

# Electronic Laboratory Reporting into the NBS

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# Background



- Support ELR capabilities already in place within some programmatic areas
- Standardize and streamline the process
- The overwhelming need to implement electronic laboratory reporting into the NBS



# Inbound Message Types

- Excel Spreadsheets – 5 labs
- Ascii text – One lab
- HL7 v2.3z – Two labs

Microsoft Excel - LabTests.xls

1	PATIENT NAME	BIRTHDATE	SEX	COLL DATE	VEFF DATE	ACCM #	TEST NAME	RESULT	UNITS	ORDI
2	Last,First	mm/dd/yyyy	F	ObservationDat	ResultsRepor	SpecimenID	TestName			
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

Microsoft Excel - LabTests.xls

1	Encounter Facility	Test	Result	Date Collecte	Date Reporte	LastName	FirstName	MI	Address	City
2	SpecimenID	LabName	TestName	ObservationDat	ResultsReport	patientLast	Patientfirst	pat	Patient/Patis	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

Microsoft Excel - LabTests.xls

1	cpl	Communicable Disease Report for 07/02/2006 through 07/08/2006	Accession	Patient	Sex	Age	DOB
2							
3							
4							
5	TestName		SpecimenID	Last, First Name			mm/dd/yyyy
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							



# Resources

- Partnership with CDC messaging projects
- Use of Orion Professional Services
- In-kind within existing 4 person staff
- Business process input from SME's and general user base
- Strengthening partnerships with labs



# User Base Requirements: Components of the System Design

- System design documentation
- Standardized reference tables
  - Lab-specific translation tables
  - LOINC code/program area table
- Standardized implementation guides
- Impact on business process

Location: PHIN document sharing folder  
(Public folders/NBS Users/ELR)

# Following an ELR into the NBS

The screenshot displays two sheets from an Excel spreadsheet named 'arupTest.xls'. The top sheet, 'Sheet1', shows patient and test details. The bottom sheet, 'Sheet2', shows order and address details. A callout box points to the data in Sheet1.

	A	B	C	D	E	F	G	H	I	J
6	<b>PATIENT NAME</b>	<b>BIRTHDATE</b>	<b>SEX</b>	<b>COLL DATE</b>	<b>VERF DATE</b>	<b>ACCN #</b>	<b>TEST NAME</b>	<b>RESULT</b>	<b>UNITS</b>	<b>OR</b>
7	Lastname, Firstname	1/1/1970	M	1/1/2007	1/3/2007	123456789	B.BURGDORFERI ab, IgM by WB	POSITIVE		Doc
8										

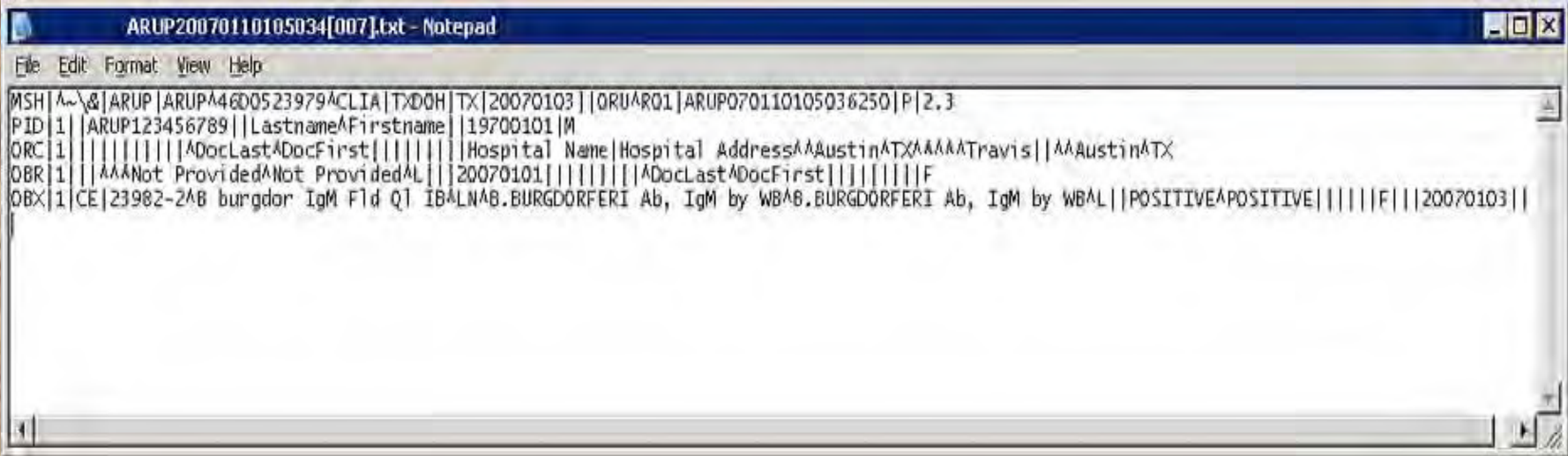
  

	I	J	K	L	M	N	O	P
6	<b>UNITS</b>	<b>ORDER DR.</b>	<b>NAME</b>	<b>CLIENT NAME</b>	<b>ADDRESS</b>	<b>CITY</b>	<b>STATE</b>	<b>COUNTY</b>
7		DocLast	DocFirst	Hospital Name	Hospital Address	Austin	TX	Travis
8								

This is a view of the spreadsheet we receive



# Spreadsheet Translated to HL7



The screenshot shows a Notepad window titled "ARUP20070110105034[007].txt - Notepad". The text inside is an HL7 message with the following lines:

```
MSH|^~\&|ARUP|ARUP^46D0523979^CLIA|TXDOH|TX|20070103||ORU^R01|ARUP070110105036250|P|2.3
PID|1||ARUP123456789||Lastname^Firstname||19700101|M
ORC|1|||||^^DocLast^DocFirst|||||Hospital Name|Hospital Address^^Austin^TX^^^Travis||^Austin^TX
OBR|1||^Not Provided^Not Provided^L||20070101|||||^DocLast^DocFirst|||||F
OBX|1|CE|23982-2^B burgdor IgM Fld Q1 IB^LN^B.BURGDORFERI Ab, IgM by WB^L^B.BURGDORFERI Ab, IgM by WB^L||POSITIVE^POSITIVE|||||F||20070103||
```

This is the translated HL7 message



# Viewing a Record Within the NBS

The screenshot shows a web browser window titled "NEDSS - Microsoft Internet Explorer". The navigation bar includes links for Home, Data Entry, Merge Patients, Investigations, Reports, System Admin, Help, and Logout. The user is identified as "User: doug hamaker".

The main content area displays patient information for Patient ID: -468980702. Key fields include:

- PATIENT NAME from Spreadsheet** (highlighted with a red callout)
- BIRTHDATE from Spreadsheet** (highlighted with a red callout)
- Current Sex: Male** (highlighted with a red callout and labeled "SEX from Spreadsheet")

Below this information are tabs for Summary, Demographics, and Events. A menu of links is provided: Administrative Information, Name, Sex and Birth, Mortality, General, Identification, Information, Ethnicity, Race, Address Information, and Telephone Information.

The "Administrative Information" section is expanded, showing "Administrative Information As Of:" and "General Comments:". Below this is the "Name" section, which includes a table of name information:

As Of	Type	Last	First	Middle
01/03/2007	Legal	Lastname	Firstname	

The "Name Information As Of:" section lists fields for Type, Prefix, Last, First, Middle, Suffix, and Degree, with corresponding labels for Second Last and Second Middle.

Red callouts also point to "VERF DATE from Spreadsheet" and "VERF DATE from Spreadsheet" (likely a typo for "VERIFIED DATE").



**Identification Information**

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SSN As Of:

SSN:

As Of	Type	Authority	Value
<a href="#">Details</a> 01/03/2007	Person number	46D0523979	ARUP123456789

Identification Information As Of:

Type:  
 Assigning Authority:  
 ID Value:

CLIA Number  
 for  
 ARUP

ACCN #  
 from  
 Spreadsheet

**Ethnicity**

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Ethnicity Information As Of:

**Race**

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**Address Information**

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As of	Use	Address	City	State	Zip
-------	-----	---------	------	-------	-----

Address Information As Of:

Use:  
 Type:  
 Street Address 1:  
 Street Address 2:  
 City:  
 Zip:  
 State:  
 County:



NEDSS - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Home | Data Entry | Merge Patients | Investigations | Reports | System Admin | Help | Logout

View Lab Report User: doug hamaker

Patient ID: -469980703 | Observation ID: ~~OBST00152101X01~~ [File: Event](#)

Mark as Reviewed   
  Transfer Ownership   
  Delete   
  Create Investigation   
  Print

Created: 01/09/2007 by: nedss elrload   
 Updated: 01/09/2007 by: nedss elrload

Lab Report Date: 01/03/2007   
 Date Received by Public Health: 01/09/2007  
*Submitted by Outside Facility*

[View Lab Report](#)   
 VERF DATE from Spreadsheet

[Patient Information](#) | [Test Results](#) | [Order Information](#) | [Other Information](#)

### Patient Information [Back to Top](#)

**Name:** Firstname Lastname  
**Alias:**  
**Home Address:**  
**Home Phone:**    **Ext:**  
**Sex:** Male    **Work Phone:**    **Ext:**  
**DOB:** 01/01/1970    **Race:**  
**Deceased:**    **Age:**  
**Marital Status:**    **Death Date/Time:**  
**Patient Comments:**    **Ethnicity:**  
**SSN:**

ID Type	ID	Assigning Authority	Expiration Date
Person number	ARUP123456789	46D0523979	

### Test Results [Back to Top](#)

Internet



NEDSS - Microsoft Internet Explorer

File Edit View Favorites Tools Help

### Test Results [Back to Top](#)

**Ordered Test:** Not Provided  
**Codes:** Not Provided(L Local)  
**Status:** Final

#### Resulted Tests and Results

**Resulted Test:** B burgdor IgM Fld QI  
IB  
**Result(s):** POSITIVE

**Reference Range:** Interpretation: N/A  
**Result Method:** Status: Final

**Date/Time:** 2007-01-03 00:00:00.0  
**Performing Facility:** Facility ID:

**Test code(s):** 23982-2 (LN LOINC) /B.BURGDORFERI Ab, IgM by WB (L LOCAL)  
**Result Code(s):** POSITIVE(LOCAL) /  
**Result Comments:**

### Order Information [Back to Top](#)

#### Facility and Provider Information

**Reporting Facility:** ARUP

**Ordering Facility:** Hospital Name  
Hospital Address  
Austin, Texas

**Ordering Provider:** DocFirst DocLast  
Austin, Texas

VERF DATE  
from  
Spreadsheet

LOINC  
text and code

RESULT  
from  
Spreadsheet

TEST NAME  
from  
Spreadsheet

CLIENT NAME  
from  
Spreadsheet

ADDRESS  
from  
Spreadsheet

CITY and  
STATE  
from  
Spreadsheet

ORDER DR.  
and NAME  
from  
Spreadsheet

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### Facility and Provider Information

**Reporting Facility:** ARUP

**Ordering Facility:** Hospital Name  
Hospital Address  
Austin, Texas

**Ordering Provider:** DocFirst DocLast  
Austin, Texas

### Order Details

**Program Area:** Zoonosis

**Jurisdiction:** Austin HHS Division (City of )

Share record with Guests for this Program Area and Jurisdiction

**Date Specimen Collected:** 01/01/2007 12:00 AM

**Specimen Source:**

**Specimen Site:**

**Accession Number:**

**Specimen Details:**

**Patient Status at Specimen Collection:**

Program Area  
derived from  
LOINC code

Jurisdiction  
derived from  
facility city

COLL DATE  
from  
Spreadsheet

### Lab Report Comments

Add Comment

There is no information to display

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### Other Information



# Business Process Changes

	<b>Legacy</b>	<b>ELR</b>
Preparation	Electronic files received	Electronic files received
	Files sorted/saved according to jurisdiction	ELR process consumes, translates, and loads messages into the NBS
	Sorted files copied to share folder on secure portal	
Review	Staff at each jurisdiction download their files and print the records.	Messages appear in the “Observations Needing Review”, accessible according to Program Area and Jurisdiction security
	Indicate records needing follow-up	Records reviewed on-screen in the NBS, marking as “Reviewed” records not needing further follow-up
Respond	Manually enter records into the NBS	Create Investigation
	Create Investigation	

# Impact

- On average, we process an estimated 7,800 records per year destined for the NBS from ARUP.
- It takes approximately 3 minutes per record to hand enter lab slips into the NBS.
- ELR will save approximately 390 hours of manual data entry time per year (for records from ARUP alone).



# System Rollout

- Continue to tune – migrate to production
- Started with ARUP
- Parallel testing
- Remainder of labs on a staggered roll-out schedule

## Future Steps

- Work with Labs to increase standardization
- Standardize process for incoming ELR
- Tap into additional sources of ELR



# Parting Thoughts



- We're taking steps forward
- There's still more steps in front of us
- We have a very good sense of direction