

## **French Work group « Microbiology lab reporting : structuring guideline proposal »**

## ■ Objectives

- n French Work group : current proposal
- n Feedback from IHTSDO « Microbiology reporting project »

## ■ Agenda

- n French Context
- n Work group mission & current proposal
- n Update on IHTSDO « Microbiology reporting project »

## ■ US context

- n @ R. Merrick 'Update on the US Meaningful Use program'

## ■ EU context

- n Directive 2011/24/EU : Patients' rights in cross-border healthcare
- n Project
  - epSOS, SemanticHealthNet,
  - eHealth interoperability ('Horizon 2020') => SNOMED-CT centric

## ■ Fr context

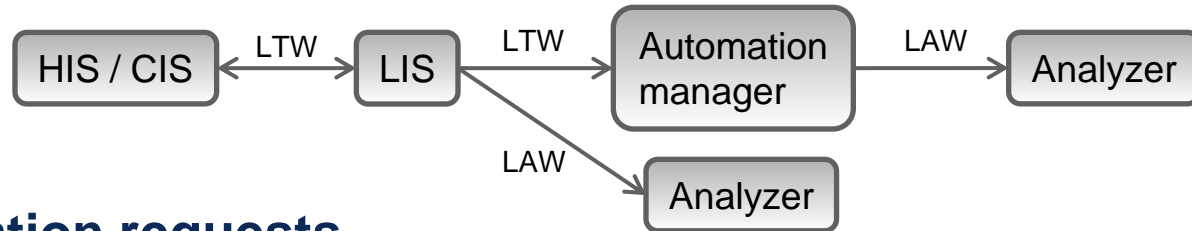
- n DMP (French national EHR/PHR)
  - CI-SIS: National interoperability framework ; includes **laboratory results reporting**
- n Terminologies
  - bioLoinc (French translation of the subset of LOINC for lab tests, managed by ASIP Santé, with a consortium AP-HP, SFIL, Mondeca, Vidal)
  - SNOMED v3.5 publicly available in French
- n Lab IS accreditation
  - @F. Macary 'Update on the French program for labeling hospital applications'

## ■ Missions

- n Guide implementation reporting microbiology
  - Tests request & results description in LTW, LAW
  - Structure reporting in XD-LAB
- n Enrich ASIP CI-SIS (Health IS – Interoperability guidance)

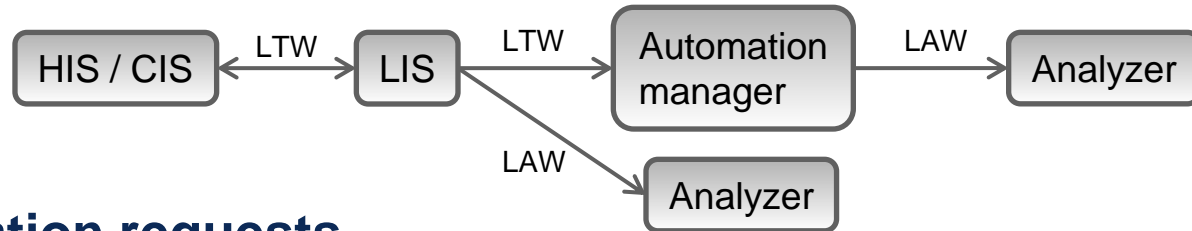
## ■ Expected deliverables

- n Guidance document (in French)
- n Translation into English
- n Generalization & contribution to IHE Lab - international



## Observation requests

- n Analysis
- n Proposals
  - Specimen description
  - Code selection



## Observation requests

n Analysis

### Key items for microbiology

- **Specimen** targeted for an observation
- **Observation** requested on that specimen

Bacterial identification in Urine

Campilobacter identification in Blood culture

### Elements

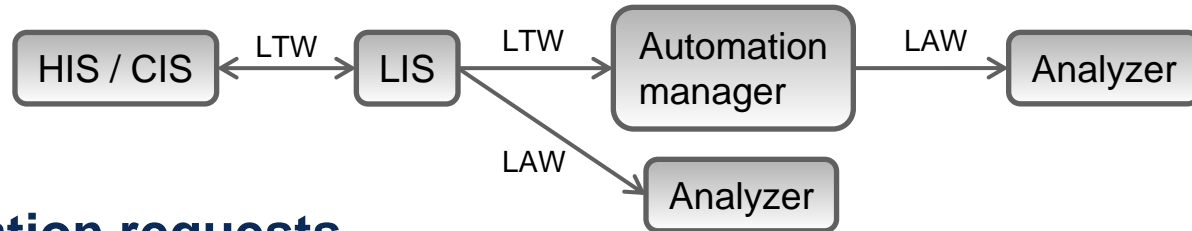
**Observation**

LOINC - Fine grain description

**Specimen**

LOINC - Poor specimen description  
HL7 - Fine grain description  
SPM to be curated & adapted to microbiological analysis

SPM-4 (type)  
SPM-6 (additives)  
SPM-7 (collection method)  
SPM-8 (source site)  
SPM-9 (source site modifier)



## Observation requests

- n Proposal : specimen description

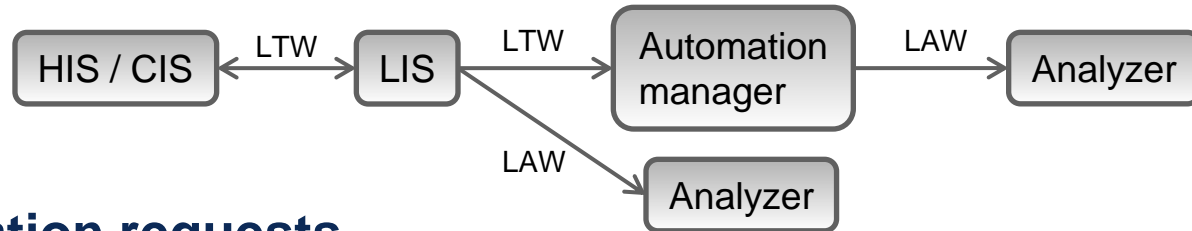
## Elements

### Specimen

HL7 Specimen description – SPM segments

Refine SPM content to fit microbiology needs

Align content on a reference terminology (HL7 vocabulary, SNOMED)



### Observation requests

n Proposal : code selection



### LOINC

- Reuse observation code to encode observation requests
- Define rules to select observation codes
- Propose a subset of codes accordingly

600-7, Bacteria identified  
In Blood by Culture

38353-9, Streptococcus  
sp identified in  
Unspecified specimen by  
Organism specific culture

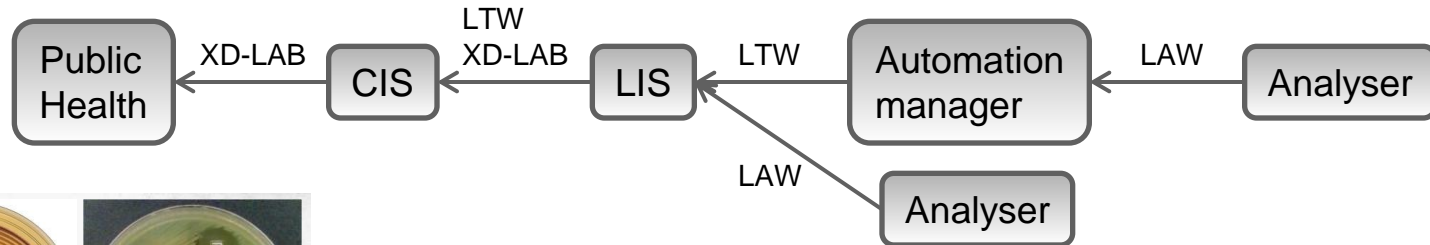
### Elements & rules

**Observation**

Select a limited list corresponding  
Observation ordered by physician

**Specimen**

Select generic or high level description from  
SPM4

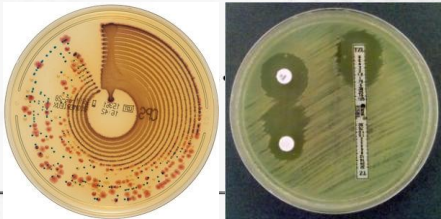


## ■ Observation Reporting



P.O. Box 5010 • London • Ontario • N6A 4G5

\*\*\* Discharge Summary \*\*\*  
Discharged: 2003/04/27



### Microbiology Culture

PROCEDURE: Respiratory Culture (RESP)      COLLECTED: 03/21/2003 18:20  
SOURCE: Tracheal Asp      ACCESSION: 03-080-03374

#### CULTURE RESULTS

\*\*\* Final Report \*\*\*  
Verified: 03/23/2003 11:35  
+++ Organisms compatible with respiratory flora.  
Gram-negative rods present. No predominant organism. Clinical significance is questionable.

PROCEDURE: Wound Culture (WNDC)      COLLECTED: 03/28/2003 10:15  
SOURCE: Wound Swab      ACCESSION: 03-087-01551  
BODY SITE: Chest

#### \*\*\* STAINS / PREPARATIONS \*\*\*

\*\*\* Gram Stain Report \*\*\*  
Verified: 03/28/2003 16:35  
Occasional White Blood Cells seen  
+ Epithelial Cells seen  
Occasional Gram negative rods

Quality Assurance Report  
Verified: 03/28/2003 16:35  
QUALITY/RISK ISSUE: The presence of squamous epithelial cells indicates a poor quality specimen.

#### CULTURE RESULTS

\*\*\* Final Report \*\*\*  
Verified: 03/31/2003 11:40  
+ Staphylococcus epidermidis  
Gram negative rods failed to grow in culture.

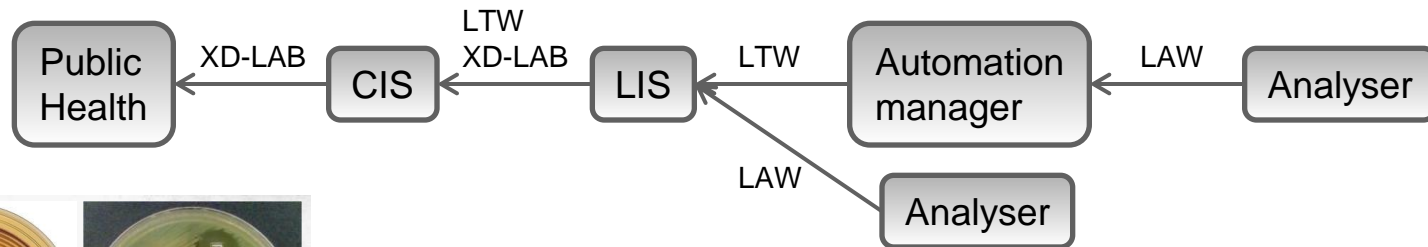
#### \*\*\* SUSCEPTIBILITY RESULTS \*\*\*

Staphylococcus epidermidis

	MIC DILN	MIC INTRP	USUAL ADULT DOSE	RVU COST/D
Clindamycin	<=0.5	S	IV 60mg q6h	11.00
Erythromycin	<=0.5	S	IV 0.5-1g q6h	16.00
Gentamicin	<=2	S	IV 2mg/kg q12h	4.00
Oxacillin / Cloxacillin(1)	>=8	R	IV 1g q4-6h	4.00
Trimethoprim/sulfamethoxazole	<=10	S	IV 2.5-5mg/kg TMP	22.00
Vancocmycin	2	S	IV 1g q12h	21.00

Name: ~      PIN: 10181686  
VISIT # 402516899

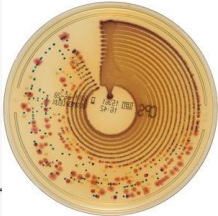
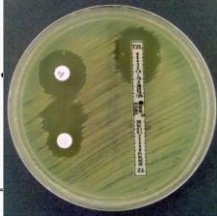
H = High      L = Low  
C = Critical      # = Abnormal  
c = corrected      i = Interpretive Data  
f = footnote



## ■ Observation Reporting

- n Included / excluded from standardization
- n Observation description
- n Observation results

**LLSG**  
London Laboratory Services Group  
A Joint Venture of London Health Sciences  
Centre and St Joseph's Health Centre London  
P.O. Box 5010 • London • Ontario • N6A 4G5  
\*\*\* Discharge Summary \*\*\*  
Discharged: 2003/04/27

**M i c r o b i o l o g y C u l t u r e**

PROCEDURE: Respiratory Culture (RESP)      COLLECTED: 03/21/2003 18:20  
SOURCE: Tracheal Asp      ACCESSION: 03-080-03374

**CULTURE RESULTS**

\*\*\* Final Report \*\*\*  
Verified: 03/23/2003 11:35  
+++ Organisms compatible with respiratory flora.  
Gram-negative rods present. No predominant organism. Clinical significance is questionable.

---

PROCEDURE: Wound Culture (WNDC)      COLLECTED: 03/28/2003 10:15  
SOURCE: Wound Swab      ACCESSION: 03-087-01551  
BODY SITE: Chest

**\*\*\* STAINS / PREPARATIONS \*\*\***

\*\*\* Gram Stain Report \*\*\*  
Verified: 03/28/2003 16:35  
Occasional White Blood Cells seen  
+ Epithelial Cells seen  
Occasional Gram negative rods

Quality Assurance Report  
Verified: 03/28/2003 16:35  
QUALITY/RISK ISSUE: The presence of squamous epithelial cells indicates a poor quality specimen.

**CULTURE RESULTS**

\*\*\* Final Report \*\*\*  
Verified: 03/31/2003 11:40  
+ Staphylococcus epidermidis  
Gram negative rods failed to grow in culture.

**\*\*\* SUSCEPTIBILITY RESULTS \*\*\***

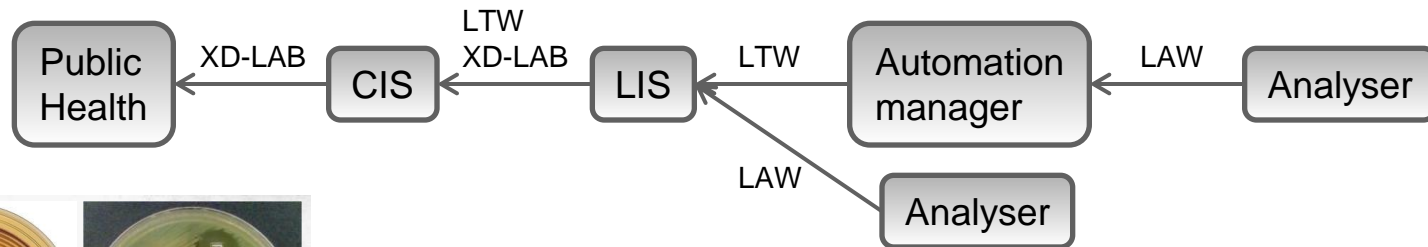
Staphylococcus epidermidis

	MIC DILN	MIC INTRP	USUAL ADULT DOSE	RVU COST/D
Clindamycin	<=0.5	S	IV 600mg q8h	11.00
Erythromycin	<=0.5	S	IV 0.5-1g q6h	16.00
Gentamicin	<=2	S	IV 2mg/kg q12h	4.00
Oxacillin / Cloxacillin(1)	>=8	R	IV 1g q4-6h	4.00
Trimethoprim/sulfamethoxazole	<=10	S	IV 2.5-5mg/kg TMP	22.00
Vancocycin	2	S	IV 1g q12h	21.00

Name: ~      PIN: 10181686  
VISIT # 402516899

H = High      L = Low  
C = Critical      # = Abnormal  
c = corrected      i = Interpretive Data  
f = footnote

Printed: 03/05/02 11:15      Page 11 of 19



## Observation Reporting

n Included / excluded from standardization

**Included  
(reported)**

Macroscopic exams

Microscopic exams (fresh & colored)

Culture results, including specific targeted organisms if specify in Obs. Request

Count results

Antibio susceptibility testing

**Excluded  
(not reported)**

Details on culture media used

Details on orientation tests

**LLSG**  
London Laboratory Services Group  
A Joint Venture of London Health Sciences  
Centre and St Joseph's Health Centre London  
P.O. Box 5010 • London • Ontario • N6A 4G5  
\*\*\* Discharge Summary \*\*\*  
Discharged: 2003/04/27

**Microbiology Culture**

PROCEDURE: Respiratory Culture (RESP)  
SOURCE: Tracheal Asp  
COLLECTED: 03/21/2003 18:20  
ACCESSION: 03-080-03374

CULTURE RESULTS

\*\*\* Final Report \*\*\*  
Verified: 03/23/2003 11:35  
+++ Organisms compatible with respiratory flora.  
Gram-negative rods present. No predominant organism. Clinical significance is questionable.

PROCEDURE: Wound Culture (WNDC)  
SOURCE: Wound Swab  
BODY SITE: Chest  
COLLECTED: 03/28/2003 10:15  
ACCESSION: 03-080-03301

\*\*\* STAINS / PREPARATIONS \*\*\*

\*\*\* Gram Stain Report \*\*\*  
Verified: 03/28/2003 16:35  
Occasional white blood cells seen  
+ Epithelial Cells seen  
Occasional Gram negative rods

Quality Assurance Report  
Verified: 03/28/2003 16:35  
QUALITY/RISK ISSUE: The presence of squamous epithelial cells indicates a poor quality specimen.

CULTURE RESULTS

\*\*\* Final Report \*\*\*  
Verified: 03/31/2003 11:40  
+ Staphylococcus epidermidis  
Gram negative rods failed to grow in culture.

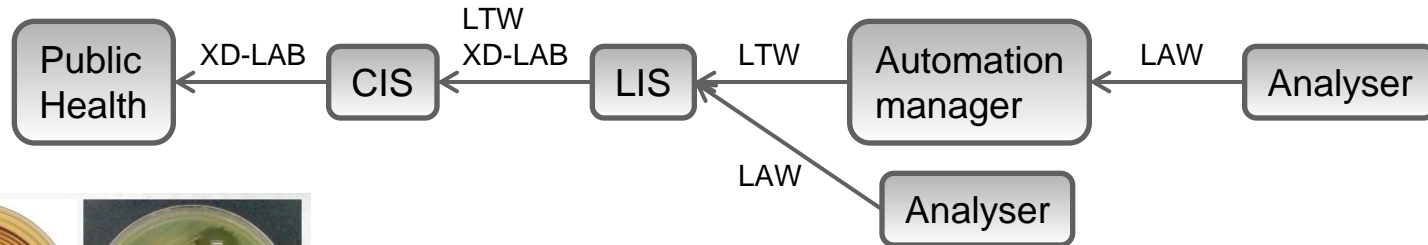
\*\*\* SUSCEPTIBILITY RESULTS \*\*\*  
Staphylococcus epidermidis

	MIC DILN	MIC INTRP	USUAL ADULT DOSE	RWD-00077D
Clindamycin	<=0.5	S	IV 600mg q6h	11.00
Erythromycin	<=0.5	S	IV 0.5-1g q6h	16.00
Gentamicin	<=2	S	IV 2mg/kg q12h	4.00
Oxacillin / Cloxacillin(1)	>=8	R	IV 1g q4-6h	4.00
Trimethoprim/Sulfamethoxazole	<=10	S	IV 2.5-5mg/kg TMP	22.00
Vancomycin	2	S	IV 1g q12h	21.00

Name: \_\_\_\_\_

H = High      L = Low  
C = Critical    # = Abnormal  
c = corrected    i = Interpretive Data  
f = footnote

Printed: 03/05/02 11:15      Page 11 of 19



## Observation Reporting

n Observation description



What Else ? ☺

**LLSG**  
London Laboratory Services Group  
A Joint Venture of London Health Sciences  
Centre and St Joseph's Health Centre London  
P.O. Box 5010 • London • Ontario • N6A 4G5  
\*\*\* Discharge Summary \*\*\*  
Discharged: 2003/04/27

**Microbiology Culture**

PROCEDURE: Respiratory Culture (RESP)      COLLECTED: 03/21/2003 18:20  
SOURCE: Tracheal Asp      ACCESSION: 03-080-03374

CULTURE RESULTS  
\*\*\* Final Report \*\*\*  
Verified: 03/23/2003 11:35  
+++ Organisms compatible with respiratory flora.  
Gram-negative rods present. No predominant organism. Clinical significance is questionable.

PROCEDURE: Wound Culture (WNDC)      COLLECTED: 03/28/2003 10:15  
SOURCE: Wound Swab      ACCESSION: 03-087-01551  
BODY SITE: Chest

\*\*\* STAINS / PREPARATIONS \*\*\*  
\*\*\* Gram Stain Report \*\*\*  
Verified: 03/28/2003 16:35  
Occasional White Blood Cells seen  
+ Epithelial Cells seen  
Occasional Gram negative rods  
Quality Assurance Report  
Verified: 03/28/2003 16:35  
QUALITY/RISK ISSUE: The presence of squamous epithelial cells indicates a poor quality specimen.

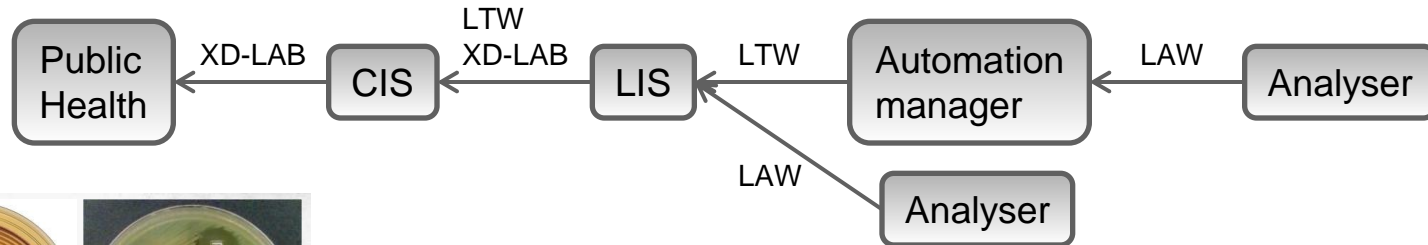
CULTURE RESULTS  
\*\*\* Final Report \*\*\*  
Verified: 03/31/2003 11:40  
+ Staphylococcus epidermidis  
Gram negative rods failed to grow in culture.

\*\*\* SUSCEPTIBILITY RESULTS \*\*\*  
Staphylococcus epidermidis

	MIC DILN	MIC INTRP	USUAL ADULT DOSE	RVU COST/D
Clindamycin	<=0.5	S	IV 60mg q8h	11.00
Erythromycin	<=0.5	S	IV 0.5-1g q6h	16.00
Gentamicin	<=2	S	IV 2mg/kg q12h	4.00
Oxacillin / Cloxacillin(1)	>=8	R	IV 1g q4-6h	4.00
Trimethoprim/sulfamethoxazole	<=10	S	IV 2.5-5mg/kg TMP	22.00
Vancocycin	2	S	IV 1g q12h	21.00

Name: ~      PIN: 10181686  
VISIT # 402516899

H = High      L = Low  
C = Critical      # = Abnormal  
c = corrected      i = Interpretive Data  
f = footnote



## ■ Observation Reporting

### n Observation results

#### - Organisms names

- Bacteria
- Fungi, yeasts
- parasites

#### - AST results

- MIC / diameter -> Unit
- Phenotype interpretation (S, I, R, IE, '-')
- Resistance Mechanisms

**M i c r o b i o l o g y C u l t u r e**

PROCEDURE: Respiratory Culture (RESP)      COLLECTED: 03/21/2003 18:20  
SOURCE: Tracheal Asp      ACCESSION: 03-080-03374

**CULTURE RESULTS**

\*\*\* Final Report \*\*\*  
Verified: 03/23/2003 11:35  
\*\*\* Organisms compatible with respiratory flora.  
Gram-negative rods present. No predominant organism. Clinical significance is questionable.

---

PROCEDURE: Wound Culture (WNDC)      COLLECTED: 03/28/2003 10:15  
SOURCE: Wound Swab      ACCESSION: 03-087-01551  
BODY SITE: Chest

**\*\*\* STAINS / PREPARATIONS \*\*\***

\*\*\* Gram Stain Report \*\*\*  
Verified: 03/28/2003 16:35  
Occasional White Blood Cells seen  
+ Epithelial Cells seen  
Occasional Gram negative rods

Quality Assurance Report  
Verified: 03/28/2003 16:35  
QUALITY/RISK ISSUE: The presence of squamous epithelial cells indicates a poor quality specimen.

**CULTURE RESULTS**

\*\*\* Final Report \*\*\*  
Verified: 03/31/2003 11:40  
+ Staphylococcus epidermidis  
Gram negative rods failed to grow in culture.

**\*\*\* SUSCEPTIBILITY RESULTS \*\*\***

Staphylococcus epidermidis

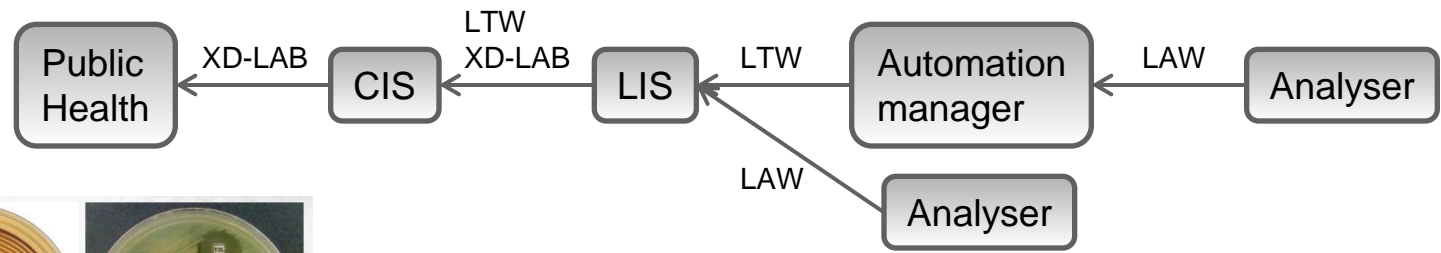
	MIC DILN	MIC INTRP	USUAL ADULT DOSE	RVU COST/D
Clindamycin	<=0.5	S	IV 60mg q8h	11.00
Erythromycin	<=0.5	S	IV 0.5-1g q6h	16.00
Gentamicin	<=2	S	IV 2mg/kg q12h	4.00
Oxacillin / Cloxacillin(1)	>=8	R	IV 1g q4-6h	4.00
Trimethoprim/sulfamethoxazole	<=10	S	IV 2.5-5mg/kg TMP	22.00
Vancocycin	2	S	IV 1g q12h	21.00

Name: ~      PIN: 10181686  
VISIT # 402516899

H = High      L = Low  
C = Critical      # = Abnormal  
c = corrected      i = Interpretive Data  
f = footnote

Printed: 03/05/02 11:15      Page 11 of 19

## French Work Current proposal



### Observation Reporting

n Understood needs for bacteria naming

- Uniq ID
- Follow ICSP
- Keep track of name history evolution
- Exhaustivity for medical needs
- Maintenance, sustainability
- Standard
- Open to collaboration
- Licence cost

n What ?

- DSMZ, WHO, LPSN
- SNOMED 3.5, SNOMED-CT
- NamesForLife,

**M i c r o b i o l o g y C u l t u r e**

PROCEDURE: Respiratory Culture (RESP)      COLLECTED: 03/21/2003 18:20  
SOURCE: Tracheal Asp      ACCESSION: 03-080-03374

**CULTURE RESULTS**

\*\*\* Final Report \*\*\*  
Verified: 03/23/2003 11:35  
+++ Organisms compatible with respiratory flora.  
Gram-negative rods present. No predominant organism. Clinical significance is questionable.

---

PROCEDURE: Wound Culture (WNDC)      COLLECTED: 03/28/2003 10:15  
SOURCE: Wound Swab      ACCESSION: 03-087-01551  
BODY SITE: Chest

**\*\*\* STAINS / PREPARATIONS \*\*\***

\*\*\* Gram Stain Report \*\*\*  
Verified: 03/28/2003 16:35  
Occasional White Blood Cells seen  
+ Epithelial Cells seen  
Occasional Gram negative rods

Quality Assurance Report  
Verified: 03/28/2003 16:35  
QUALITY/RISK ISSUE: The presence of squamous epithelial cells indicates a poor quality specimen.

**CULTURE RESULTS**

\*\*\* Final Report \*\*\*  
Verified: 03/31/2003 11:40  
+ Staphylococcus epidermidis  
Gram negative rods failed to grow in culture.

**\*\*\* SUSCEPTIBILITY RESULTS \*\*\***

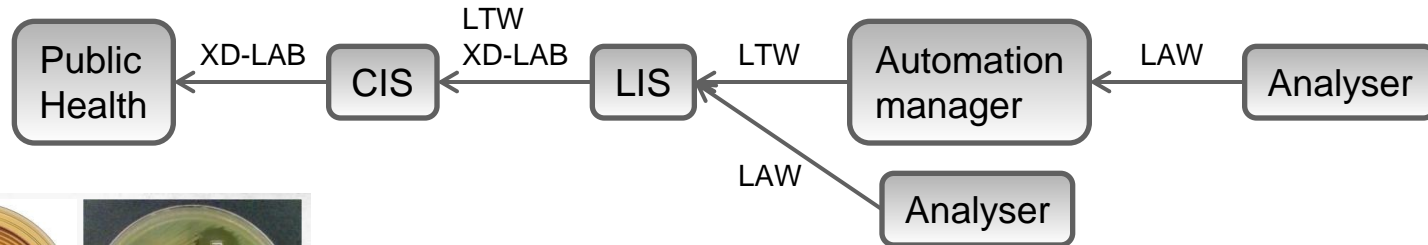
Staphylococcus epidermidis

	MIC DILN	MIC INTRP	USUAL ADULT DOSE	RVU COST/D
Clindamycin	<=0.5	S	IV 60mg q8h	11.00
Erythromycin	<=0.5	S	IV 0.5-1g q6h	16.00
Gentamicin	<=2	S	IV 2mg/kg q12h	4.00
Oxacillin / Cloxacillin(1)	>=8	R	IV 1g q4-6h	4.00
Trimethoprim/sulfamethoxazole	<=10	S	IV 2.5-5mg/kg TMP	22.00
Vancocycin	2	S	IV 1g q12h	21.00

Name: ~      PIN: 10181686  
VISIT # 402516899

H = High      L = Low  
C = Critical      # = Abnormal  
c = corrected      i = Interpretive Data  
f = footnote

Printed: 03/05/02 11:15      Page 11 of 19



## Observation Reporting

### n Observation results

#### - Organisms names

- Bacteria
- Fungi, yeasts
- parasites

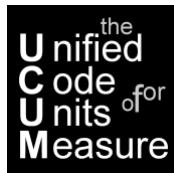
- IHTSDO delivering
- SNOMED CT®**
- the global clinical terminology



#### - AST results

- MIC / diameter -> Unit
- Phenotype interpretation (S, I, R, IE, '-')
- Resistance Mechanisms

- IHTSDO delivering
- SNOMED CT®**
- the global clinical terminology



**LLSG**  
London Laboratory Services Group  
A Joint Venture of London Health Sciences  
Centre and St Joseph's Health Centre London  
P.O. Box 5010 • London • Ontario • N6A 4G5  
\*\*\* Discharge Summary \*\*\*  
Discharged: 2003/04/27

*M i c r o b i o l o g y   C u l t u r e*

PROCEDURE: Respiratory Culture (RESP)      COLLECTED: 03/21/2003 18:20  
SOURCE: Tracheal Asp      ACCESSION: 03-080-03374

CULTURE RESULTS

\*\*\* Final Report \*\*\*  
Verified: 03/23/2003 11:35  
+++ Organisms compatible with respiratory flora.  
Gram-negative rods present. No predominant organism. Clinical significance is questionable.

---

PROCEDURE: Wound Culture (WNDC)      COLLECTED: 03/28/2003 10:15  
SOURCE: Wound Swab      ACCESSION: 03-087-01551  
BODY SITE: Chest

\*\*\* STAINS / PREPARATIONS \*\*\*

\*\*\* Gram Stain Report \*\*\*  
Verified: 03/28/2003 16:35  
Occasional White Blood Cells seen  
+ Epithelial Cells seen  
Occasional Gram negative rods

Quality Assurance Report  
Verified: 03/28/2003 16:35  
QUALITY/RISK ISSUE: The presence of squamous epithelial cells indicates a poor quality specimen.

CULTURE RESULTS

\*\*\* Final Report \*\*\*  
Verified: 03/31/2003 11:40  
+ Staphylococcus epidermidis  
Gram negative rods failed to grow in culture.

\*\*\* SUSCEPTIBILITY RESULTS \*\*\*

Staphylococcus epidermidis

	MIC DILN	MIC INTRP	USUAL ADULT DOSE	RVU COST/D
Clindamycin	<=0.5	S	IV 60mg q8h	11.00
Erythromycin	<=0.5	S	IV 0.5-1g q6h	16.00
Gentamicin	<=2	S	IV 2mg/kg q12h	4.00
Oxacillin / Cloxacillin(1)	>=8	R	IV 1g q4-6h	4.00
Trimethoprim/sulfamethoxazole	<=10	S	IV 2.5-5mg/kg TMP	22.00
Vancomycin	2	S	IV 1g q12h	21.00

Name: ~      PIN: 10181686  
VISIT # 402516899

H = High      L = Low  
C = Critical      # = Abnormal  
c = corrected      i = Interpretive Data  
f = footnote

Printed: 03/05/02 11:15      Page 11 of 19

### ■ Many ongoing projects to maintain the terminology

■ IHTSDO delivering  
■ SNOMED CT®  
■ the global clinical terminology



- n Organism & Infectious Disease Model Project
- n Microbiology Reporting Project

- «Establish subset(s) to be used for microorganism related results reporting. These subsets will be drawn from SNOMED CT content, and new concepts will be added to the SNOMED CT International Release to meet the requirements.»

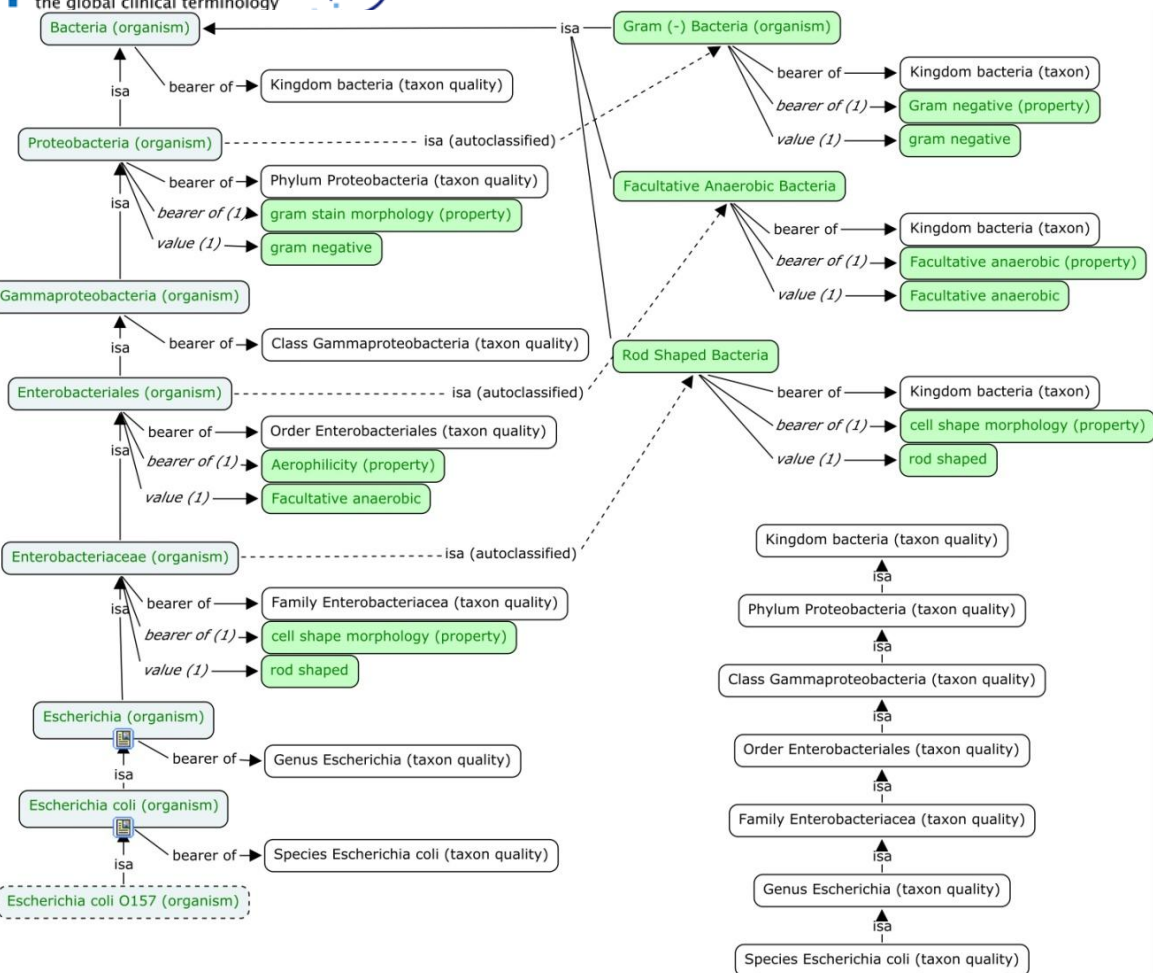
### ■ Microbiology Reporting project - Why is it of importance ?

- n Fix existing microorganism related content issues
- n Add required content to SNOMED CT hierarchies including
  - Organism, Clinical Finding, Observation Results, Substance
- n Identify and categorize concept patterns including :
  - Organisms classes and patterns for modifying classes
  - Patterns of reporting of results from microbiological examinations. Most of these are values that would normally be paired with laboratory tests
- n Identify editorial guidelines for descriptions and relationships for the concept patterns
- n Develop Value Set(s)

### Organism & Infectious Disease Model Project

- IHTSDO delivering
- SNOMED CT®
- the global clinical terminology

#### Taxonomy modeling effort



- Connections to
  - laboratory findings
  - new observables model
  - Decision support
- Better support for bacterial taxonomies

### ■ Microbiology Reporting project

- n Fix existing microorganism related content issues
  - 'organism X / organism Y' ??
  - organism 'X species' ??
  - Organisme 'X like' ??
  - ...
  
- n Rework / Add required content to SNOMED CT hierarchies including
  - Organism
  - Clinical Finding
  - Observation Procedure
    - method=evaluation action
  - Observation Results
    - Artifacts as output of observation procedures

