

From modelling to visualization of topic relationships in classification schemes

Rebecca Green, OCLC

Diane Vizine-Goetz, OCLC

Marcia Lei Zeng, Kent State University

Maja Žumer, University of Ljubljana

Classification & Visualization: Interfaces to Knowledge
International UDC Seminar 2013, 25 October 2013

Application of visualization techniques to DDC

- Modelling topic relationships in the DDC
- [Data format revision for topic relationships]
- [Use scenarios]
- Visualization of topic relationships in the DDC

DDC in FRSAD, so far

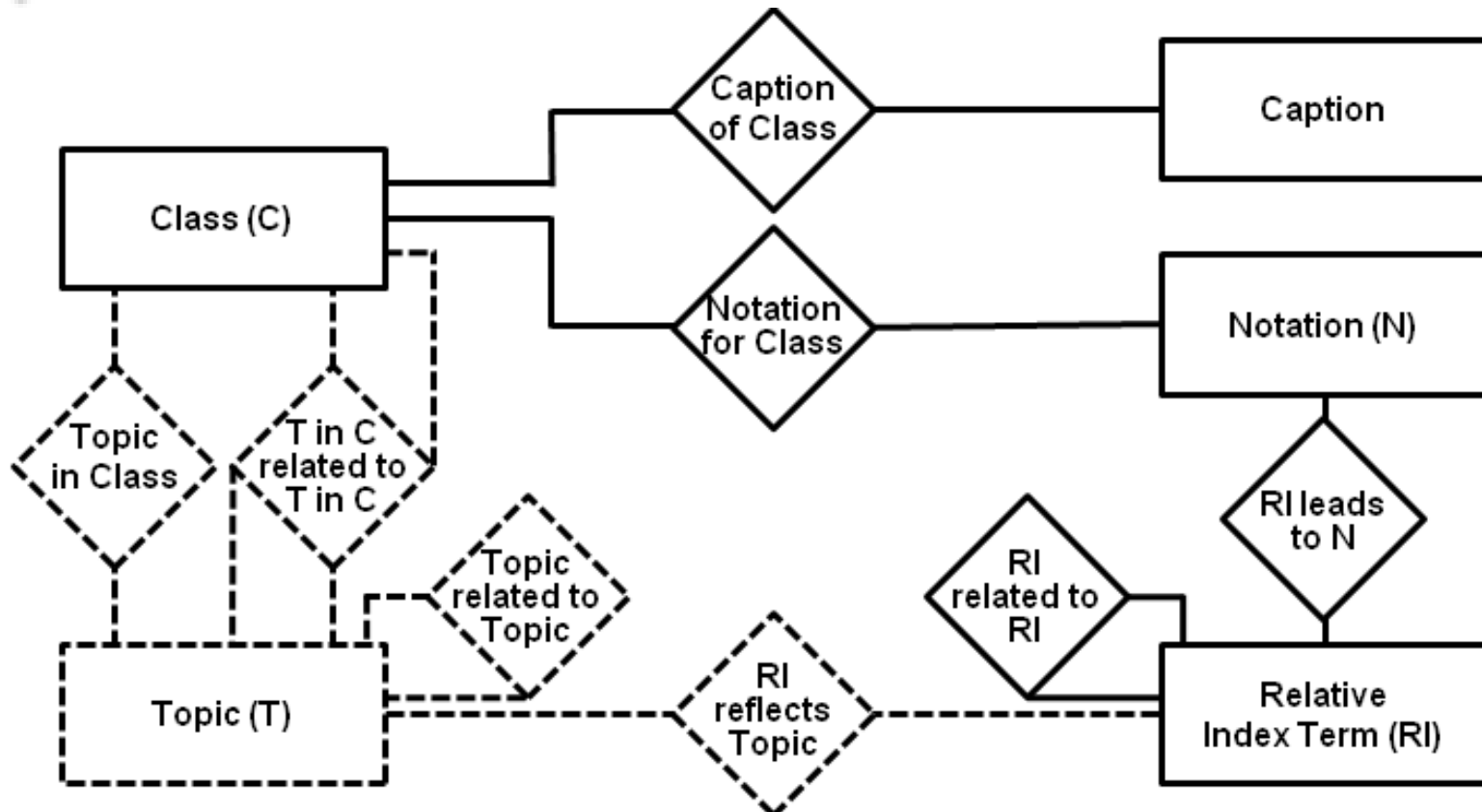


- Each DDC class corresponds to a *thema*
- Notation associated with the class is the *nomen*
- *Thema* is the full category description of the class
- *Nomen* is the symbol (or surrogate) used to represent the full category description:
 - dewey.info URI
 - hierarchically contextualized caption
 - Relative Index (RI) terms corresponding to functionally equivalent topics

Extensions, set 1: All topics, Relative Index terms included

- All topics are themas
- All RI terms are nomens
- Topics can be related to:
 - Classes (thema-to-thema relationship)
 - Other topics (thema-to-thema relationship)
 - RI terms (thema-to-nomen relationship)
- RI terms can be related to each other (nomen-to-nomen relationship)

Topic-enhanced view



themas on left

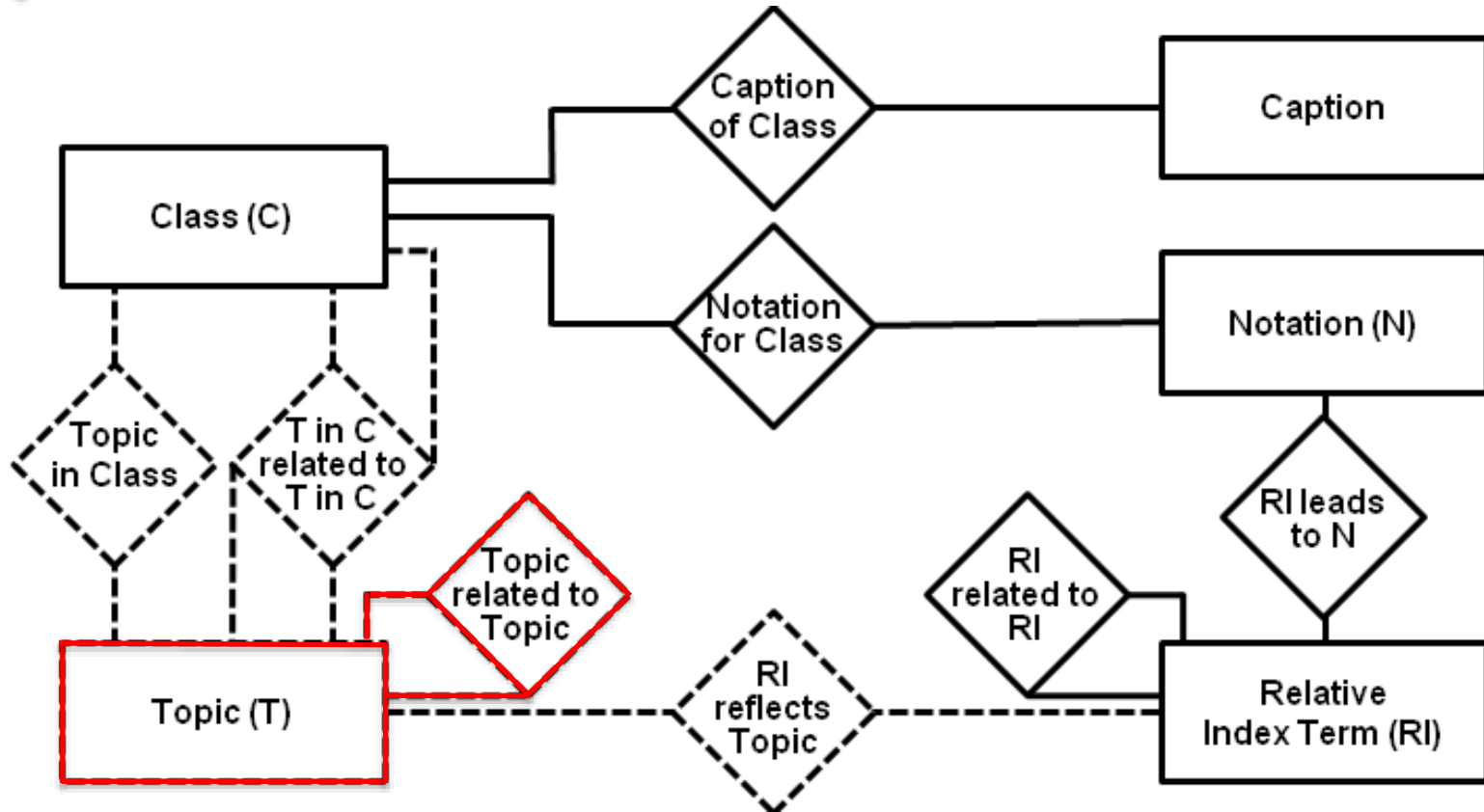
nomens on right

only portions in solid lines now systematically captured in DDC database

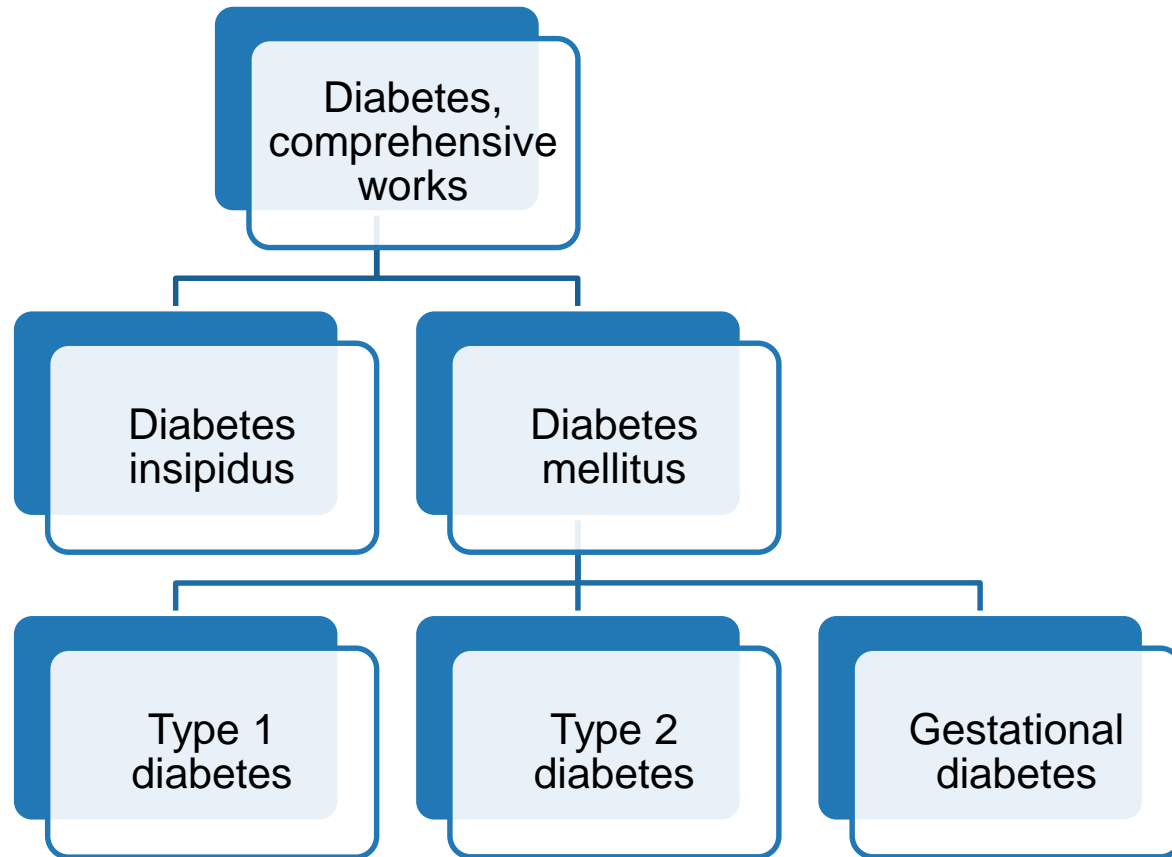
Extensions, set 2: Filling out the picture

- Topic-to-class relationship attribute: equivalence status
- Topic-reflecting text in class descriptions as parallel set of *nomens* (note: this is **not** a fully controlled vocabulary)
- *Nomen-to-nomen* equivalence relationships
 - Between two synonymous RI terms
 - Between an RI term and textual expression

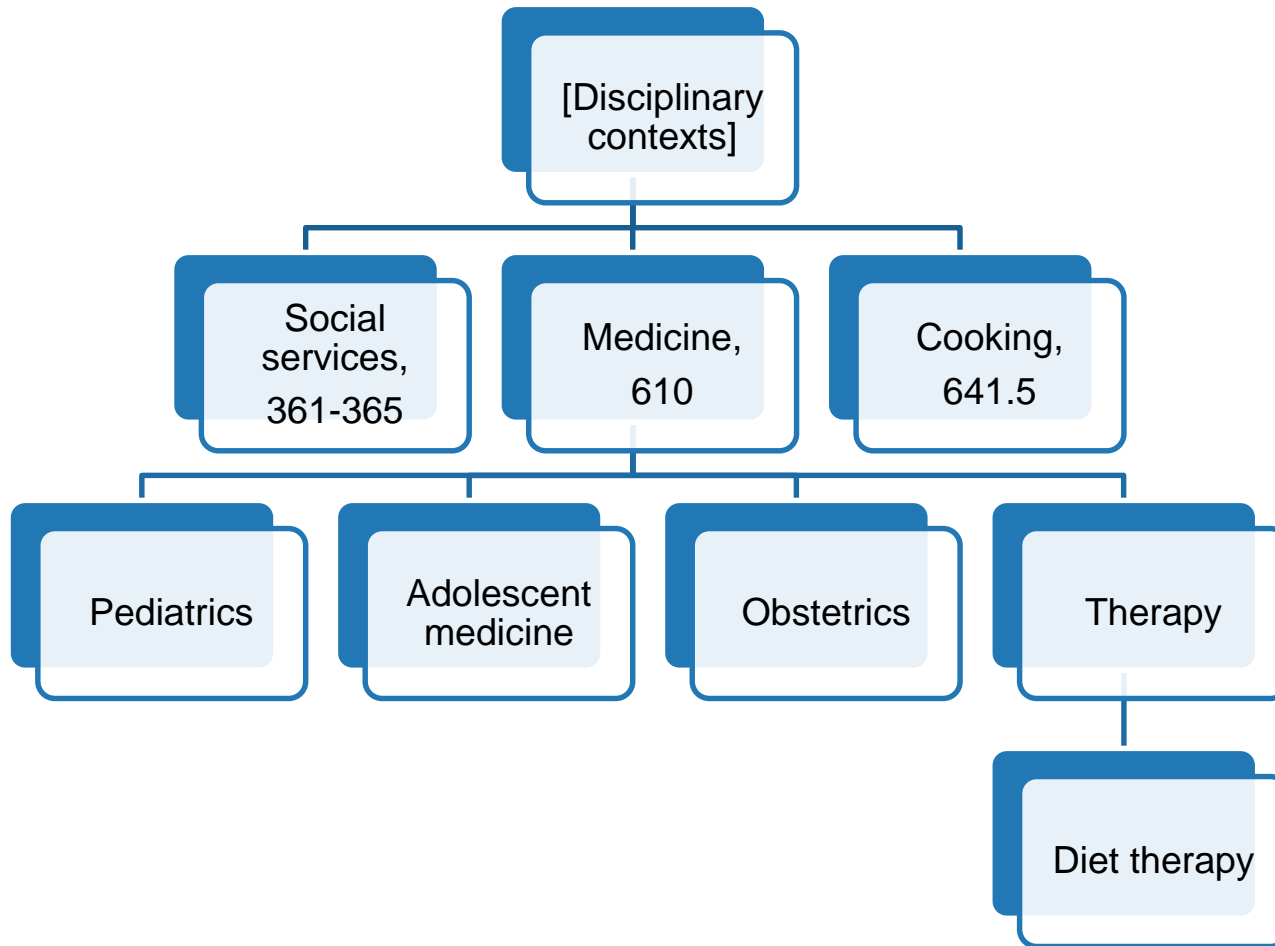
Topics and their interrelationships (1)



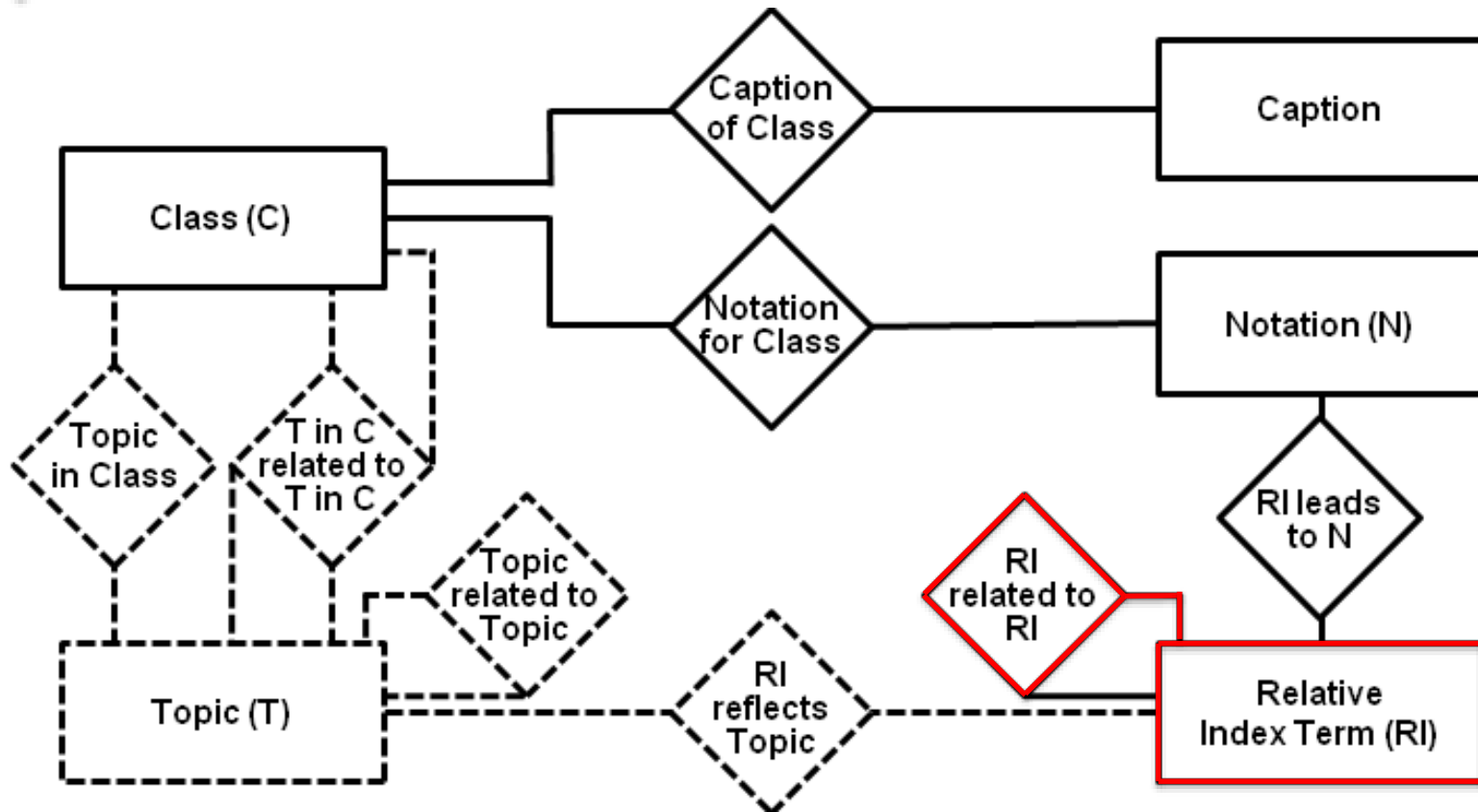
Topics and their interrelationships (2)



Topics and their interrelationships (3)



Relative Index (RI) terms and their interrelationships (1)



Relative Index (RI) terms and their interrelationships (2)

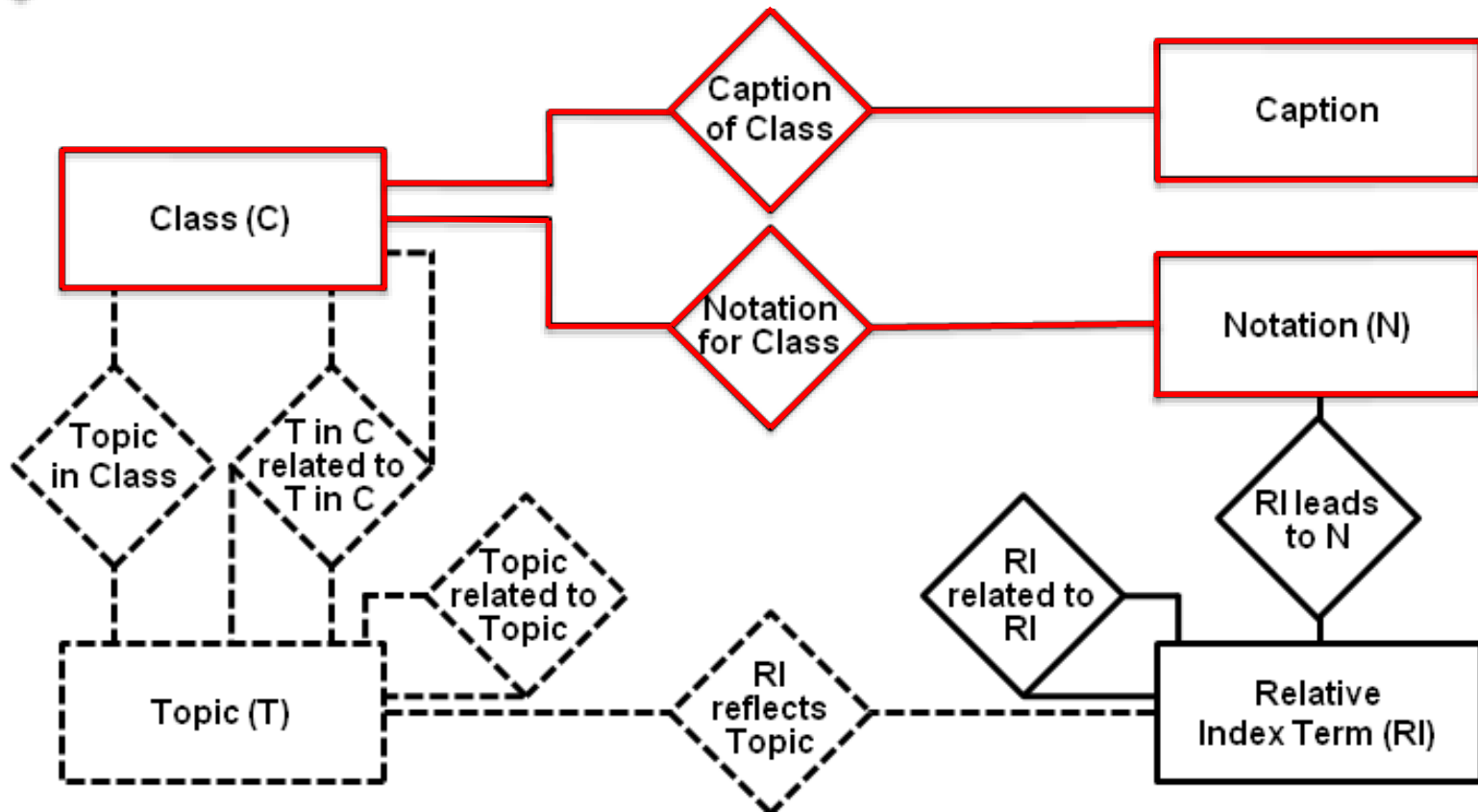
- **Diabetes**
- **Diabetes mellitus**

- **Type 1 diabetes**
- **Diabetes mellitus (Type 1)**
- **Insulin-dependent diabetes**

- **Type 2 diabetes**
- **Diabetes mellitus (Type 2)**
- **Non-insulin-dependent diabetes**
- **Noninsulin-dependent diabetes**

- **Gestational diabetes**
- **Diabetes mellitus – pregnancy complications – obstetrics**

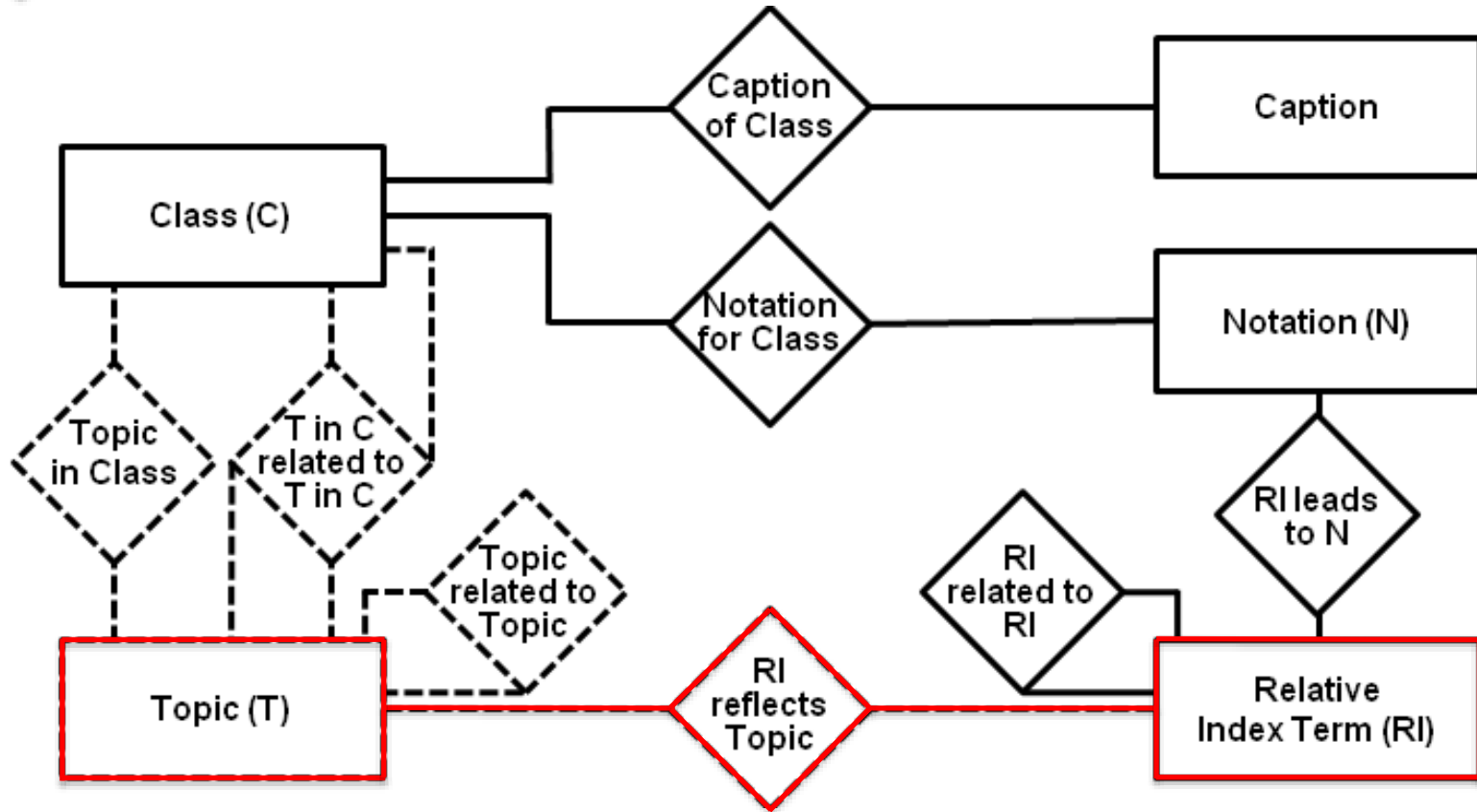
Notation for / Caption of Class (1)



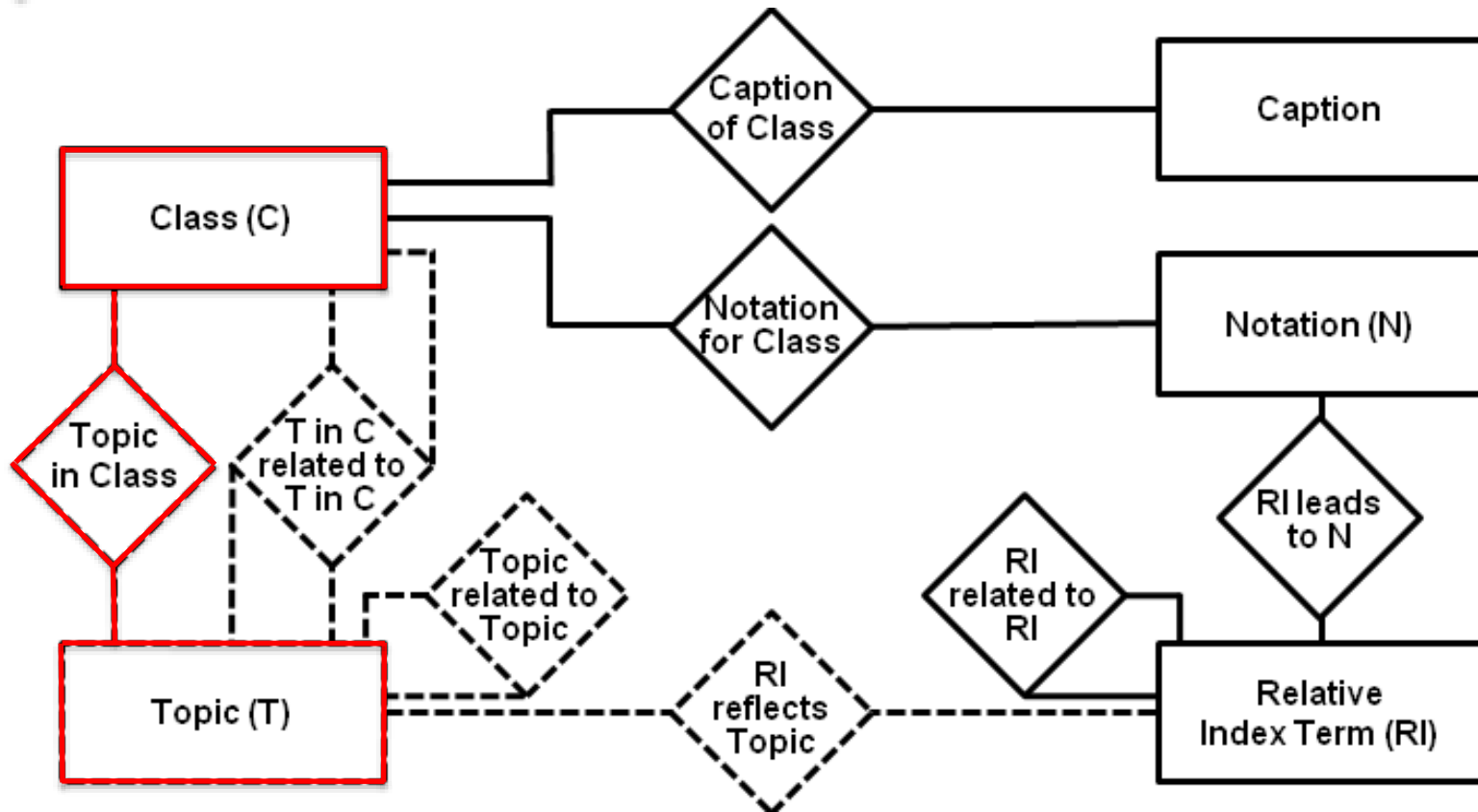
Notation for / Caption of Class (2)

Notation	Hierarchically-contextualized caption
362.196462	Social problems of and services to groups of people / People with physical illnesses / Medical services / Diabetes
616.462	Medicine / Specific diseases / Diseases of endocrine system / Diabetes mellitus
616.46206	. . . / Diabetes mellitus / Treatment
618.3646	Medicine / Gynecology and obstetrics / Diseases and complications of pregnancy / Diabetes
618.92462	Medicine / Pediatrics / Diabetes mellitus
641.56314	Cooking for people with medical conditions / People with diabetes

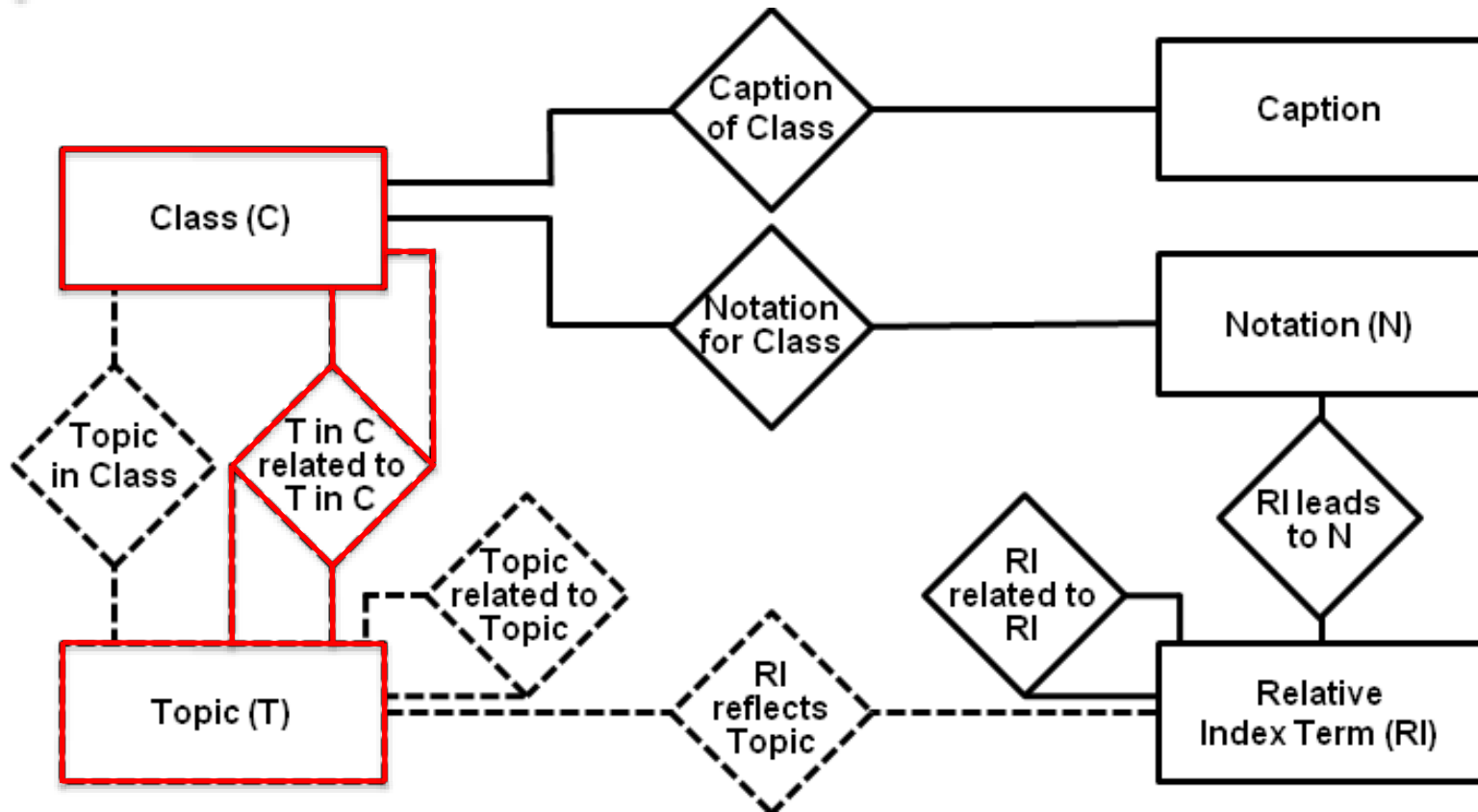
Relative Index (RI) terms reflect Topics (1)



Topics in Classes



Topic-in-class related to Topic-in-class (1)



Topic-in-class related to Topic-in-class (2)

- **616.462 *Diabetes mellitus**

Class here comprehensive works on diabetes

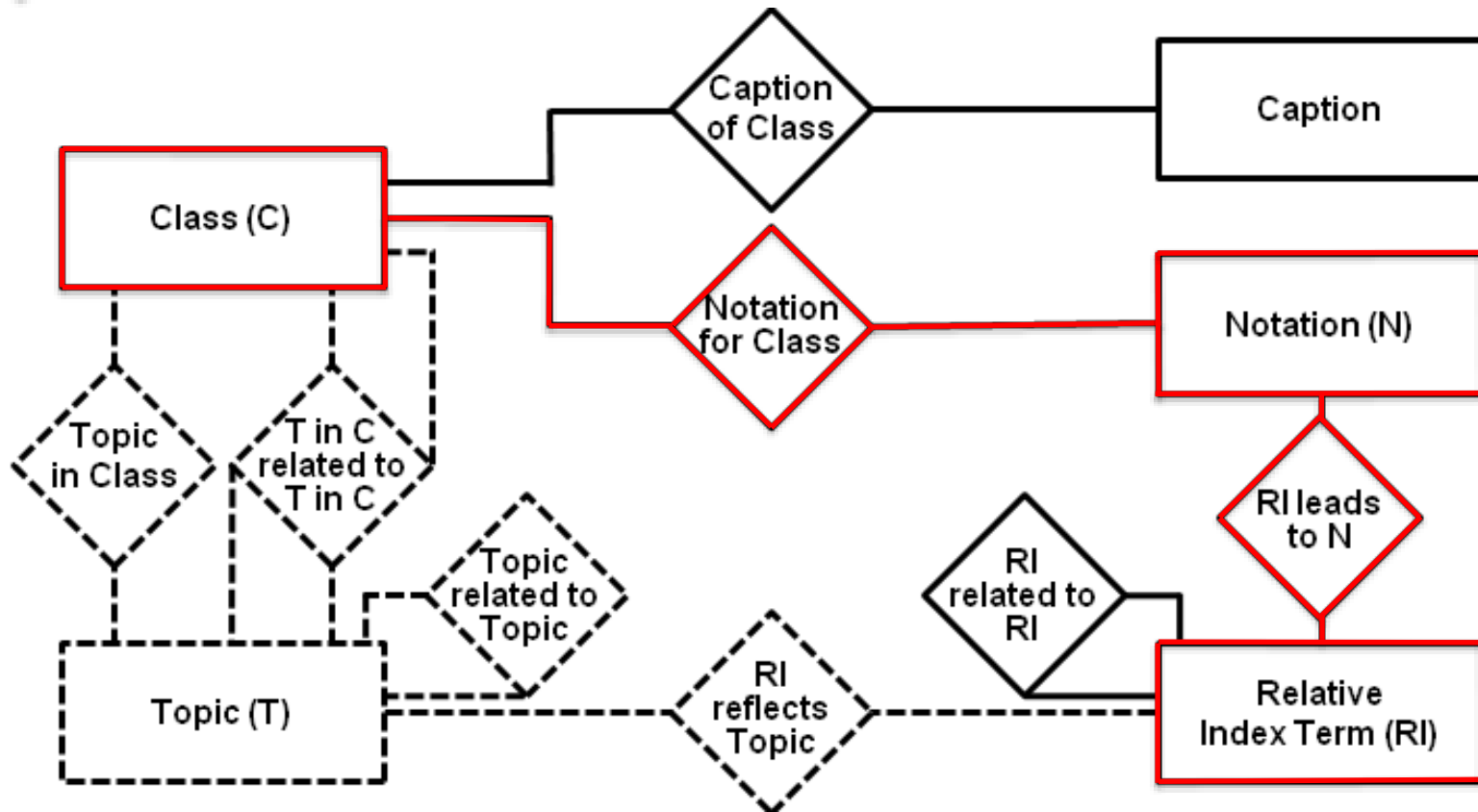
Class diabetic nephropathies in 616.61

For diabetes insipidus, see 616.47

- **616.61 *Diseases of kidneys and ureters**

Class here diabetic nephropathies, nephrology

Relative Index (RI) term leads to Class



Searching against authority data . . .

Headings presented in context of classes / subheadings

Subheading can be expanded / collapsed

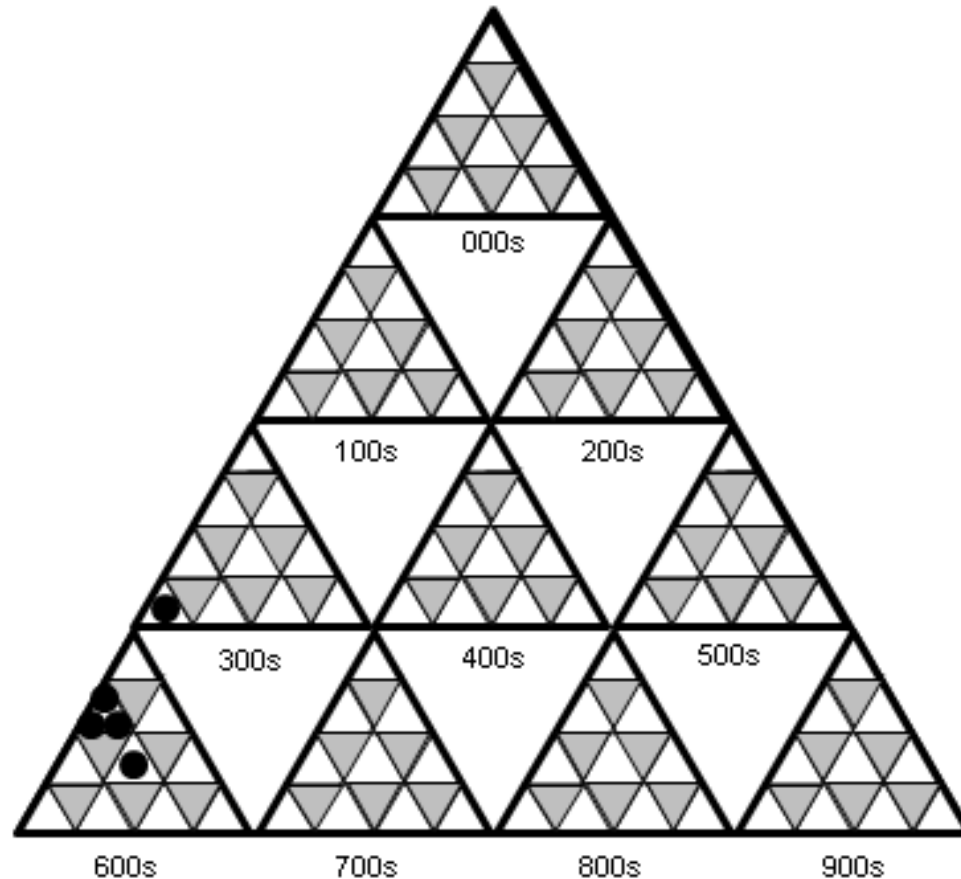
Keyword Search: *DIABETES*

<input type="checkbox"/> social services	362.196462x
<hr/>	
<i>Diabetes</i> —social services	362.196462
<i>Diabetes mellitus</i> —social services	362.196462
<i>Diabetes mellitus</i> (Type 1) —social services	362.1964622
Insulin-dependent <i>diabetes</i> —social services	362.1964622
Type 1 <i>diabetes</i> —social services	362.1964622
<i>Diabetes mellitus</i> (Type 2) —social services	362.1964624
Non-insulin-dependent <i>diabetes</i> —social services	362.1964624
Noninsulin-dependent <i>diabetes</i> —social services	362.1964624
Type 2 <i>diabetes</i> —social services	362.1964624
<hr/>	
<input type="checkbox"/> medicine	616.4x
<hr/>	
<input type="checkbox"/> therapy	616.46206
<hr/>	
<input type="checkbox"/> diet therapy	616.4620654
<hr/>	
<input type="checkbox"/> adolescent medicine	616.462x00835
<hr/>	
<input type="checkbox"/> obstetrics	618.3646
<hr/>	
<input type="checkbox"/> pregnancy complications—obstetrics	618.3646
<hr/>	
<input type="checkbox"/> pediatrics	618.92462x
<hr/>	
<input type="checkbox"/> cooking for	641.56314

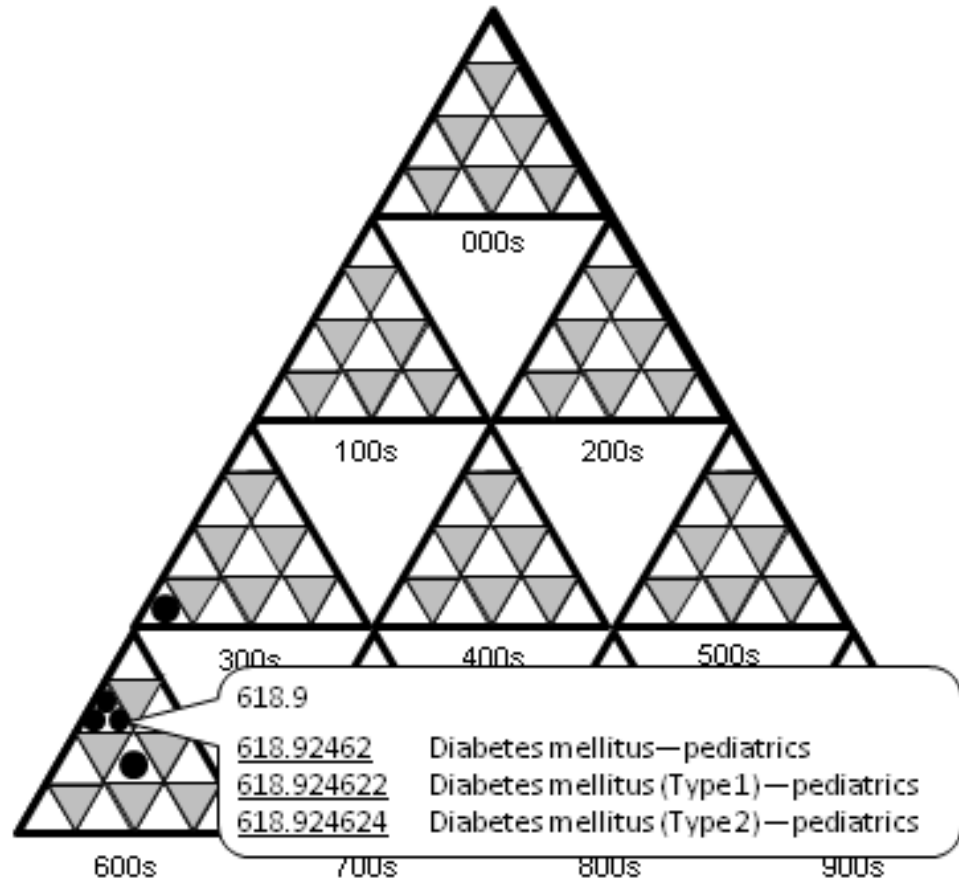
Click on heading to access authority record

Related topics accessed through reference fields in record

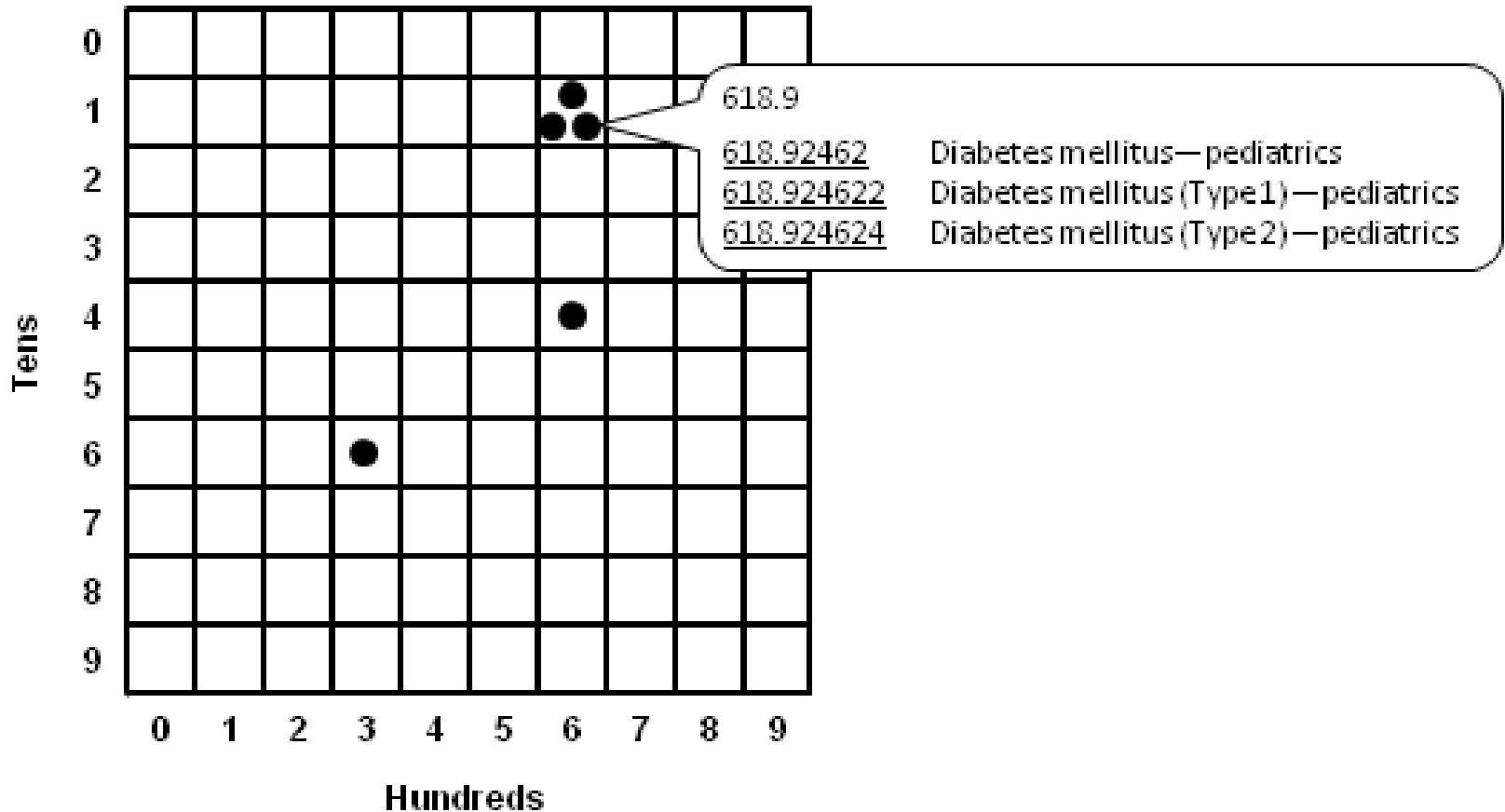
Visual overview of diabetes across the DDC (1)



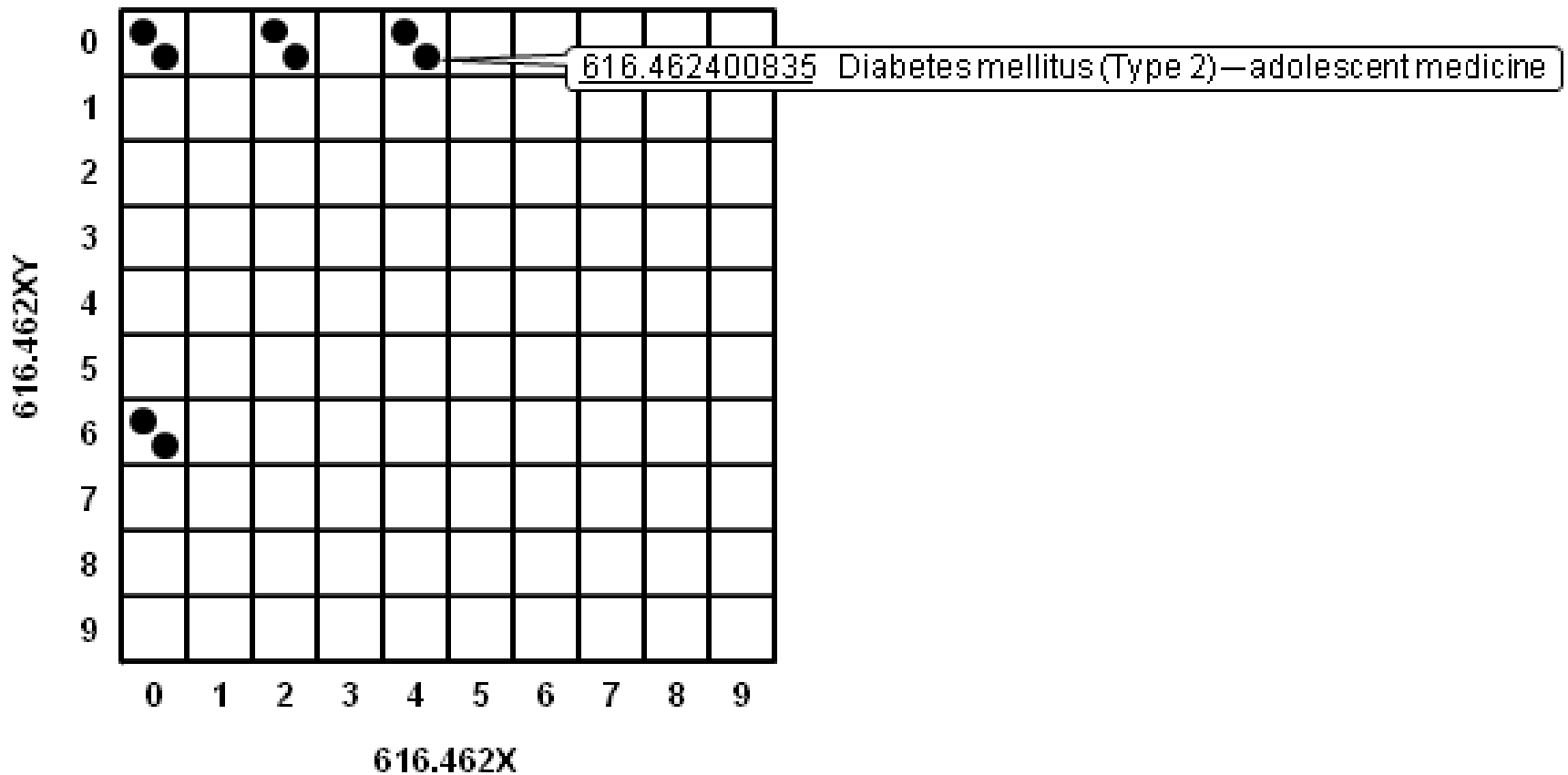
Visual overview of diabetes across the DDC (2)



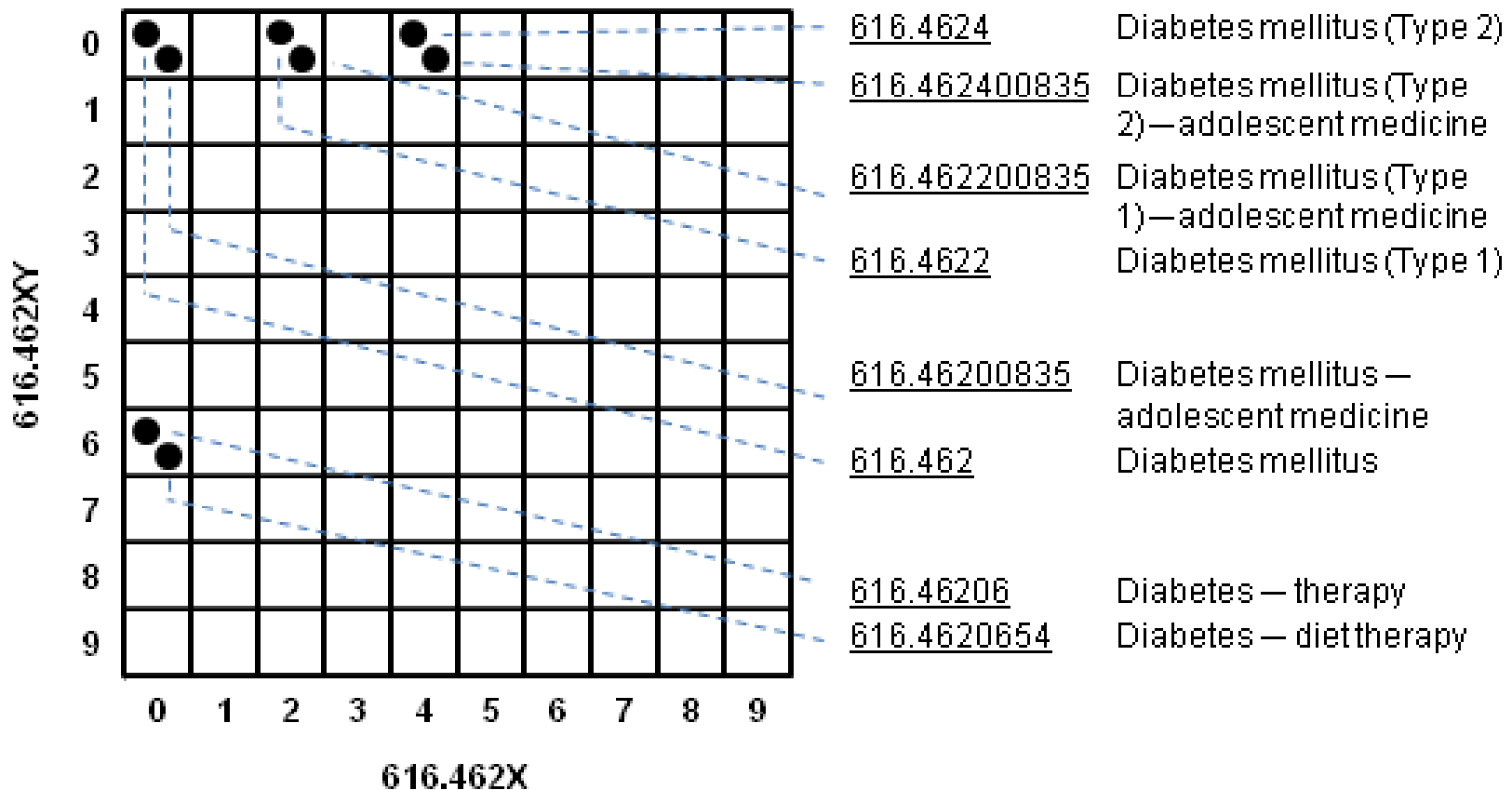
Alternative view of diabetes across the DDC



Drilling down from 616.462 (1)



Drilling down from 616.462 (2)



Representative authority record

LDR nz###n##

001 och00127208

003 OCoLC-D

005 20110322091736.0

008 100206|||a|z|||||#####|#a|#####d

040 ## \$a OCoLC-D \$b **eng** \$c OCoLC-D \$d OCoLC-D \$f **ddcri**

083 04 \$a **362.1964622** \$0 (OCoLC-D)ocd00139591 \$2 23 \$5 OCoLC-D \$9 as=AP
\$9 ps=PE \$9 cts=2011-03-22T09:17:36Z-Rebecca Green

150 ## \$a **Type 1 diabetes**

550 ## \$w g \$a **Endocrine diseases \$x humans** \$0 (OCoLC-D)och00043296 \$2 23
\$9 ra=AP \$9 rv=PE \$9 cts=2010-11-17T19:30:18Z-Joan Mitchell \$9 uts=2011-03-
02T20:40:30Z-Rebecca Green

670 ## \$a **LCSH.** \$b **Type 1 diabetes** \$0 (DLC)sh 85037456 \$9 450

983 0# \$2 23

Conclusion

- Topics play key role in:
 - DDC data model
 - Uses of DDC, e.g.,
 - End-user discovery
 - Editorial maintenance
- Topic relationships are many + varied = complex
- Visualization techniques address need to control topics to support use of DDC

Questions?