Clinical Information Systems – A Universal approach to Structuring the Clinical Artefacts and Elements

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Abstract and Objective

To develop a patient centric clinical system which has universal application across the full range of Clinical Pathways requires all clinical content artefacts to be uniquely named and structured, such that all elements can be re-used and that the needs of all clinical practitioners are recognised and supported. The key objectives were:

- *Harmonisation of language associated with the different professional groups and care settings*
- *Incorporating existing concepts in use across the NHS, including dependency models and classification schemas*
- *Demonstrating that generic, speciality initiated and disease focused actions could be grouped by pathway milestones along a Clinical Pathway*
- *To enable innovative changes to care delivery models*

Keywords:

Clinical pathway, SNOMED clinical terms, Medical record linkage

Introduction

The development of a patient centric clinical system must support the full range of Clinical Pathways with re-usable clinical content artefacts named and structured such that they support:

- Clinicians assembling a plan of treatment or care with the minimum of effort and time
- The Configuration Librarian role in catalogue management, linkage and version control
- Commissioners and Providers of services requiring patient centric information to support person based costing, quality and resourcing

This paper describes the approach taken in developing a naming convention for patient Clinical Information Systems, for deployment into the National Health Service in England.

Method

To construct a multi-dimensional framework that allowed the lowest elements of care to be assembled and re-assembled in any combination or workflow configuration required, initial effort was focussed on breaking down the components of care given along any Clinical Pathway. These elements were then grouped into generic or specialist effort. At the same time, a set of generic milestones, which would be sensitive for use across all pathways in all care settings was also identified. Existing professional and service concepts such as classification schemas and acuity models were identified and approaches to incorporation agreed.

Variation was minimised by building the model from existing catalogues and libraries containing at a unique level, the lowest elements of care, individual data items, drugs, clinical terminology concepts such as Systematised Nomenclature of Medicine Clinical Terms (SNOMED CT) and diagnostic tests.

Results

The model constructed in *Table 1* is based on:

- Agreed admission or contact classification
- Resource or acuity categories
- Generic milestones along a Clinical Pathway
- Care elements or artefacts

The model can be practically applied to all clinical pathways, with the structure providing logical, consistent framework with reusable material. The simplicity and commonality makes the cognitive load light on busy end users.

Table 1-Model of care framework

<table>
<tr><th>Classification</th><th>Category</th><th>Milestone</th><th>Artefact</th></tr>
<tr><td>Contact</td><td>Resource /Acuity</td><td>Clinical Pathway</td><td>Care Element</td></tr>
<tr><td rowspan="2">Un-scheduled</td><td>Major Complex</td><td rowspan="4">• Initial Contact
• Pre-Admit
• Admit/Review
• Pre-Procedure /Interventions
• Peri-Procedure /Interventions
• Post-Procedure /Interventions
• Transfer of Care</td><td rowspan="2">Assessment</td></tr>
<tr><td>Major</td><td rowspan="2">Treatment/ Care plan</td></tr>
<tr><td rowspan="2">Scheduled</td><td>Intermediate</td><td>Order set</td></tr>
<tr><td>Minor</td><td>Prescription</td></tr>
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