

Modellierung und Implementierung von Score und Assessment Systemen in HL7 Version 3

Frank Oemig

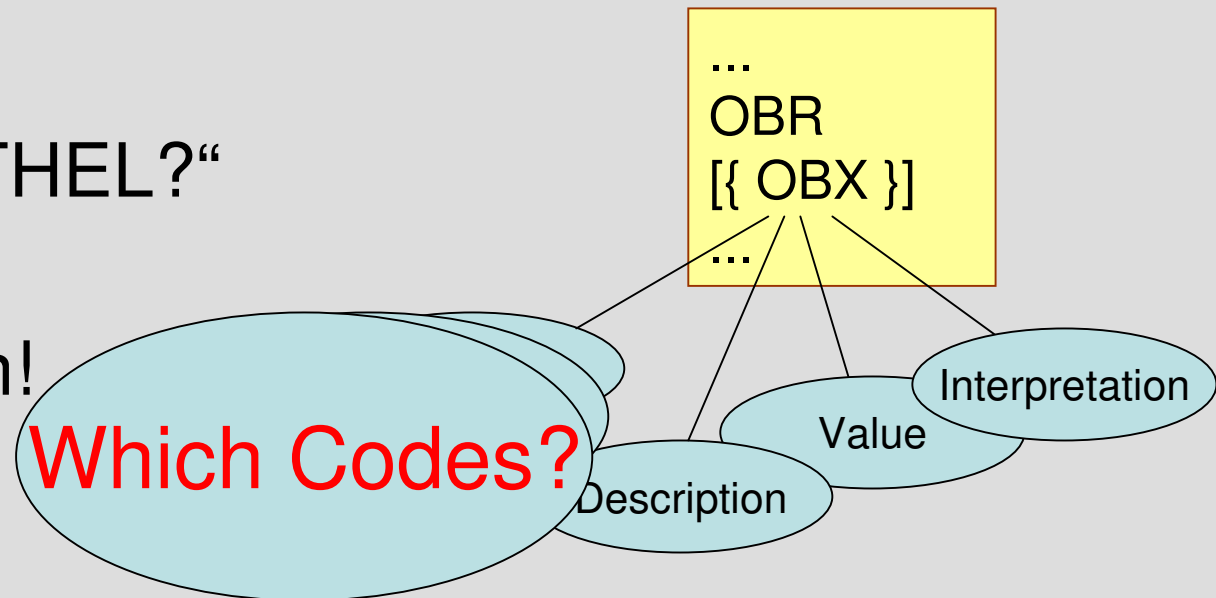
HL7-Jahrestagung - „HL7 verbindet“

21.10.2008, Göttingen

AGFA 
HealthCare

Original Request

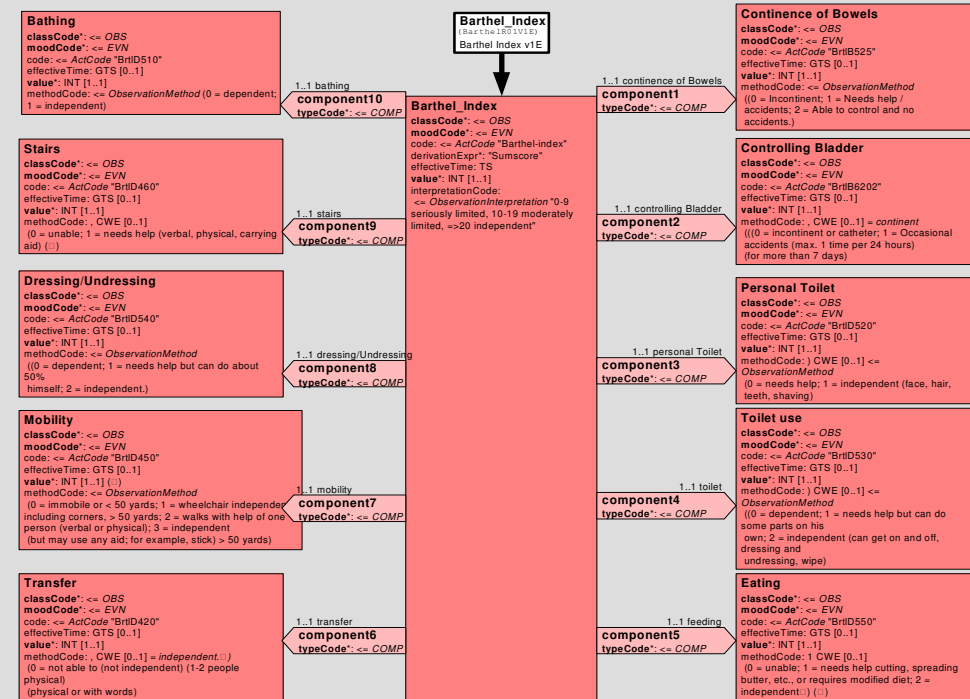
- Original Query of R&D:
„In which field shall we place BARTHEL values?“
- Answer:
„What is BARTHEL?“
- An observation!



History of the Project

- Examples:
 - TISS, SAPS, APACHE, BMI, Barthel, ..
- No direct guidance in standard documents
- Different approaches

- Dutch approach: individual models e.g. Barthel Index (Clinical Information Models, Zorg-Informatie-Model NL)



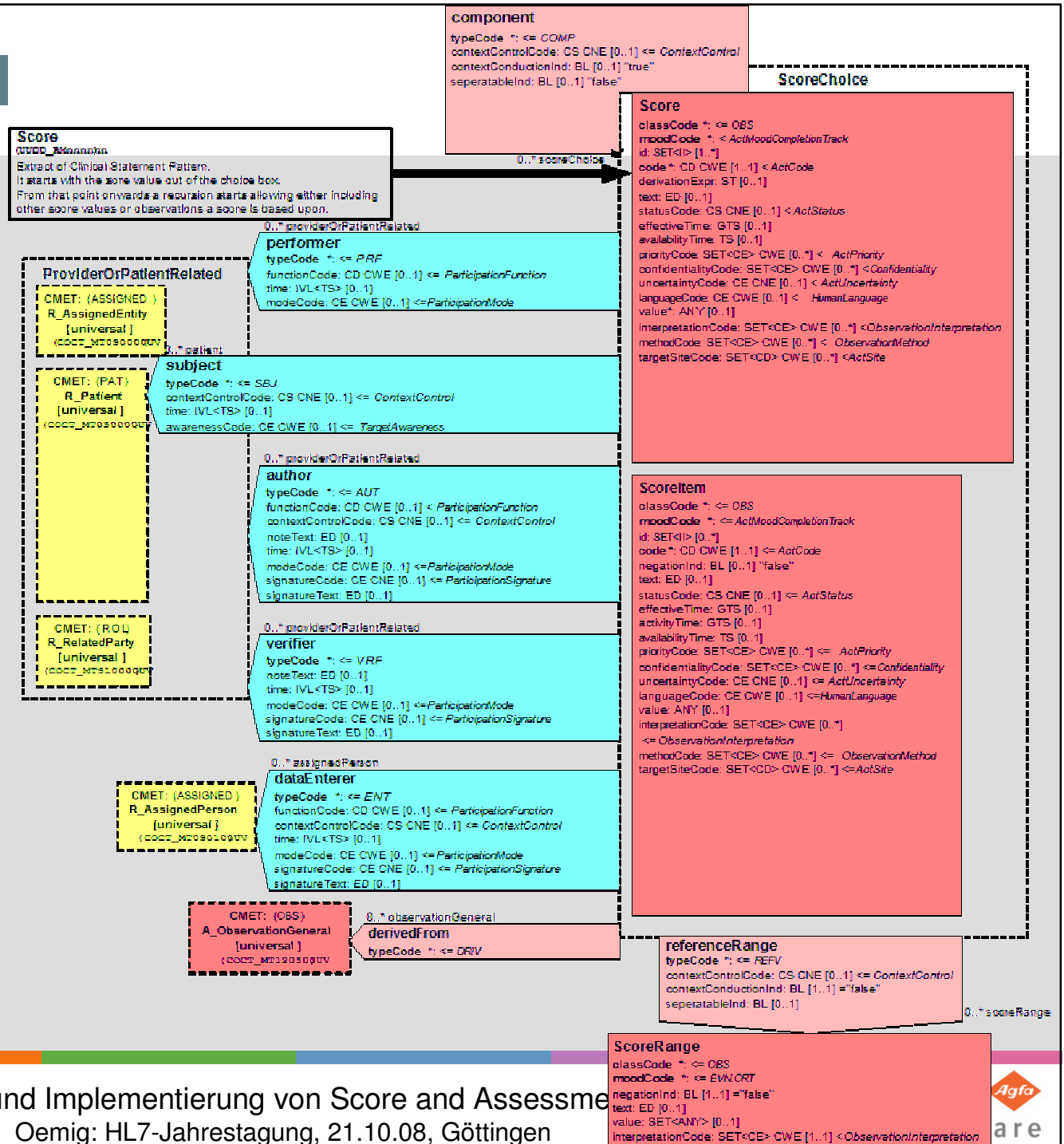
Score-Systems

- Primary Goal: Assignment of Codes
 - LOINC, Snomed CT, ICD, ICF, proprietary, ..
- Secondary Goal: Generic Model
 - Identification of components
 - Interpretation of values
- Solution
 - HL7-Models for v2.x and V3
 - Score Administration using a database
 - Cooperation with HL7-NL + Patient Care TC (USA)

} Codes

Static Model

- Is based on Clinical Statement Pattern

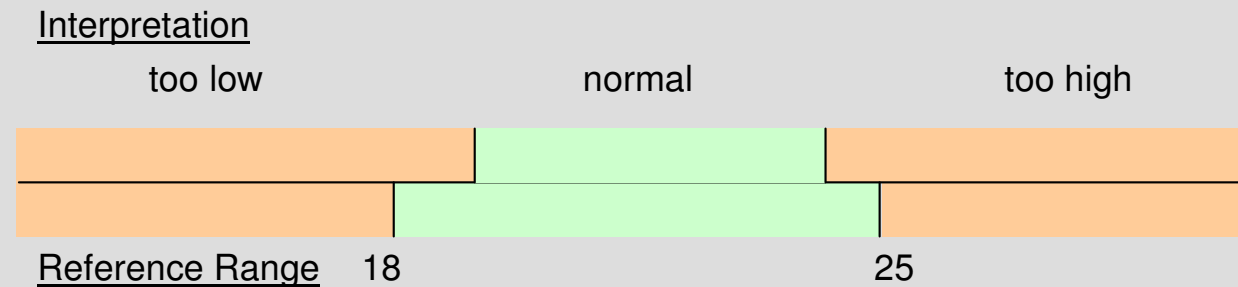


Administration using a Database

- **Score System:**
 - name (English and German)
 - author
 - references (hyperlinks to web content)
 - status information
 - calculation method
 - copyright and trademark hints
 - assigned facilities
- **Score Details:**
 - **recursive definition**
 - description (English + German)
- **Data Type** (constraints) for:
 - HL7 v2.x
 - HL7 V3
- Units of Measurement
- (expected) **values** for each concept: score
- interpretation of values
- assigned **Codes**
 - LOINC, Snomed CT and proprietary in parallel
 - including LOINC-specific details allowing for requesting new codes for new concepts

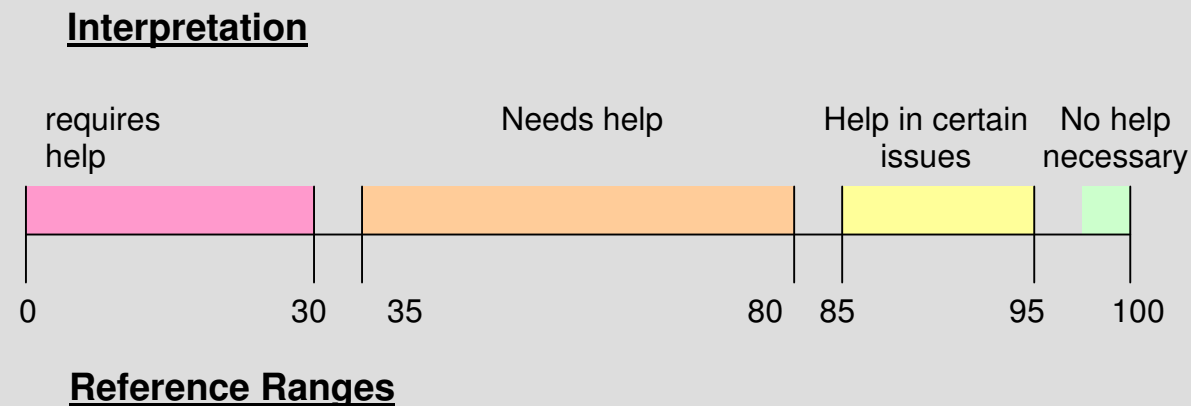
Score-Systems: Improving Reference Ranges

- Old

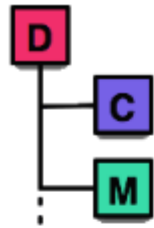


- New

- e.g. for Barthel Index



Generating Documentation



Score System Details



Name: Barthel XML-Definition: [XML-Definition](#)
 Description: Barthel Index Bezeichnung: Barthel Index
 Datatype v2.x: NM Datatype V3: INT
 Copyright Comment: Trademark Comment

| Ifd.Nr. | Description | Bezeichnung | Codes |
|----------|--|--|-------------|
| 1 | Eating | Essen | ???? |
| | independent | selbstständig/ unabhängig | 10 - |
| | needs help cutting, spreading butter | braucht etwas Hilfe/schneiden | 5 - |
| | unable | nicht selbstständig | 0 - |
| 2 | Transfer (wheelchair to bed and return) | Bett/Stuhltransfer | ???? |
| | independent | selbstständig | 15 - |
| | minor help (verbal or physical) | geringe Hilfen /Beaufsichtigung | 10 - |
| | major help (one or two people), can sit | erhebliche Hilfe/Liegen/Sitzen selbstständig | 5 - |
| | unable, no sitting balance | nicht selbstständig | 0 - |
| 3 | grooming | Waschen | ???? |
| | independent | selbstständig (Gesicht, Hände, Zähneputzen) | 5 - |
| | needs to help with personal care | nicht- selbstständig | 0 - |
| 4 | Toilet use | Toilettenbenutzung | ???? |

Generating Documentation: RMIMs

- Preliminary
- Different problems encountered
 - Under discussion
- RMIM
 - In definition mood

```
- <Score classCode="OBS" moodCode="DEF">
  <code codesystemName="Barner"/>
  - <component>
    - <ScoreItem classCode="OBS" moodCode="DEF">
      <text>Eating</text>
      - <referenceRange typeCode="REFV">
        - <ScoreRange>
          <value code="10" displayName="selbstständig/ unabhängig"/>
          <value code="5" displayName="braucht etwas Hilfe/schneiden"/>
          <value code="0" displayName="nicht selbstständig"/>
        </ScoreRange>
      </referenceRange>
    </ScoreItem>
  </component>
  - <component>
    - <ScoreItem classCode="OBS" moodCode="DEF">
      <text>Transfer (wheelchair to bed and return)</text>
      - <referenceRange typeCode="REFV">
        - <ScoreRange>
          <value code="15" displayName="selbstständig"/>
          <value code="10" displayName="geringe Hilfen/Beaufsichtigung"/>
          <value code="5" displayName="erhebliche Hilfe/Liegen/Sitzen selbstständig"/>
          <value code="0" displayName="nicht selbstständig"/>
        </ScoreRange>
      </referenceRange>
    </component>
  </component>
</Score>
```

Conclusions

- Models are fine,
but harmonization is necessary!
 - ⇒ templates!
 - ⇒ Detailed Clinical Information Models (DCM)
 - ⇒ DSTU + Implementation Guide!
- Commonly agreed upon codes
 - ⇒ terminology!
 - ⇒ interpretation of RIM classes!
- ⇒ DB rendered into HTML
- HL7 needs improvement on reference ranges
 - ⇒ v2.7: „Interpretation Codes“ (OBX)



Thank you

For your Attention!

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