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***Knowledge Framework and Nomenclature***

## ➔ Three faces of HIS usability:

1. **Content**
2. *Functionality*
3. *Look and feel*



- ➔ **No one single reference terminology is adequate**
  - Different domain strengths for different terminologies
- ➔ **External influences on terminology preferences**
  - External endorsements of certain terminologies
  - Market acceptance of certain terminologies
- ➔ **External forces that lead to usages of certain code sets in lieu of clinical terminologies**
  - Requirement based on organization policy or procedure
  - Regulatory requirements
  - Billing and reimbursement requirements
  - Patient volume and workflow issues
  - Perception of value
  - Cost

- ➔ **An increasingly accepted clinical reference terminology globally**
- ➔ **Excellent breadth and depth for certain discretized domains:**
  - Disease
  - Finding
  - Body structure
  - Procedure
- ➔ **Despite breadth and depth, still not adequate for qualitative clinical documentation in a comprehensive manner**
  - Need to be complemented by other reference terminologies that cover certain domains better or are better or preferred standards
- ➔ **Cost is a barrier to adoption**



- ➔ **An increasingly accepted clinical reference terminology globally**
- ➔ **Narrow scope of focus**
- ➔ **No clinically usable description terms**
- ➔ **Lack intermediate concepts that meet clinical expression**



- ➔ **Comprehensive terminology of medication related concepts**
- ➔ **Support the identification of products**
- ➔ **Support the identification of medication as expressed in an order or prescription**
- ➔ **Critical for CPOE and clinical decision support**

- ➔ **Most closely approximates the way diagnostic imaging tests are ordered**
- ➔ **Physicians tend to order diagnostic imaging tests in ways that are acceptable for reimbursement**
- ➔ **Kill two birds with one stone**
  - Clinical documentation and placement of orders
  - Ready for billing processing
- ➔ **Pricing is not an issue only because it is mandated and requirement for reimbursement**

- ➔ **Already mandated for use to capture diagnostic information**
- ➔ **Close enough proxy to actual clinical condition to be usable by clinicians**
- ➔ **Data model supports the ability to express the ICD-9-CM description in easier or more clinically intuitive manner**
- ➔ **Currently limited use of data**
  - Not able to move providers away from the use despite the limitations in the information
- ➔ **Kill two birds with one stone**
  - Clinical documentation of diagnosis and problems
  - Ready for billing processing

## ➔ What it enables or should enable

- Definitional knowledge
  - *Dictionary of terms to support flexibility and specificity of clinical expression*
  - *Concepts that define meaning through semantic relationships*
- Clinical decision support
- Reporting and analysis
- Categorization of data



## ➔ What it does not solve

- Out-of-the-box usability
- End-user compliance with the precise and accurate usage of concepts as defined by the source
- Aggregation and comparison of clinical data with reliability and validity based on concept mapping alone

- ➔ **The clinician selection or declaration of a concept is done in the context of all available alternate choices at that time**
  - The dependencies are:
    - *Terminology: what are the concepts available for selection for that specific domain*
    - *Version of terminology: what concepts are available may be time or version dependent, changing over time*
    - *Clinical ambiguity*
- ➔ **End-user actions:**
  - Revert to free text
  - Select the closest relevant concept, which may consist of:
    - *A more general concept*
    - *An ambiguous concept, such as “others” or “not otherwise specified”*

## ➔ The clinician documents a clinical diagnosis using the concept of anemia, when there are many more specific anemia concepts

- This is all the clinician know about the patient diagnostically in regards to the anemia
- This is all the clinician wants to declare in the diagnosis module, relying on other data points to further refine/define the anemia to a greater degree of specificity (e.g. iron, ferritin, TIBC, folate, etc.)
  - *Fully described Dx=anemia, plus a low iron on laboratory test*

## ➔ End-user variables:

- Ambiguity of expression
- Convenience of expression
- Laziness
- Disassociation between the definitions of concepts and the way end-user express or apply the concepts

## ➔ Control of expression

- Pre-defined canonical choices to ensure standardization of data capture
- Constraining choices in itself brings risks to the validity and reliability of the structured data
- Constraint often pose usability challenges

## ➔ Compositional flexibility:

- Freedom of ad lib composition of available reference concepts
- End-user and context dependent