

# Intermountain Healthcare Units of Measure

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# Experience at Intermountain

- Coded representation of units of measure for patient data in the HELP system (40 years)
- Hierarchical structure for coded units of measure created jointly with 3M Health Information Systems about 15 years ago
  - Over 600 units of measure
  - Includes long names and common abbreviations

# Units of measure and HL7

- Health Level Seven
  - Healthcare interoperability standards
  - Coded units of measure used in data exchange messages
  - Originally used enhanced ISO units of measure (ISO+)
  - Adopted UCUM (Unified Codes for Units of Measures) about 5 years ago
    - Developed by Gunther Schadow and Clem McDonald at Regenstrief Institute in Indianapolis
    - Base units – gram, meter, liter, mole, degree Celsius, etc
    - Multipliers – micro, kilo, deci, milli, etc.
    - Rules for making combinations – gm/L, gm/kg/d, etc.

# HL7 Common combinations

- HL7 Vocabulary committee (especially Sundak Ganesan) created list of all healthcare units of measure
- Organized based on IUPAC/IFCC Silver Book “kind-of-property” – mass, length, heat, time, mass concentration, frequency, etc.
- Includes commonly used (user friendly) designations

# Most recent work at Intermountain

- New units of measure hierarchy created jointly by Intermountain and General Electric
- Combined master file created by Ming-Chin Lin as part of his PhD project
- Intermountain will contribute any and all of the previous work to the new effort

# Questions (1)

- How (in what ways) will the new ontology be used?
  - Unit conversions?
  - Associations between kind-of-property and unit of measure
  - Will any other sort of reasoning be supported?
- What is the scope of the new ontology?
  - Health sciences only?
  - All measurements?
  - Something else?
- Will synonyms and standard designations be included?

## Questions (2)

- Will the new ontology be only “pure” units of measure?
  - Pure – mg/gm, gm/dL, km/h
  - Mixed – mg/gm of hemoglobin, mg/gm of creatinine
  - I think we should cover all units and “unit-like” things that people actually use

## Questions (3)

- Do we include imprecise and or improper units of measure
  - mg/packet, mg/spray, mg/drop
  - International units (impure reference compounds)
  - Todd, Bethesda
  - EIA unit, Absorbance unit
- Again, I think we should cover all things that people currently use



**Questions?**