Appendix 17a

LOINC Mapping:
Advice to others in understanding/employing HL7 and/or LOINC

Four aspects might be helpful for LOINC mapping: formal education, tools, content to map. Not all of the aspects are defined for HL-7; we include only formal education.

Formal Education

HL-7: There is an educational working group within the HL-7 organization that hosts public education events, maintains a speakers list for corporate training, and administers certification exams for versions 2.5/2.6, Clinical Document Architecture (CDA) and Version 3 Reference Information Model (RIM). Educational Summits are held on a regular basis internationally. Refer to *www.hl7.org*

LOINC: Public tutorial meetings are held free to the public twice a year, in June and December, in conjunction with the biannual Lab LOINC committee meetings. Refer to *www.loinc.org* . Additionally, organizations such as American Association of Clinical Chemists and Canada Health Infoway have held their own public education sessions. The LOINC and RELMA User's Guide are downloadable from *www.loinc.org*. Additionally, on the *www.loinc.org* website is a slideshow for online learning, along with a Frequently Asked Questions section. Regenstrief Institute hosts an online LOINC Forum for informal communication between users.

Tools

Unless a site is going to outsource the mapping to a vendor, it's recommended that they download a free copy of the RELMA mapping tool from *www.loinc.org* . The RELMA User's Guide notes that due to the internationalization of LOINC, with support of foreign character sets, RELMA only works on the Windows 2000/XP family. At this time of writing, RELMA hasn't been tested on Vista operating system.

Content to Map

There are two current theories of capturing the lab workload to be mapped. Originally, each lab was encouraged to identify all chartable lab assays to include in an extract from the laboratory information system. To be excluded were comment fields, internal tracking, quality control fields, inactive fields, and non-chartable fields. In 2007, Dan Vreeman published an AMIA paper on the Rationale of Parsimonious Lab Mapping (See Appendix 16). As a mechanism to deal with the 1,000 to 5,000 estimated rows of lab codes, Vreeman's paper offers a method of prioritization of the work. The rationale involves mapping the highest occurring volume of lab assays. This is taking into account that the person assigned to mapping is relatively new to the process, has a steep learning curve, and needs a confidence building mechanism.

3M's Terminology Consulting Services requires that all chartable assays be presented for mapping in the extract, in order to see the usage of each particular lab assay. The assembled team is not new to the mapping process, and are experts in LOINC mapping with over ten years of experience. As new clients join, they initially want to send only the top 100 or 200 tests for mapping, to align with Vreeman's paper. There are two possible flaws of doing this with an outsourced mapping team. As mentioned in the paper, the intent is to mitigate the issue of having limited mapping resources. Clients contracting with an outside vendor have already addressed that issue by passing the mapping task onto an experienced team. 3M suggests if the client has limited

resources to work with the completed mappings, they take the entire mapped file and use the test performance volume to implement the LOINC codes.

Secondly, using the test performance volume to identify the order lab codes ignores the full usage of a lab result and might impact the granularity of the mapping. For example, Basic Metabolic Test may qualify in the top 100, with components like glucose, urea nitrogen, creatinine, sodium, potassium, chloride, and carbon dioxide. Table 1 below demonstrates subsets of the file, sorting by the result code. Additional information is derived by having the lesser order volumes of CSF Panel and two challenges. In this example, it can be demonstrated that one result code GLU crosses specimen types, and another result code crosses two different challenges (see Table 2)

Table 1: Result Codes Used in Multiple Panels

Order Code	**Result Code**	**Result Display**	**Units**	**Specimen**	**LOINC**
Basic Metabolic	GLU	Glucose	mg/dL	Serum	2345-7
Basic Metabolic	BUN	BUN	mg/dL	Serum	3094-0
Basic Metabolic	CRT	Creatinine	mg/dL	Serum	2160-0
Basic Metabolic	GLU	Glucose	mg/dL	Serum	Result code crosses specimen types; go to XXX specimen
CSF Panel	GLU	Glucose	mg/dL	CSF	
Glucose Tolerance Test, 2Hr	GLU2	Glucose	mg/dL	Serum	12610-2; result code crosses challenges
Lactose Tolerance Test, 2Hr	GLU2	Glucose	mg/dL	Serum	12610-2

Table 2: Derived LOINC Codes for GLU and GLU2 from Table 11

LOINC code	**Attributes**	**Local Result Code**
2345-7	Glucose:MCnc:Pt:Ser/Plas:Qn:	GLU
No current LOINC	Glucose:MCnc:Pt:XXX:Qn:	GLU
12610-2	Glucose^2H Post XXX Challenge:MCnc:Pt:Ser/Plas:Qn:	GLU2
	All instances of a result code = 1 LOINC code, with granularity defined by usage across assays.	