a specialist who builds each patient's care plan under LTC insurance.

As for the receiver of the DCCs, 9 of 57 DCCs were CMs, 42 were acute care hospitals, and 17 were LTC settings (*Table 1*).

*Table 1 – Sender and Receiver of DCCs (n=57)*

| User of DCCs | N | (%) |
|---|---|---|
| Sender | | |
| Medical Settings (e.g. Acute hospital) | 26 | 45.6 |
| Long Term Care Settings | 21 | 36.8 |
| Care Manager | 22 | 38.6 |
| Others (e.g. Dental, Pharmacy) | 4 | 7.0 |
| Receiver | | |
| Medical Settings (e.g. Acute hospital) | 42 | 73.7 |
| Long Term Care Settings | 17 | 29.8 |
| Care Manager | 9 | 15.8 |
| Others (e.g. Dental, Pharmacy, EMS) | 5 | 8.8 |

### 2) Character of each DCCs

Each DCC form averaged 194.2 terms. The number of terms in DCCs from acute care hospitals or other medical settings, CM, and LTC settings was 187.8, 248.0, and 224.2, respectively. DCCs from acute care hospitals or other medical settings tended to contain pharmaceutical information (e.g. ability for drug self-management). DCCs from LTC settings and CMs tended to contain information related to patients' lives (e.g. having meals, toileting, etc.) (*Figure 1*).

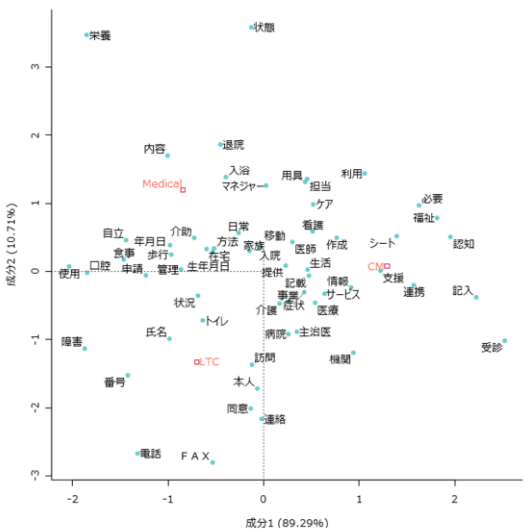


*Figure 1. Character of each DCCs by correspondence analysis*

### 3) Matching DCCs to NPST

The top 30 recurrent words found in each type of DCC were matched to the NPST. The match rate was 96.7% for DCCs from acute care hospitals or other medical settings (exception: "unnecessity"), 93.3% from CMs (expection: "smooth", "filling up"), and 86.7% from LTC settings (exception: "at a fine［nice, pretty, sad］pass" etc.).

## Discussion

Some DCC forms have multiple functions, e.g. guiding the transition between (1) acute care hospitals to LTC settings, and (2) LTC settings to acute care hospitals. However, multi-function DCCs are not specialized, so the number of words was not enough. These forms tended to include free-text areas and were less structured.

DCCs from acute care hospitals contained some structured terms, but DCCs from CM and LTC settings tended to be unstructured. Unstructured DCCs are labor-intensive, and require senders to fill out the forms, possibility preventing future implementation of electronic DCCs [4].

DCCs from all settings (acute care hospitals, LTC facilities, and CMs) contain mostly local language and contain much standardized text. Even while working with paper-based DCC forms in the future, DCC terminology should consist of standardized terminology completely.

## Conclusions

We found a terminology gap in the transition between acute care and LTC settings by analyzing DCC forms.

Our results suggest a need to use common terminology by expanding the NPST to cover terms that are frequently used in LTC settings. This is a realistic plan for improving the quality of continuous care in Japan.

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