Establishment of Standard Process Modules for Healthcare Operation Processes

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Motivations

- Quality assurance with limited available resources for a hospital is required

- Hospitals have to examine their operation process (healthcare delivery process)
  - Needs to design appropriately

Not yet formalized

A Method to examine hospital operation process efficiently and effectively is required
Core Concept: Standardized Modules

- Core concept has two aspects:
  - **Module**: a subsystem/a component with independent function that could constitute a more complex system
    → Understand a complex system as a combination of modules
  - **Standard**: a method that has already come to be considered acceptable on the basis of someone’s experience
    → Each module provides a standard method, embedding proven best practices in the module’s specific domain.
Design of Operation Process using “Standardized Modules”

- A procedure to design of operation process using standardized modules

Specify a means to function from input to output

- Requirements & Condition of the operation process
- Refer & Select modules
- Combine and Arrange the selected modules
- Review the design plan
- Design Plan of the operation process

A pool of modules for a healthcare process

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In order to establish standard process modules, we have to:

- Identify modules composing a healthcare operation process
- Build knowledge (best practice) to achieve each module’s purpose

Identify standardized modules which constitute a surgery process (most complex process)
Methods for Identifying Modules

- Two Steps for Identifying Modules

**Surgery Process in Real World**

**Step 1:** Acquisition of critical perspectives

**Step 2:** Derivation of Modules by Job Function Deployment

- **Extracted preliminary Modules**
- **Generic Modules**
- **Standard Modules**
- **Operation Process for Surgery**
- **Main Process (Diagnosis & Treatments)**
- **Support Process (Resource Preparation)**
- **Implementation Plan**
- **Preparation**
- **Implementation**
- **Evaluation**

**Modules for Surgery Process**
Step 1: Acquisition of Critical Perspectives

- Perspectives for deployment

1st deployment
- Main Process (Diagnosis & Treatments)
  - Implementation Plan
  - Preparation
  - Implementation
  - Evaluation

2nd deployment
- Support Process (Resource Preparation)
  - (Input)
  - (Process)
  - (output)

3rd deployment
- (Input)
- (Process)
- ...
- (Output review)

4th deployment
- Modules for Surgery Process
### Step 2: Derivation of Modules by Job Function Deployment

- We identified 68 modules for surgery process

<table>
<thead>
<tr>
<th>First Function (PDCA)</th>
<th>Second Function (Process Elements)</th>
<th>Third Function (Healthcare-specific Elements of the Phase)</th>
<th>Standardized Modules for Surgery Process (Surgery-specific Elements of the Phase)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of a patient (Input)</td>
<td>Assessment of patient’s physical condition</td>
<td>Assessment of disease condition</td>
<td>Informed Consent on medical invasion</td>
</tr>
<tr>
<td>Assessment of patient’s competent state</td>
<td>Assessment of general condition</td>
<td>Informed Consent on living</td>
<td>Informed Consent on anaesthesia</td>
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<tr>
<td>Customization of implementation plan based on the assessment (Process)</td>
<td>Implementation plan on medical intervention</td>
<td>Implementation plan for surgery</td>
<td>Implementation plan for general condition control</td>
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<td>...</td>
<td>Implementation plan for nursing</td>
<td>Implementation plan for medical intervention</td>
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</tr>
<tr>
<td>Review of implementation plan (Output)</td>
<td>Review of implementation</td>
<td>Review of implementation plan for surgery by specialized staffs</td>
<td>Review of implementation plan for surgery</td>
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</tbody>
</table>
Hospital-Specific Characteristics

Receivers of Services
- Patients
  - Various

Services to be provided
- Accompanying human body invasion

Providers of Services
- Hospitals
  - Highly specialized

Each patient is unique
Patient condition is dynamic
Medical treatment accompanies human body invasion and pain
Failure will not be tolerated
An urgent response is required
Medical treatment requires technical competence
Healthcare services are provided by a multi-functional team
Application for an Actual Case

In order to validate effectiveness of the proposed, the authors examined whether the modules composing the surgery process in Hospital A are covered and defined present surgery process.

Requirements & Condition of the operation process → Refer & Select modules → Combine and Arrange the selected modules → Conform the design plan → Design Plan of the operation process

A list of modules for surgery process

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<th>The process of identifying modules</th>
<th>The result of identifying modules</th>
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</thead>
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<tr>
<td>First Function (Phase)</td>
<td>Standardized Modules for Surgery Process</td>
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<tr>
<td>Second Function (Process Elements of the Phase)</td>
<td>Assessment of disease condition</td>
</tr>
<tr>
<td>Third Function (Healthcare-specific Elements of the Phase)</td>
<td>Assessment of general condition</td>
</tr>
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</table>

the all surgery process modules are defined for a surgery process at Hospital A.
Discussion

- Results of the application of the model
  - The healthcare staffs at Hospital A accepted the developed surgery process modules.
  - Use of surgery process modules is found effective in design of surgery process.

- Application of the standard modules
  - The order of job function deployment is from the most generic perspective, i.e. PDCA, to the most specific, i.e. surgery-specific characteristics
  - Utilize the upper-level perspectives for other healthcare operation processes
Summary and Future Plan

Summary
- Introduced a concept of “standard modules”
- Identified a set of standard modules for surgery process by job function deployment
- Validated these modules for process design

Future Plan: Complete a knowledge base
- We have just listed up a set of modules for surgery process
- We have to build best practice for each module