



Welcome to the joint meeting of
Anatomic Pathology & Laboratory
committees
hosted by CAP in Deerfield,
February 4-6 2013



Microbiology reporting in HL7 2.x messages and in the CDA lab report

Purposes:

- Clarify the structure and vocabularies
- Check consistency with other implementation guides
- Refine LAB TF vol. 2 & 3 (CPs)
- LAW release 2 with micro

ITI profiles

<----- Laboratory Profiles ----->

security
ATNA
CT
patient administration

PAM
PDQ

document sharing
XDS
XDM
XDR

Blood specimen collection rooms

Care providers
(care settings, ambulatory providers)

Clinical Laboratories
Management Automation

LCSD: sharing lab tests code set FINAL

LTW: tests performed in hospital lab FINAL

LPOCT: point of care testing FINAL

LBL: robotized distribution & labeling of specimen containers FINAL

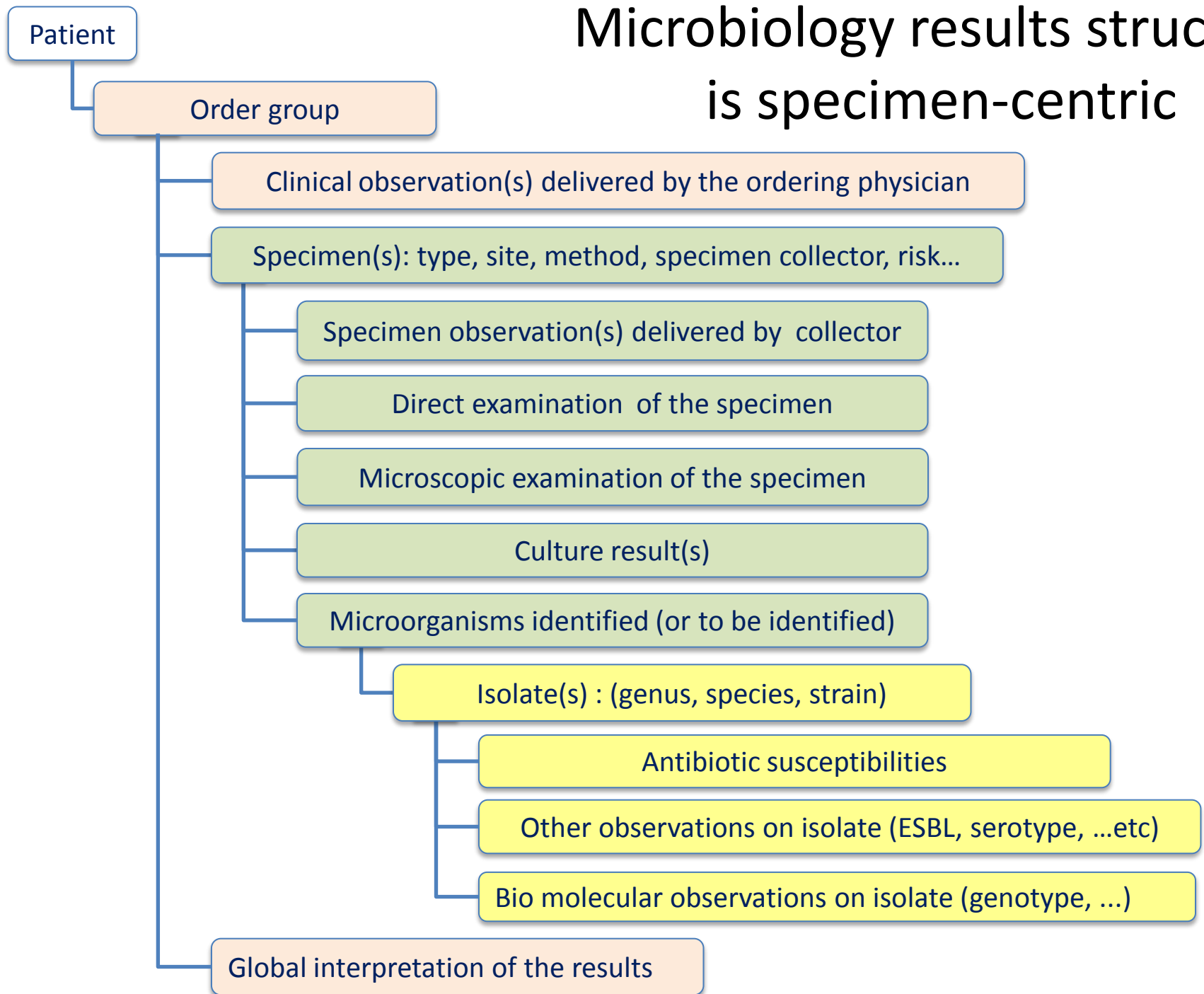
ILW: lab to lab TRIAL

XD-LAB: clinical or public health laboratory digital report FINAL

LDA: laboratory automation FINAL

LAW: laboratory analytical workflow TRIAL

Microbiology results structure is specimen-centric

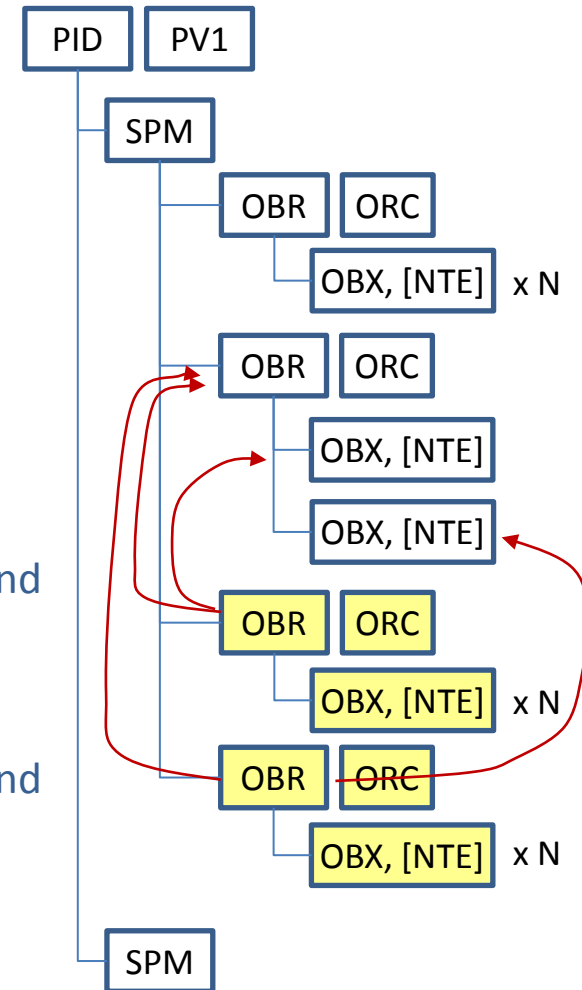


Microbiology with HL7 2.5.1 messages

- LAB TF-2x:C.11 « Microbiology reporting rules »
- LAB TF-2a: 4.5 Example « Microbiology with Two Specimens and Three Germs Identified »

OUL^R22

- Patient
- **Specimen 1**
 - Order of microscopy on specimen
 - Microscopy observations
 - Order of culture and microorganism isolation
 - Observation **organism 1** identified (indexed by OBX-4)
 - Observation **organism 2** identified (indexed by OBX-4)
 - Child order for **isolate 1** (linked to parent result and parent order)
 - Observations on isolate 1
 - Child order for **isolate 2** (linked to parent result and parent order)
 - Observations on isolate 1
- **Specimen 2 ...**



Rules for reporting microbiology with HL7 2.5.1 messages

- LAB TF-2x:C.11 « Microbiology reporting rules »

1. Microorganisms identified are indexed by observation sub-id (OBX-4)
2. The combination OBX-3 + OBX-4 for a microorganisms must be stable across successive messages reporting results for the same order group.

OBX|1|ST|11475-1^Micro organism identified^LN|1.234.5.67.8|E. coli

OBX|2|ST|11475-1^Micro organism identified^LN|1.234.5.67.9|Strepto group D

Change Proposal : Use an OID in OBX-4 that will be assigned forever to the microorganism identified on this specimen, independently of any messages.

3. Below an OBR,ORC, observations related to a microorganism are grouped together, → sort OBX by OBX-4.
4. Test on an isolate is a “reflex order” (**Change proposal: OBR-11 SHALL be valued “G”**) spawned by the positive culture. This order is related to its parent result (the microorganism identified): OBR-26 → [OBX-3 + OBX-4 + OBX-5.2],
and to its parent order (the culture): OBR-29 → [OBR-2 + OBR-3]
5. LAB-3: Results are reported in **recapitulative mode** (called “*snapshot mode*” in HL7 implementation guide “Lab results interface”)

Coded vocabularies pointed by LAB TF for microbiology (1)

- Specimen type (SPM-4)
 - *“Valid coding systems for this field include HL7 table 0487 (...), SNOMED CT, or any national coding scheme.”*
 - The LAB TF does not support specimen type modifier (SPM-5). [Change proposal to make it optional](#). (See US use cases from Riki)
- Specimen collection method (SPM-7)
 - *“Valid coding systems for this field include HL7 table 0488 (...), SNOMED CT, or any national coding scheme.”*
- Specimen source site (SPM-8)
 - No suggested vocabulary.
- Specimen source site modifier (SPM-9)
 - No suggested vocabulary.
 - SNOMED CT could provide a post-coordinated expression for SPM-8.
 - What to suggest in countries who haven't a SNOMED CT license?
- Specimen risk code (SPM-16)
 - HL7 user defined table 0489. Is it useful for micro?

Coded vocabularies for microbiology (2)

- Ordered service (OBR-4): JLAC10 in Japan, LOINC or others for the rest of the World
- Any observation (OBX-3) : JLAC10 in Japan, LOINC for the rest of the World
- Identification of microorganisms (OBX-5)
 - SNOMED CT for the countries who have purchased the license.
 - JANIS in Japan, SNOMED 3.5 in France, others?
- Antibiotic susceptibility tests: OBX-3 = LOINC (JLAC10 in Japan)

C.11.3.5 OBX-3 Observation Identifier

1285 For sensitivity results, the Observation Identifier must be encoded using the LOINC® terminology. Specifically, the value of the observation identifier must be one of the LOINC® codes designated to identify antimicrobials tested within susceptibility panels, i.e., codes with a PROPERTY attribute of “SUSC”. The LOINC® coding system includes approximately 1100 such codes, which cover all antimicrobials that are typically assessed in microbiology sensitivity testing.

1290 Sample Values:

1-8^ ACYCLOVIR^LN

12-5^ AMIKACIN:MIC^LN

- OBX-5 = the measured value (MIC or diameter), [or no value](#).
- OBX-8 = the sensitivity, with HL7 user defined Table 0078 (S, I, R, DDS ...)

The structure of a laboratory report (XD-LAB profile)

ClinicalDocument

- recordTarget: the patient
- infulfillmentOf/id: Placer Order Group
- documentationOf: Lab requisition (id, performer, time, ...)
- **Microbiology specialty section** (code 18725-2 : microbiology studies)
 - **One report item sub-section per specimen**
 - text: human readable content of the section
 - entry/act : machine readable content of the section (code, performer, author ...)
 - Specimen collection
 - Battery organizer(s)
 - Observation(s)
 - Annotation comment(s)
 - Cluster organizer(s)
 - Battery organizer(s)
 - Observation(s)
 - Annotation comment(s)
 - Annotation comment(s)

The structured data for microbiology in a CDA LAB report

The report

<ClinicalDocument>

– Patient

<recordTarget>

– Microbiology section

<section> /code 18725-2 « microbiology studies »

– Report item sub-section

<section> *(the results obtained on one specimen)*

– Human readable content

<text>

– Machine readable content

<entry><act>

– Specimen

{specimen collection template}

– Microscopic examination

{battery organizer template}

– Microscopy observations

{laboratory observation template}

– Culture and organism isolation

{battery organizer template}

– **organism identified**

{laboratory observation template}/**value**

– Testing on an isolate

{laboratory cluster organizer template}

– **microorganism**

specimen/specimenRole/specimenPlayingEntity/**code**

– AST panel

{battery organizer template}

– Antibiotic tested

{laboratory observation template}

– ...

{laboratory observation template}

– Global interpretation

{annotation comment template}