

# MN Clinical Laboratory Survey of Readiness and Needs for Electronic Health Information Exchange (2011)

## General Information

1. Survey Respondent

- a. Name: \_\_\_\_\_  
b. Title: \_\_\_\_\_  
c. E-mail: \_\_\_\_\_  
d. Phone number: \_\_\_\_\_

2. Facility name (full name with no abbreviation): \_\_\_\_\_

3. Please specify your facility type

- Hospital [Go to 4]  
 Clinic [Go to 5a]  
 Reference laboratory [Go to 5a]  
 Public health agency [Go to 5a]

4. Does your facility have a clinical laboratory on site?

- Yes [Go to 5a]  
 No [Go to 5b and Exit]

5a. Laboratory name (full name with no abbreviation): \_\_\_\_\_

Laboratory address: \_\_\_\_\_  
City \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_ Zip \_\_\_\_\_ [Go to 6]

5b. Please list the clinical laboratory where you refer most of your patient specimens.

Laboratory name (full name with no abbreviation): \_\_\_\_\_  
Laboratory address: \_\_\_\_\_  
City \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_ Zip \_\_\_\_\_ [Then Exit]

6. Is your clinical laboratory part of a health system (e.g., Allina, Mayo)?

- Yes, please specify your health system name \_\_\_\_\_  
 No

7. Please estimate a total of ALL billable tests your laboratory received in calendar year 2010.

- Less than 100,000 billable tests
- 100,000 – 499,999 billable tests
- 500,000 – 999,999 billable tests
- 1,000,000 or more billable tests

7a. What percentage of the billable tests is for outpatient or outreach?

- Less than 20%
- 20 – 39%
- 40 – 59%
- 60-79%
- 80% or more
- Not applicable

### **Computerized Clinical Laboratory Information System (LIS)**

Definition for this survey: A computerized clinical laboratory information system (LIS) is a software system used in a clinical laboratory to computerize laboratory business processes such as test processing, test scheduling, specimen and sample tracking, inventory control, reporting, quality control and quality assurance management, and statistical analysis and surveillance.

If your laboratory has more than one LIS, please consider your primary LIS for answering the questions in this section.

Answer 8 only if your laboratory is part of a health system. Otherwise, go to 9.

8. Which statement best describes LIS in your health system?

- All the laboratories in our health system use the same LIS
- Some of the laboratories in our health system use the same LIS
- None of the laboratories in our health system use the same LIS

9. Which statement best describes your LIS?

- We have an LIS installed and in use for all (more than 90%) of our laboratory units [Go to 10]
- We use our hospital information system as our LIS [Go to 10]
- We have an LIS installed and in use for some of our laboratory units [Go to 10]
- We have purchased/begun installation of an LIS but are not yet using the system [Go to 11]
- We do not have an LIS, but consider purchasing one in the next year [Go to 16]
- We do not have an LIS and are not considering purchasing of one in the next year [Go to 16]

10. What year did your laboratory start using your current LIS?

- 2003 or earlier
- 2004 - 2005
- 2006 - 2007
- 2008 -2009
- 2010 - 2011

11. How would you describe your current LIS?

- Commercial LIS [Go to 12a]
- Home-grown LIS [Go to 13]
- Other, please specify \_\_\_\_\_ [Go to 13]

Please tell us about your vendor name and product name of your LIS.

Example Vendor Name: LabSoft, Inc.

Product Name: Beethoven, LabNet, or EZLink

12a. What is the vendor name of your primary LIS? (full name with no abbreviation)

\_\_\_\_\_

12b. What is the product name of your primary LIS? (full name with no abbreviation)

\_\_\_\_\_

12c. What is the version of your primary LIS?

\_\_\_\_\_

13. Does your laboratory have a plan to upgrade/switch to another LIS in calendar year 2011?

- Yes [Go to 14a]
- No [Go to 16]

14a. What is the vendor name of the LIS to which your lab plans to upgrade/switch? (full name with no abbreviation)

\_\_\_\_\_

14b. What is the product name of the LIS to which your lab plans to upgrade/switch? (full name with no abbreviation)

\_\_\_\_\_

14c. What is the version of the LIS to which your lab plans to upgrade/switch?

\_\_\_\_\_

15. Please elaborate on benefits your laboratory will gain from upgrading/switching to another LIS.

16. If you would like to clarify answers related to your LIS, please provide comments below.

**Methods Used to Receive Test Orders and Send Lab Results**

Many laboratories are moving toward electronically receiving test orders and sending lab results. We would like to learn about your laboratory's current practices regarding exchange of laboratory information.

17. Please estimate the proportion of all test orders (outpatient, outreach, and inpatient) received in calendar year 2010 using each transport method below. (Percentages do not need to add up to 100%.)

Transport method	Percent of <u>test orders received</u>						
	None	<10%	10-29%	30-49%	50-69%	70-89%	≥90%
Verbal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paper requisition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electronic orders from providers' EHR <sup>†</sup> or CPOE <sup>‡</sup> systems (including other healthcare providers entering order)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify _____ _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<sup>†</sup>EHR = Electronic Health Record, <sup>‡</sup>CPOE = Computerized Provider Order Entry

18. Please estimate the proportion of all final lab results (outpatient, outreach, and inpatient) sent in calendar year 2010 to providers using each transport method below. (Percentages do not need to add up to 100%.)

Transport method to <u>providers</u>	Percent of <u>lab results sent</u>						
	None	<10%	10-29%	30-49%	50-69%	70-89%	≥90%
US Postal Service / Courier	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facility internal hand delivery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fax	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Manual entry of lab results into providers' electronic health record (EHR) systems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Automatically upload of lab results into providers' EHR systems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electronic file transfer independent of EHR (e.g., sending HL7 <sup>†</sup> -based messages via secure file transfer protocol)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify _____ _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<sup>†</sup>HL7 (Health Level 7) is a messaging standard that may be used to send results between laboratory and clinical information system.

The following questions are about information messaging and coding standards that may be used by your laboratory to send results.

*LOINC (Logical Observations, Identifiers, Names and Codes) is a terminology data set that includes standard codes for lab test names.*

**Example:**     **Test name:** Salmonella Stool Culture

**LOINC code:** 20955-1

**Local or vendor-specific code:** SSC (Others will be unable to interpret this code unless they have your local code lookup table or use the same vendor as your laboratory)

**No code:** Salmonella Stool Culture

**Note:**            Current Procedural Terminology (CPT) Codes are primarily used for billing and not generally used to represent test names.

19a. Among all the electronic and non-electronic lab reports in calendar year 2010, please estimate the proportion of codes for test names your laboratory **stored** in the system using LOINC, local or vendor-specific codes. (Percentages do not need to add up to 100%.)

Coding for test names	Percent of <u>codes for test names stored</u> in system						
	None	<10%	10-29%	30-49%	50-69%	70-89%	≥90%
LOINC codes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local or Vendor-specific codes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No code	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19b. Among all the electronic and non-electronic lab reports in calendar year 2010, please estimate the proportion of codes for test names your laboratory **sent** using LOINC, local or vendor-specific codes. (Percentages do not need to add up to 100%.)

Coding for test names	Percent of <u>codes for test names used</u> on report						
	None	<10%	10-29%	30-49%	50-69%	70-89%	≥90%
LOINC codes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local or Vendor-specific codes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No code	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If the percentage of LOINC codes stored (19a) in your system is more than the percentage of LOINC codes used on report (19b), go to 19c. Otherwise go to 20.

19c. Please specify why your laboratory does not send all the lab reports using LOINC codes stored in the system. (Select all that apply)

- Electronic Health Record (EHR) systems on the receiving end are not able to accept LOINC codes
- Our laboratory information system (LIS) is able to store LOINC codes, but does not have an interface to send lab reports with LOINC codes
- Other, please specify \_\_\_\_\_

20. Does your laboratory plan to use or expand its use of LOINC codes for test names in result reporting?

- Yes, within the next year, we plan to use or expand our use of LOINC codes for test names in result reporting
- Yes, within 2-3 years, we plan to use or expand our use of LOINC codes for test names in result reporting
- No, within the next 3 years, we do not plan to use or expand our use of LOINC codes for test names in result reporting.

*SNOMED (Systemized Nomenclature of Medicine) is a terminology system that includes standard codes for organisms and other results.*

Example:     **Test result:** Salmonella Enteritidis

**SNOMED code:** 7352500

**Local or vendor-specific code:** SEn (Others will be unable to interpret this code unless they have your local code lookup table or use the same vendor as your laboratory)

**No code:** Salmonella Enteritidis

Note:           Current Procedural Terminology (CPT) Codes are primarily used for billing and not generally used to represent test results.

21a. Among all the electronic and non-electronic lab reports in calendar year 2010, please estimate the proportion of codes for test results (such as organism names or `positive' or `negative') your laboratory **stored** in the system using SNOMED, local or vendor-specific codes. (Percentages do not need to add up to 100%.)

Coding for test results	Percent of <u>codes for test results stored</u> in system						
	None	<10%	10-29%	30-49%	50-69%	70-89%	≥90%
SNOMED codes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local or Vendor-specific codes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No code	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21b. Among all the electronic and non-electronic lab reports in calendar year 2010, please estimate the proportion of codes for test results (such as organism names or `positive' or `negative') your laboratory **sent** using SNOMED, local or vendor-specific codes. (Percentages do not need to add up to 100%.)

Coding for test results	Percent of <u>codes for test results used</u> on report						
	None	<10%	10-29%	30-49%	50-69%	70-89%	≥90%
SNOMED codes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local or Vendor-specific codes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No code	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If the percentage of SNOMED codes stored (21a) in your system is more than the percentage of SNOMED codes used on report (21b), go to 21c. Otherwise go to 22.

21c. Please specify why your laboratory does not send all the lab reports using SNOMED codes stored in the system. (Select all that apply)

- Electronic Health Record (EHR) systems on the receiving end are not able to accept SNOMED codes
- Our laboratory information system (LIS) is able to store SNOMED codes, but does not have an interface to send lab reports with SNOMED codes
- Other, please specify \_\_\_\_\_



22. Does your laboratory plan to use or expand its use of SNOMED codes for test results in result reporting?
- Yes, within the next year, we plan to use or expand our use of SNOMED codes for test results in result reporting
  - Yes, within **2-3 years**, we plan to use or expand our use of SNOMED codes for test results in result reporting
  - No, within the next 3 years, we do not plan to use or expand our use of SNOMED codes for test results in result reporting.

*HL7 (Health Level 7) is a messaging standard that may be used to send results between laboratory and clinical information system.*

23. Is your laboratory able to send lab reports electronically using HL7-based messages?
- Yes [Go to 24]
  - No [Go to 23a]

23a. Does your laboratory have a plan to use HL7-based messages?

[switch order]

- Yes, we plan to use HL7 within the next year
- Yes, we plan to use HL7 within the next 2-3 years
- No, we do not plan to use HL7 within the next 3 years

[Go to 27]

24. Which version of HL7 does your laboratory currently use? (Select all that apply)

- HL7 Version 2.3.1
- HL7 Version 2.5.1
- Other, please specify \_\_\_\_\_

25. Is your laboratory in a process of upgrading HL7 to a newer version?

- Yes, please specify a newer version \_\_\_\_\_
- No

If your laboratory uses LOINC **AND** SNOMED **AND** HL7 to send lab reports, go to 26. Otherwise, go to 27.

26. For calendar year 2010, please estimate the proportion of the reports your laboratory sent to providers using LOINC and SNOMED and HL7 (all the three together).

- None
- < 10%
- 10-29%
- 30-49%
- 50-69%
- 70-89%
- ≥ 90%

27. Does your laboratory use a third party intermediary organization that supports sending, transferring, and receiving laboratory information between your laboratory and other organizations?

- No
- Yes, please specify your third party intermediary organization \_\_\_\_\_

28. If you would like to clarify answers related to methods your laboratory uses to receive test orders and send lab results, please provide comments below.

## Minnesota Reportable Laboratory Results

Laboratories use a variety of methods to identify the individual test results that should be reported to Minnesota Department of Health. Below are some examples.

- *Chlamydia trachomatis* infection
- Pertussis (*Bordetella pertussis*)
- Salmonellosis, including typhoid (*Salmonella* spp.)
- Shigellosis (*Shigella* spp.)

29. Because methods may vary in different departments within a facility, please select the methods your facility uses to identify Minnesota reportable lab results (select all that apply).

- Manual (e.g., trained laboratory technicians or infection preventionists identify specific results that need to be reported)
- Partially automated (e.g., there is an automated system for flagging results, but a person still needs to run a report.)
- Fully automated (e.g., a computer system automatically finds results that need to be reported and generates a report), please specify a product name your laboratory uses for automation

30. How many Minnesota reportable lab results did your laboratory identify in calendar year 2010?

- Less than 50 a year
- 50 – 199 a year
- 200 – 399 a year
- 400- 799 a year
- 800 or more a year

31. Please estimate the proportion of Minnesota reportable lab results sent to Minnesota Department of Health in calendar year 2010 using each transport method below. (Percentages do not need to add up to 100%.)

Transport method	Percent of Minnesota reportable lab results <u>sent</u>						
	None	<10%	10-29%	30-49%	50-69%	70-89%	≥90%
US Postal Service / Courier	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fax	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Web-based entry to MDH system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electronic file transfer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify _____ _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If some Minnesota reportable lab results are sent via electronic file transfer, go to 31a. Otherwise, go to 32.

31a. Which electronic transport mechanisms does your laboratory use to transmit reportable lab results to Minnesota Department of Health (MDH)?

- VPN (Virtual Private Network)
- sFTP (secure File Transfer Protocol)
- PHIN-MS (Public Health Information Network Messaging System)
- Nationwide Health Information Network (NwHIN) Direct protocol
- Other, please specify \_\_\_\_\_

31b Which of the following messaging and coding standards your laboratory uses when transmitting Minnesota reportable lab results to MDH? (Select all that apply)

- HL7 Version 2.3.1
- HL7 Version 2.5.1
- LOINC codes for test names
- SNOMED codes for test results
- Other, please specify \_\_\_\_\_

32. If you would like to clarify answers related to how your laboratory identifies and sends Minnesota reportable lab results to the Minnesota Department of Health, please provide comments below.

## Health Information Exchange Challenges

Standards HL7, LOINC, and SNOMED all used together allow LIS to electronically exchange laboratory orders and results and be interoperable with other health information systems, including submission of reportable laboratory results to Minnesota Department of Health. We would like to understand your challenges in implementing these standards.

33. What are your largest challenges related to implementing HL7 and LOINC and SNOMED to enable standards-based electronic orders and results delivery? (Select at most three)

- Unclear value on investment or return on investment
- Competing priorities
- Lack of funding to implement/build/upgrade LIS
- Lack of access to technical support or expertise
- LIS does not support LOINC, SNOMED codes
- Insufficient information on exchange options available
- Inability of LIS to generate/receive electronic messages/transactions in standardized format
- Capabilities of others to receive electronic data unknown or not as proficient as our organization
- HIPAA, privacy or legal concerns
- Subscription rates/fees for exchange services are too high
- Other, please specify \_\_\_\_\_
- No challenges

## Workforce Capacity

34. Which LIS technology related skills and/or roles are in greatest need within your organization? This includes adding new staff or developing the current staff. (Select at most three)

- A person to lead the implementation/upgrade of the LIS
- People to help design, customize, and/or maintain an LIS for use in our clinical laboratory
- People to help modernize an LIS to enable standards-based exchange of electronic orders and results delivery
- People to map test names and test results to LOINC and SNOMED codes
- Computer/IT personnel
- Laboratory persons who bridge knowledge between IT and lab (laboratory informaticians)
- People to train staff on how to use the LIS
- Other, please specify \_\_\_\_\_
- No workforce issue

## Additional Contact Information

35. If this survey is to be repeated, who is the best point of contact in your laboratory to address questions on readiness and needs for laboratory information exchange

Yourself

Other, please specify

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

Title: \_\_\_\_\_

E-mail: \_\_\_\_\_

Phone number: \_\_\_\_\_

**Thank you very much for taking the time to complete the survey.**

We will email to inform you of survey results once they are made available.

Please contact Pat Kuruchittham at [pat.kuruchittham@state.mn.us](mailto:pat.kuruchittham@state.mn.us) or 651-201-3576 with questions.