

**State of New Hampshire
 Department of Health and Human Services
 Division of Public Health Services
 Healthy Homes & Lead Poisoning Prevention Program**

**Clinical Laboratory Lead Test Results Flat File Specification
 April 1, 2016**

New Hampshire provides for two distinct methods for electronically reporting heavy metals test results: flat file reporting and HL7 reporting. Flat file reporting requires that all results be submitted in a delimited text file where each row represents a single test result. HL7 reporting provides a specific set of rules for generating a message using the health information messaging standard developed by the Health Level 7 Organization and used internationally for healthcare messaging and reporting.

The below specification has been developed to establish the acceptable flat file structure and clarify instructions for populating flat file fields. For informational purposes, this flat file specification includes a mapping of flat file elements to corresponding HL7 message fields.

All flat files prepared in accordance to this specification shall be use tab characters (ASCII 009) to separate fields, and all file submissions will use a “txt” file extension. When more than one test is being reported, the results may be batched so that each laboratory order is presented as a distinct row. Line wraps are not accepted. Carriage return (ASCII 010) line feed (ASCII 013) character sequences are expected to mark the end of each row. Carriage return and line feed characters are not allowed within any of the reported data fields.

This flat file structure has been developed to conform to NH RSA 130-A, and administrative rule He-P 1600. All lead test results are reportable regardless of test result.

Field Name	Description	Corresponding HL7 Field	Optionality	Special Instructions
LAB	Reporting laboratory name	OBX-15.2 / OBX-23.1	Required	OBX-15.2 shall be used to populate this field when the reporting laboratory submits heavy metals test results generated by a reference laboratory. OBX-23.1 shall be used to populate this field when the reporting laboratory is a reference laboratory processing a specimen collected by another facility.
SPEC_DT	Specimen collection date	OBR-14.1 / SPM-17.1	Required	Format: MM/DD/YYYY
LAST_NA	Patient last name	PID-5.1.1	Required or Empty	
FIRST_NA	Patient first name	PID-5.2	Required or Empty	
INITIAL	Patient middle initial	PID-5.3	Required or Empty	
HOUSE_NBR	House number from patient residence street address	PID-11.1.1	Required or Empty	
STREET	Street name from patient residence street address	PID-11.1.2	Required or Empty	
APT_NBR	Apartment number from patient residence street address	PID-11.1.3	Required or Empty	
CITY	City/town from patient residence address	PID-11.3	Required or Empty	

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Field Name	Description	Corresponding HL7 Field	Optionality	Special Instructions																		
STATE	State from patient residence address	PID-11.4	Required or Empty	Populate with two character US Postal service abbreviations for all domestic addresses. Laboratories shall return whatever information they have recorded that within the patient residence state field for foreign addresses.																		
ZIP	Zip code from patient residence address	PID-5	Required or Empty	Report 5-digit postal zip codes preceded with a single quote mark shall be returned for domestic addresses. Foreign zip codes shall be reported as received, but shall also be prepended with a single quote character.																		
GLAST_NA	Parent/guardian last name (for minors)	NK1-2.1.1	Conditional	Required if patient is less than 16 years old.																		
GFIRST_NA	Parent/guardian first name (for minors)	NK1-2.2	Conditional	Required if patient is less than 16 years old.																		
PROV_ID	<empty>	Not Applicable	Empty	Leave field empty.																		
RACE	Patient race code	PID-10	Required or Empty	Race code values will be reported per the following table: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>American Indian/Alaska Native</td> </tr> <tr> <td>2</td> <td>Asian</td> </tr> <tr> <td>3</td> <td>Black</td> </tr> <tr> <td>4</td> <td>Hawaiian/Pacific Islander</td> </tr> <tr> <td>5</td> <td>White</td> </tr> <tr> <td>7</td> <td>Multiracial</td> </tr> <tr> <td>8</td> <td>Other</td> </tr> <tr> <td>9</td> <td>Unknown</td> </tr> </tbody> </table> Values extracted from HL7 field PID-10 must be recoded to conform to the above table.	Code	Description	1	American Indian/Alaska Native	2	Asian	3	Black	4	Hawaiian/Pacific Islander	5	White	7	Multiracial	8	Other	9	Unknown
Code	Description																					
1	American Indian/Alaska Native																					
2	Asian																					
3	Black																					
4	Hawaiian/Pacific Islander																					
5	White																					
7	Multiracial																					
8	Other																					
9	Unknown																					
ETHNIC	Patient ethnicity code	PID-22.2	Required or Empty	Ethnicity code values will be returned per the following table: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Hispanic</td> </tr> <tr> <td>2</td> <td>Non-Hispanic</td> </tr> <tr> <td>8</td> <td>Other</td> </tr> <tr> <td>9</td> <td>Unknown</td> </tr> </tbody> </table> Values from PID-22.2 must be recoded to conform to the above table.	Code	Description	1	Hispanic	2	Non-Hispanic	8	Other	9	Unknown								
Code	Description																					
1	Hispanic																					
2	Non-Hispanic																					
8	Other																					
9	Unknown																					
DOB	Patient date of birth	PID-7.1	Required	Format: MM/DD/YYYY																		

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Field Name	Description	Corresponding HL7 Field	Optionality	Special Instructions										
SEX	Patient sex	PID-8	Required	<p>Sex code values will be returned per the following table:</p> <table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Male aged 16 years or more</td> </tr> <tr> <td>2</td> <td>Female aged more than 16 years</td> </tr> <tr> <td>M</td> <td>Male aged less than 16 years</td> </tr> <tr> <td>F</td> <td>Female aged less than 16 years</td> </tr> </tbody> </table> <p>Ages will be calculated from the difference between the patient's date of birth and the specimen collection/draw date.</p>	Code	Description	1	Male aged 16 years or more	2	Female aged more than 16 years	M	Male aged less than 16 years	F	Female aged less than 16 years
Code	Description													
1	Male aged 16 years or more													
2	Female aged more than 16 years													
M	Male aged less than 16 years													
F	Female aged less than 16 years													
SPEC_ID	Specimen ID/Accession number	SPM-2 / OBR-3.1	Required											
MEDICAID	Patient Medicaid ID number	PID-4	Required or Empty	Leave empty if Medicaid ID is unavailable.										
SAM_TYP	Sample/draw type for specimen	OBR-15.1.1	Required	<p>Expected sample/draw type code values will be returned per the following table:</p> <table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>Capillary</td> </tr> <tr> <td>V</td> <td>Venous</td> </tr> <tr> <td>U</td> <td>Unknown</td> </tr> </tbody> </table> <p>Values from OBX-15.1.1 must be recoded to conform with the above table</p>	Code	Description	C	Capillary	V	Venous	U	Unknown		
Code	Description													
C	Capillary													
V	Venous													
U	Unknown													
AN_DATE	Analysis/result date	OBX-14.1	Required	Format: MM/DD/YYYY										
PB_RESULT	Blood lead test result	OBX-5	Required	Lead results shall be placed in this column for all tests										
EP_RESULT	Protoporphyrin test result	OBX-5	Required	<p>Erythrocyte protoporphyrin results will be placed in this column for patients less than 16 years of age</p> <p>Zinc protoporphyrin results will be placed in this column for patients aged 16 years and older</p>										
PT_PHONE	Patient phone number	PID-13	Required or Empty	Format: [(999)]999-9999 [X999999] [B999999] [C any text]										
PROVIDER	Provider practice name/Lab name	ORC-21.1	Required											
MD	Provider who placed lab order	OBR-16	Required	<p>Format: LastName, FirstName</p> <p>Do not include any name prefixes or suffixes in this field (e.g. MD, APRN, JR, SR).</p> <p>There will be only one space character after the comma.</p> <p>Compound last names and compound first names will have all white space characters and hyphens removed.</p> <p>A representative example of a correctly structured MD value for a provider who goes by "Mary Ellen Thomas-Smith MD, MPH, ACHE" would be "ThomasSmith, MaryEllen".</p>										

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Field Name	Description	Corresponding HL7 Field	Optionality	Special Instructions
PROVIDER_HOUSE_NBR	House number from provider street address	ORC-24.1.1	Required	
PROVIDER_STREET	Street name from provider street address	ORC-24.1.2	Required	
PROVIDER_APT_NBR	Unit/suite/apartment number from provider street address	ORC-24.1.3	Required or Empty	
PROVIDER_CITY	City/town from provider address	ORC-24.3	Required	
PROVIDER_STATE	State from provider address	ORC-24.4	Required	Populate with two character US Postal service abbreviations for all domestic addresses. Laboratories shall return whatever information they have recorded that within the provider state field for foreign addresses.
PROVIDER_ZIP	Zip code from provider address	ORC-24.5	Required	Report 5-digit postal zip codes preceded with a single quote mark shall be returned for domestic addresses. Foreign zip codes shall be reported as received, but shall also be prepended with a single quote character.
PROVIDER_PHONE		ORC-14.7 / OBR-17	Required or Empty	Format: [(999)]999-9999 [X99999] [B99999] [C any text]
REFERRING_LAB	Referring Laboratory is physical location where the specimen (e.g. blood) was collected	OBX-15.2	Conditional	Field is required when the testing laboratory is different than the specimen collection laboratory Note: Within HL7 messages field OBX-15.2 will be empty when the facility that collects the specimen is also the laboratory that generates test results from the specimen they have drawn.
PB_UNITS	Unit of measure used to quantify laboratory test results	OBX-6.1	Required	ug/dl – micrograms per deciliter
METHOD_ANALYSIS	Method of Analysis	OBX-17	Required	(e.g. AA-F, AA-G, ICP)
OCCUPATION	Job title of patient at time of specimen collection	OBX-5	Conditional	Required or Empty when patient is >16 years of age Occupation observations correspond to LOINC code 74287-4
EMPLOYER	Employer of person	NK1-13	Conditional	Required or Empty when patient is >16 years of age

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Note on Optionality:

“Required” fields must be populated.

“Required or Empty” fields must be populated whenever that information is possessed by the reporting laboratory. Fields marked “Required or Empty” can only be empty when information was not provided to the reporting laboratory.

“Conditional” fields must be populated when the criteria stated in the “Special Instructions” column is satisfied. Conditional fields need not be populated when criteria is not satisfied.

Flat File Example

The below example demonstrates how a flat file shall be created. To improve readability, this example has been formatted for display using line wraps. The actual ends of each line are marked with a [CR][LF] to represent a carriage return and line feed combination (ASCII 010 and ASCII 013). This example has also been marked up with an integer at the start of each row to improve human readability. Arrows are shown to represent the presence of tab characters. The actual flat file required by the lead program should not be formatted to conform with any page margins. Had this been an actual submission, this flat file would have included the optional column headings row, and three records that would have extended well beyond the right margin of this document.

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1 LAB_SPEC_DT LAST_NA FIRST_NA INITIAL HOUSE_NBR STREET APT_NBR LAB_SPEC_DT LAST_NA FIRST_NA INITIAL HOUSE_NBR STREET
  APT_NBR CITY STATE ZIP_GLAST_NA GFIRST_NA PROV_ID RACE ETHNIC DOB SEX SPEC_ID MEDICAID SAM_TYP AN_DATE PB_RESULT
  EP_RESULT PT_PHONE PROVIDER MD_PROVIDER HOUSE_NBR PROVIDER STREET PROVIDER_APT_NBR PROVIDER_CITY PROVIDER
  STATE_PROVIDER ZIP_PROVIDER_PHONE_REFERRING_LAB PB_UNITS METHOD ANALYSIS OCCUPATION EMPLOYER[CR][LF]
2 LABCORP EVERYTOWN 10/29/2015 MOUSE MICKEY J 100 ELM ST 1ST FLOOR LABCORP EVERYTOWN 10/29/2015 MOUSE MICKEY J 100
  ELM ST 1ST FLOOR ANYTOWN NH 03999 1 1 8/9/1928 1 3037080999 C 10/29/2015 2 6032442890
  ANYTOWN COMMUNITY HEALTH CENTER STOOGELARRY 1500 PINE STREET SUITE B ANYTOWN NH 03999 6035551212 ANYTOWN COMMUNITY
  HEALTH CENTER ug/dL AA-F ENTERTAINER DISNEY[CR][LF]
3 ARUP ANYTOWN 11/3/2015 MOUSE MINNIE A 99 ELM ST 3 ARUP ANYTOWN 11/3/2015 MOUSE MINNIE A 99 ELM ST 3
  ANYTOWN NH 03999 1 9 8/9/1928 2 30770809000 V 11/3/2015 17 9787012288 ANYTOWN COMMUNITY
  HEALTH CENTER STOOGEMOE 1500 PINE STREET SUITE B ANYTOWN NH 03999 6035551313 EVERYTOWN HEALTH LABORATORIES ug/dL
  AA-G ENTERTAINER DISNEY[CR][LF]
4 LABCORP EVERYTOWN 11/3/2015 DOG GOOBY A 100 ELM ST 1ST FLOOR LABCORP EVERYTOWN 11/3/2015 DOG GOOBY A 100 ELM ST
  1ST FLOOR ANYTOWN NH 03999 MOUSE MICKEY B B 8/10/2011 M 31170809001 V 11/3/2015 2 6032663377
  ANYTOWN COMMUNITY HEALTH CENTER STOOGECURLY 1500 PINE STREET SUITE B ANYTOWN NH 03999 6035551212 ANYTOWN COMMUNITY
  HEALTH CENTER ug/dL ICD [CR][LF]

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To simplify the reading of this flat file, the same content shown above has been parsed into a tabular display. This tabular display is intended for educational purposes. Had this been a true example, the table would be three records deep and 39 columns wide.

LAB	SPEC_DT	LAST_NA	FIRST_NA	INITIAL	HOUSE_NBR	STREET	APT_NBR
LABCORP EVERYTOWN	10/29/2015	MOUSE	MICKEY	J	100	ELM ST	1ST FLOOR
ADCP ANYTOWN	11/8/2015	MOUSE	MINNIE	A	99	ELM ST	9
LABCORP EVERYTOWN	11/9/2015	DOG	GOOFY	A	100	ELM ST	1ST FLOOR

CITY	STATE	EIP	GLAST_NA	GFIRST_NA	PROV_ID	RACE	ETHNIC
ANYTOWN	NH	'08999				1	1
ANYTOWN	NH	'08999				1	9
ANYTOWN	NH	'08999	MOUSE	NICKEY		8	8

DOB	SEX	SPEC_ID	MEDICAID	SAM_TYP	AN_DATE	PB_RESULT	EP_RESULT
8/9/1928	I	30370808999		C	10/29/2015	2	
8/9/1928	E	30770809000		V	11/8/2015	17	
8/10/2011	M	81170809001		V	11/8/2015	2	

PT_PHRN	PROVIDER	ID	PROVIDER_HOUSE_NBR	PROVIDER_STREET	PROVIDER_APT_NBR	PROVIDER_CITY
6032442890	ANYTOWN COMMUNITY HEALTH CENTER	STOOGES, LARRY	1600	PINE STREET	SUITE B	ANYTOWN
9787012288	ANYTOWN COMMUNITY HEALTH CENTER	STOOGES, MOE	1600	PINE STREET	SUITE B	ANYTOWN
6038663377	ANYTOWN COMMUNITY HEALTH CENTER	STOOGES, CURLY	1600	PINE STREET	SUITE B	ANYTOWN

PROVIDER_STATE	PROVIDER_EIP	PROVIDER_PHRN	REFERRING_LAB	PB_UNITS	METHOD_ANALYSIS	OCCUPATION	EMPLOYER
NH	'08999	6038661212	ANYTOWN COMMUNITY HEALTH CENTER	ug/dL	AA-F	ENTERTAINER	DISNEY
NH	'08999	6038661313	EVERYTOWN HEALTH LABORATORIES	ug/dL	AA-G	ENTERTAINER	DISNEY
NH	'08999	6038661212	ANYTOWN COMMUNITY HEALTH CENTER	ug/dL	ICP		

Though both of these examples includes column headings, understand that column headings are accepted, but not required for reporting lead test results.

Questions?

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