



HL7 Generator Tool Overview (Manual Entry)

Version 20200921

Version number	Changes made
20200921	<i>Added capability to customize the file name (Step 5 to Step 5A and 5B) Updated notes around replacement value handling</i>



This tool is built into Microsoft Excel and has various tabs, some of which are for data input and some of which are for configuration data.

Note: When you have to update to a new version of the tool it is recommended to copy over the entire tabs EXCEPT for the Admin tab - copy only your settings (values in Column B) over to it.

Description of Tabs in the HL7 Generator Tool

Instructions Tab: Contains overall instructions and buttons to execute the generation

Gap Analysis7-8 Tab: Contains the overall data guidance/constraints provided by CDC and HHS on 7/8/2020

Flatfile_Result_Use Tab: Data entry tab which allows the user to manually enter data into those fields whose values cannot be pre-configured. This tab supports drop down menus for several elements. The macro used ensures that all fields required to generate an HL7 v.2.5.1 compliant message are populated and follow the expected format, when important.

Configuration Tab: Contains two parts that determine data mapping for each message generated by the tool:

1. Static values to be included in specific data fields for all messages generated
 - a. If Column E – “Corresponding input column name (to replace if empty)” is populated, the tool will only populate this entry if the corresponding input column is empty.
2. References that map valid values from the dropDownValues tab to the data input fields on Flatfile_Result_Use tab

dropDownValues Tab: Defines specific value sets that are valid for certain HL7 elements and fields. Referenced by Configuration Tab and Flatfile_Result_Use Tab and allows for mapping local codes used in the csv file that is being imported to the standard codes to be included in the HL7 messages. If the lookup of the local value fails, it will then check to see if the input is in column D (Standard code). If it matches the value in Column D, it will map the replacement value to the HL7 message for that field.

Admin Tab: Defines overall flat file configuration (input/output directories for processing, flatfile naming parameters) as well as validations and lookups to be used for various fields.

For a video of this section see (The video uses the previous version of the tool, so if some screens look different don't despair – the screenshots in this document show the updated views):

<https://youtu.be/3SdD0D4vPwQ>



Summary of Steps to Generate HL7 Output Files from Manual Entry

Step 1: Set up folder structures for files

Step 2: Open the HL7 Generator Tool

Step 3: In *Admin* tab, specify file directory paths

Step 4: In *Admin* tab, specify 'Test' or 'Prod'

Step 5A: For AIMS Routing Service: In *Admin* tab, select "InterPartner" in Cell B13 and specify the *Interpartner "From"* Value in Cell B16, which will be the ID assigned to your organization by the AIMS team.

Step 5B: For direct connections with jurisdictions: In *Admin* tab, select the desired file naming schema in Cell B13 and enter the specific requirements for the jurisdiction you are working with in Cell B14.

Step 6: In *Admin* tab, specify the delimiter character to note multiple values (repeats) in a single segment.

Step 7: In *Instructions* tab, click "Generate HL7 from Manual Entry" button to generate test output

Step 8: In *Gap Analysis7-8* tab, view minimum required fields and indicate fields that your lab supports

Step 9: In *Configuration* tab, populate static meta-data values.

Step 10: In *dropDownValues* tab, map local lab values to standard HL7 values

Step 11: In *Configuration* tab, ensure that all standard HL7 values from *dropDownValues* tab are represented in the bottom half of the tab

Step 12: In *Flatfile_Result_Use* tab, enter your data manually

Step 13: In *Instructions* tab, click "Generate HL7 from Manual Entry" button to generate output

For videos of the above steps see here (The video uses the previous version of the tool, so if some screens look different don't despair – the screenshots in this document show the updated views):

<https://youtu.be/5ZEK1JXRN5c>

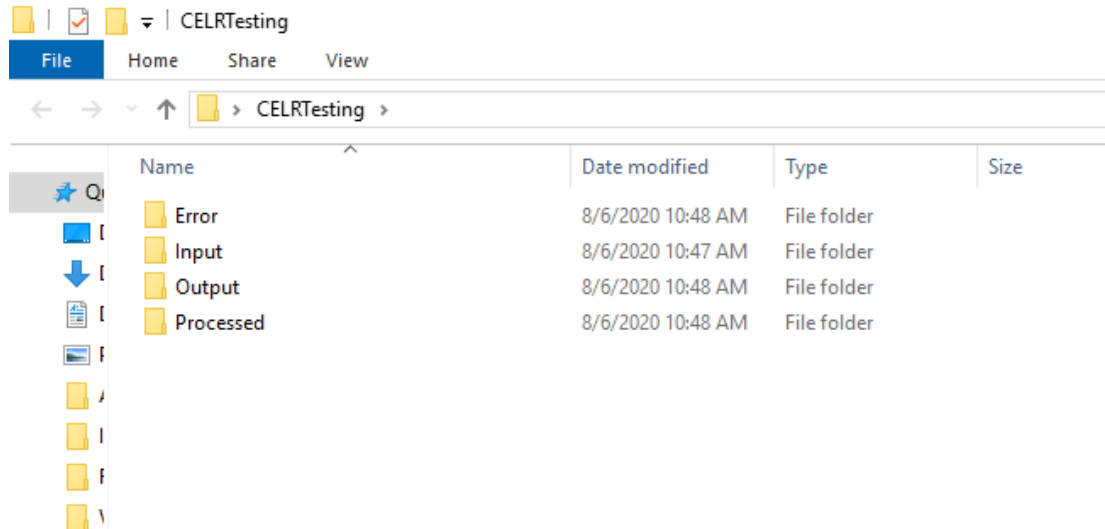
https://youtu.be/6_6v4cCv7y0

https://youtu.be/zBggE_4DTeY



Detailed Steps to Generate HL7 Output Files from Manual Entry

Step 1: Create a folder structure (suggested on Desktop of your Computer) with four folders: Input, Output, Processed, Error. Write down the full paths of each of the folders.



Step 2: Open the HL7 Generator tool Excel file (*NatELRFlatFile_GapAnalysis_HL7Generator.xlsm*). Enable all content and macros. Click on “Save As” and add your own unique filename to save your specific configurations separate from the base tool file (i.e. *NatELRFlatFile_GapAnalysis_HL7Generator_Testing.xlsm*).

Step 3. Go to the *Admin* tab of the tool. Enter the full directory paths for the Input, Output, Processed and Error Directories from Step 1. If the order of the columns is changed on the Flatfile_result_use tab, update the “Flatfile_Result_Use column to count rows” to a required field. It currently points to “Patient_ID.”

File Home Insert Page Layout Formulas Data Review View ACROBAT Tell me what you want to do...			
PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing			
G34 REQUIRED_COMBO_4			
Config Item	Value	Description	FlatFile_Col
Input Directory	C:\runMacro\test1\Input		Abnormal_flag
Output Directory	C:\runMacro\test1\Output		Comments
Processed Directory	C:\runMacro\test1\Processed		Date_result_rel
Error Directory	C:\runMacro\test1\Error		Disease_symptr
FlatFile_order_use column to count rows	A		Employed_in_h
FlatFile_Result_Use final column	DP		Employed_in_h
Timer on	FALSE		First_test
Number of Errors before exit	0		flatfile_version
Include Batch header and footer	TRUE		Hospitalized
File Naming option	ManualAndTimeStamp		ICU
Manual file Name	ELR~		Illness_onset_d
Current Usage (and MSH-11 mapping)	Prod		Instrument_ins
InterPartner "From" value	eTrueNorth		Instrument_mo
InterPartner "To" value	AIMSPlatform		Instrument_mo
Test result exclude from normal processing	Test_kit_EUA_ID,Test_kit_model_ID,Test_kit_model_name,Test_result_code_system,Tes		Link_test_to_pa
Multiple value separator	;		Link_test_to_pa
Input file name	csvToConvert.csv		Order_result_st
Debug mode	FALSE		Order_test_dat
Time zone	ET		Ordered_test_c
			Ordered_test_c
			Ordered_test_d
			Ordering_facilit

Step 4: On the *Admin* tab, select the appropriate value (Test or Prod) from the drop down for the field *Current Usage (and MSH-11 mapping)*.

File Home Insert Page Layout Formulas Data Review View ACROBAT Tell me what you want to do...			
PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing			
G34 REQUIRED_COMBO_4			
Config Item	Value	Description	FlatFile_Col
Input Directory	C:\runMacro\test1\Input		Abnormal_flag
Output Directory	C:\runMacro\test1\Output		Comments
Processed Directory	C:\runMacro\test1\Processed		Date_result_rel
Error Directory	C:\runMacro\test1\Error		Disease_symptr
FlatFile_order_use column to count rows	A		Employed_in_h
FlatFile_Result_Use final column	DP		Employed_in_h
Timer on	FALSE		First_test
Number of Errors before exit	0		flatfile_version
Include Batch header and footer	TRUE		Hospitalized
File Naming option	ManualAndTimeStamp		ICU
Manual file Name	ELR~		Illness_onset_d
Current Usage (and MSH-11 mapping)	Prod		Instrument_ins
InterPartner "From" value	eTrueNorth		Instrument_mo
InterPartner "To" value	AIMSPlatform		Instrument_mo
Test result exclude from normal processing	Test_kit_EUA_ID,Test_kit_model_ID,Test_kit_model_name,Test_result_code_system,Tes		Link_test_to_pa
Multiple value separator	;		Link_test_to_pa
Input file name	csvToConvert.csv		Order_result_st
Debug mode	FALSE		Order_test_dat
Time zone	ET		Ordered_test_c
			Ordered_test_c
			Ordered_test_d
			Ordering_facilit

Step 5A: Setting up for Use of InterPartner file naming convention: On the *Admin* tab, in Cell B13 select InterPartner.



NatELRFlatFile_GapAnalysis_HL7Generator_20200921 (Protected View) - Excel			
File Home Insert Page Layout Formulas Data Review View ACROBAT Tell me what you want to do...			
PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing			
B13 ManualAndTimeStamp			
Config Item	Value	Description	FlatFile_Col
Input Directory	C:\runMacro\test1\Input		Abnormal flag
Output Directory	C:\runMacro\test1\Output		Comments
Processed Directory	C:\runMacro\test1\Processed		Date result relea
Error Directory	C:\runMacro\test1\Error		Disease_symptom
FlatFile_order_use column to count rows	A		Employed_in hea
FlatFile_Result_Use final column	DP		Employed_in_high
Timer on	FALSE		First test
Number of Errors before exit	0		flatfile_version nc
Include Batch header and footer	TRUE		Hospitalized
File Naming option	ManualAndTimeStamp		ICU
Manual file Name	InterPartner		Illness onset data
Current Usage (and MSH-11 mapping)	InterPartner		Instrument_insta
InterPartner "From" value	InterPartner		Instrument_mode
InterPartner "To" value	InterPartner		Instrument_mode
Test result exclude from normal processing	ManualAndTimeStamp		Link test to pare
Multiple value separator	ManualAndInputFileName		Link test to pare
Input file name	ManualAndInputFileNameAndTimeStamp		Order result stati
Debug mode	csvToConvert.csv		Order test date
Time zone	ET		Ordered test cod
			Ordered test cod
			Ordered test des
			Ordering facility

On the *Admin* tab, in Cell B16 *Interpartner "From" Value*, input the appropriate value for your organization (example below shows "eTrueNorth"). For more information about setting up the Interpartner filename follow instructions in ["AIMS - CentralizedELR InterPartner Messaging Guide"](#) This step is important when using AIMS routing services.

File Home Insert Page Layout Formulas Data Review View ACROBAT Tell me what you want to do...			
PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing			
G34 REQUIRED_COMBO_4			
Config Item	Value	Description	FlatFile_Col
Input Directory	C:\runMacro\test1\Input		Abnormal flag
Output Directory	C:\runMacro\test1\Output		Comments
Processed Directory	C:\runMacro\test1\Processed		Date result rel
Error Directory	C:\runMacro\test1\Error		Disease_sympt
FlatFile_order_use column to count rows	A		Employed in h
FlatFile_Result_Use final column	DP		Employed in h
Timer on	FALSE		First test
Number of Errors before exit	0		flatfile_version
Include Batch header and footer	TRUE		Hospitalized
File Naming option	ManualAndTimeStamp		ICU
Manual file Name	ELR~		Illness onset d
Current Usage (and MSH-11 mapping)	Prod		Instrument_insti
InterPartner "From" value	eTrueNorth		Instrument_mo
InterPartner "To" value	AIMSPlatform		Instrument_mo
Test result exclude from normal processing	Test_kit_EUA_ID,Test_kit_model_ID,Test_kit_model_name,Test_result_code_system,Tes		Link test to pa
Multiple value separator	;		Link test to pa
Input file name	csvToConvert.csv		Order result st
Debug mode	FALSE		Order test dat
Time zone	ET		Order test c
			Ordered test_c
			Ordered test_c
			Ordered test_c
			Ordering facilit

Step 5B: Setting up for Use of other file naming conventions: When working directly with a jurisdiction they may have other requirements for file naming conventions, which can be configured using cell B14 in the *Admin* tab.

REQUIRED_COMBO_4			
Config Item	Value	Description	FlatFile_Col
Input Directory	C:\runMacro\test1\Input		Abnormal_flag
Output Directory	C:\runMacro\test1\Output		Comments
Processed Directory	C:\runMacro\test1\Processed		Date_result_rela
Error Directory	C:\runMacro\test1\Error		Disease_symptom
FlatFile_order_use column to count rows	A		Employed_in_h
FlatFile_Result_Use final column	DP		Employed_in_h
Timer on	FALSE		First_test
Number of Errors before exit	0		flatfile_version
Include Batch header and footer	TRUE		Hospitalized
File Naming option	ManualAndTimeStamp		ICU
Manual file Name	ELR		Illness_onset_d
Current Usage (and MSH-11 mapping)	Prod		Instrument_inst
InterPartner "From" value	eTrueNorth		Instrument_mo
InterPartner "To" value	AIMSPlatform		Instrument_mo
Test result exclude from normal processing	Test_kit_EUA_ID,Test_kit_model_ID,Test_kit_model_name,Test_result_code_system,Tes		Link_test_to_pa
Multiple value separator	;		Link_test_to_pa
Input file name	csvToConvert.csv		Order_result_st
Debug mode	FALSE		Order_test_dat
Time zone	ET		Ordered_test_c

Cell B13 in the *Admin* tab allows selection of one of 4 basic file naming schemes:

- Manual – where the filename is defined in the *Admin* tab in cell B14
- Manual with timestamp – uses the value from cell B14 in *Admin* tab and appends with the file creation date and time
- Manual with the name of the input file – uses the value from cell B14 in *Admin* tab and appends with the file name defined in cell B20
- Manual with the name of the input file and timestamp– uses the value from cell B14 in *Admin* tab and appends with the file name defined in cell B20 and the file creation date and time

ManualAndTimeStamp			
Config Item	Value	Description	FlatFile_Col
Input Directory	C:\runMacro\test1\Input		Abnormal_flag
Output Directory	C:\runMacro\test1\Output		Comments
Processed Directory	C:\runMacro\test1\Processed		Date_result_rela
Error Directory	C:\runMacro\test1\Error		Disease_symptom
FlatFile_order_use column to count rows	A		Employed_in_h
FlatFile_Result_Use final column	DP		Employed_in_h
Timer on	FALSE		First_test
Number of Errors before exit	0		flatfile_version
Include Batch header and footer	TRUE		Hospitalized
File Naming option	ManualAndTimeStamp		ICU
Manual file Name	ManualAndTimeStamp		Illness_onset_date
Current Usage (and MSH-11 mapping)	ManualAndTimeStamp		Instrument_inst
InterPartner "From" value	ManualAndTimeStamp		Instrument_mode
InterPartner "To" value	ManualAndTimeStamp		Instrument_mode
Test result exclude from normal processing	ManualAndInputFileName		Link_test_to_pare
Multiple value separator	ManualAndInputFileNameAndTimeStamp		Link_test_to_pare
Input file name	csvToConvert.csv		Order_result_stat
Debug mode	FALSE		Order_test_date
Time zone	ET		Ordered_test_cod



On the *Admin* tab, note that Columns D-K contain the logic by which the different data fields are read, transformed and output to the flat file. Please do not change these columns or the tool macros may break.

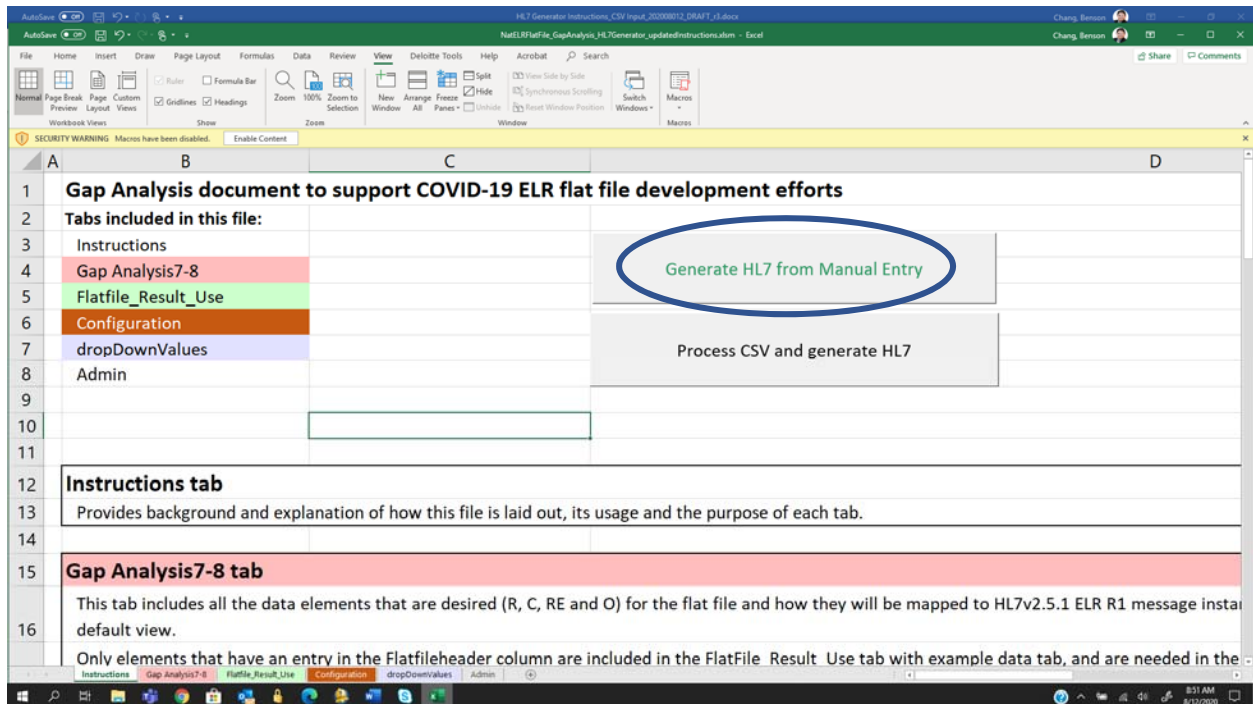
On the Admin tab, the fields “Timer on”, “Number of Errors before exit” and “Debug mode” should be used by developers or those trained with the macro to perform integration testing. This is documented in “Developer Instructions”. By default “Timer on” and “Debug Mode” should be set to “FALSE” and “Number of Errors before exit” should be set to 0.

If you notice any issues please contact AIMS Technical Assistance at informatics.support@aphl.org.

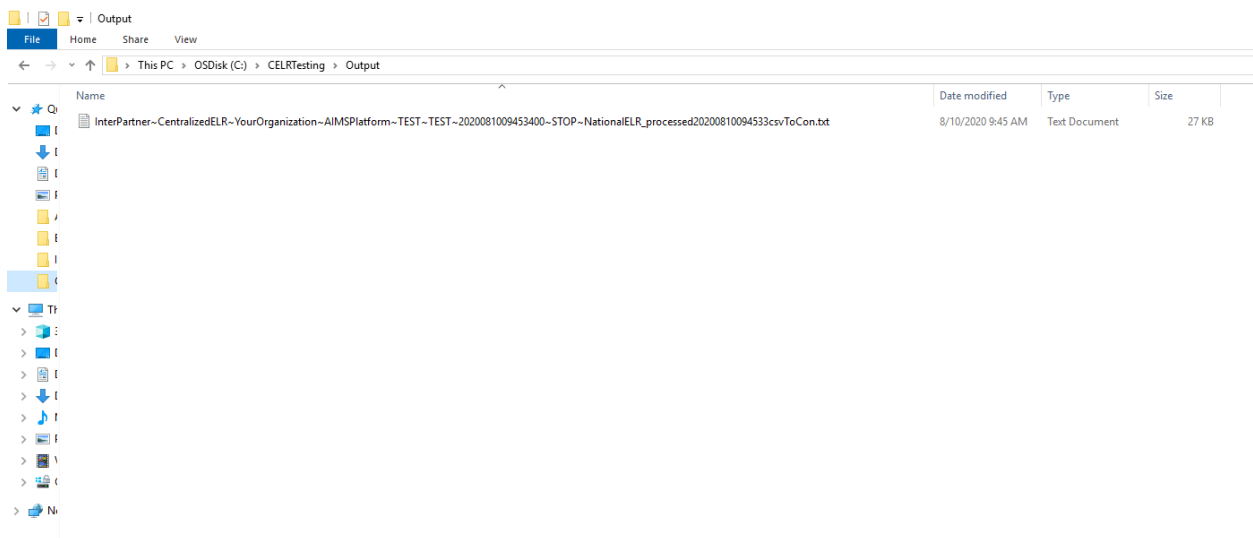
Step 6: In *Admin* tab, specify the delimiter character to note multiple values (repeats) in a single field. Note that the default character used is a semicolon (;). Use this delimiter to list multiple values in the Disease_symptoms column. In the output, each value will be mapped to a separate OBX segment.

File Home Insert Page Layout Formulas Data Review View ACROBAT Tell me what you want to do...			
PROTECTED VIEW Be careful—files from the Internet can contain viruses. Unless you need to edit, it's safer to stay in Protected View. Enable Editing			
G34			REQUIRED_COMBO_4
	A	B	C
1	Config Item	Value	Description
2	Input Directory	C:\runMacro\test1\Input	Abnormal_flag
3	Output Directory	C:\runMacro\test1\Output	Comments
4	Processed Directory	C:\runMacro\test1\Processed	Date_result_rel
5	Error Directory	C:\runMacro\test1>Error	Disease_symptoms
6	FlatFile_order_use column to count rows	A	Employed_in_h
7	FlatFile_Result_Use final column	DP	Employed_in_h
8			First_test
9	Timer on	FALSE	flatfile_version
10	Number of Errors before exit	0	Hospitalized
11	Include Batch header and footer	TRUE	ICU
12			Illness_onset_d
13	File Naming option	ManualAndTimeStamp	Instrument_inst
14	Manual file Name	ELR~	Instrument_mo
15	Current Usage (and MSH-11 mapping)	Prod	Instrument_mo
16	InterPartner "From" value	eTrueNorth	Link_test_to_pa
17	InterPartner "To" value	AIMSPlatform	Link_test_to_pa
18	Test result exclude from normal processing	Test_kit_EUA_ID,Test_kit_model_ID,Test_kit_model_name,Test_result_code_system,Tes	Order_result_st
19	Multiple value separator	;	Order_test_dat
20	Input file name	csvToConvert.csv	Ordered_test_c
21	Debug mode	FALSE	Ordered_test_c
22	Time zone	ET	Ordered_test_d
23			Ordering_facilit

Step 7: Under the *Instructions* tab, click the “Generate HL7 from Manual Entry” button to generate a test output. If a runtime error pops up, go through Steps 1 to 6 (especially Step 3) to ensure that all setup steps are correct. If no runtime error is generated or no message appears, go to the Output directory set up in Step 3 to find output files generated from the sample data that were included through the *Flatfile_Result_Use* tab.



Output folder showing generated file:



Step 8: Go to the *Gap Analysis7-8* tab. Filter on Column L, *MUST SUPPORT in flatfile* = Y. This displays the minimum data fields that must be included in the input and output files.



	I	J	K	L	M	N	O	P
1	HHS guidance elements							
	HHS element name / description	HHS Guidance comment	HHS guidance 6/4/2020 verbiage	MUST SUPPORT in flatfile	Supported by Lab (Y/N)	GAP ANALYSIS NOTES	Sort for HL7 mapping	HL7 Field
2								
3	Performing facility name and/or CLIA number, if known		C(R/RE)	Y			121	OBX-23.1
4	Performing facility name and/or CLIA number, if known		RF	Y			123	OBX-23.1

Review each data element and mark in Column M, *Supported by Lab* whether your lab can support the particular required data field (Y/N). Enter any notes, other documentation that may help with understanding what you are using to populate the field or anything needed for follow up in Column N, *Gap Analysis Notes*, as necessary. Once you have validated that your lab can provide data for each of the minimum required fields, proceed to Step 9.

Step 9: Go to the *Configuration* tab. The top part of the tab specifies static values that will be sent with every HL7 message generated (i.e. your lab address and CLIA number) and which fields they are mapped to in the HL7 message. If a field is left empty on the “Flatfile_Result_Use” tab, the field will be automatically populated with the appropriate value from the “Configuration” tab if column E “Corresponding input column name (to replace if empty)” is configured. Populate all fields in Column B, *Answer (local value)* that are highlighted in yellow. The tool will reference these values to populate the appropriate field when generating the HL7 message. You will need to create 1 tool file for each submitting laboratory, if you are a data aggregator.



Static Values	Do not move these columns. The macro code references specific cells.	Mapping to HL7	Corresponding input column name (to replace if empty)	Additional mapping instructions	Related mapping value
1. Question	Answer (local value)	More information about the question			
2. Data on this tab is assumed to be the same for each site, where testing is performed, so could be pre-populated for manual user entry or populated automatically if entry is blank					
3. Testing Laboratory Street	202 South Missouri from static	OBX-24.1	Testing_lab_street		
4. Testing Laboratory Street 2	Big 12 from static	OBX-24.2	Testing_lab_street2		
5. Testing Laboratory City	Little Rock from static	OBX-24.3	Testing_lab_city		
6. Testing Laboratory State	AR	OBX-24.4	Testing_lab_state		
7. Testing Laboratory County	Test 19	OBX-24.9	Testing_lab_county		
8. Testing Laboratory Zip	71205	OBX-24.5	Testing_lab_zip_code		
9. Name of the reporting facility	Public Health Laboratory, AR from static	MSH-4.1	Reporting_facility_name	MSH-4.3	OID
10. Identifier of the reporting facility	AR-LittleRock SPM4 from static	MSH-4.2	Reporting_facility_id	MSH-3.3	OID
11. Name of the reporting system	AR-LittleRock SPM4 from static 2	MSH-3.1	Report_facility_data_source_app		
12. OID for the reporting system (if known)	dummyMSH4OID	MSH-3.2			
13. Testing Lab ID assigner	testingLabIDAssignerRequired				
14. Testing Lab ID assigner OID	testingLabIDAssignerOIDRequired				
15. Name of the testing laboratory	WMAAC from static	OBX-23.1	Testing_lab_name		
16. CLIA number of the testing laboratory	0401044169 from static	OBX-23.10	Testing_lab_id		
17. Name of the organization that assigns the Patient Identifier	Accumbent	PID-3.4.1-5			
18. OID of organization that assigns the Patient Identifier	Public Health Laboratory, AR from static	PID-3.4.2-5			
19. Name of the organization that assigns the Patient Identifier	dummyOID2	PID-3.4.3-5			
20. Name of the organization that assigns the Patient Identifier		PID-3.4.2-5			
21. Test instrument or kit		OBX-17.1		populate if OBX-17.1 empty	
22. Test instrument or kit		OBX-17.1		populate if OBX-17.1 empty	
23. Default Specimen Type Description	Specimen of unknown material	OBX-17.1	Specimen_type_description	populate if OBX-17.1 empty	
24. Default specimen type code	119324002	SPM4-4.1	Specimen_type_code		
25. Software vendor	software vendor				
26. Software version or release number	V12				
27. Software Name	software name				
28. Binary ID	Binary ID unknown				
29. Install date	20181208				
30. Receiving Application Name	US-WMD Clinical Lab	Date in HL7 format 'YYYYMMDD'			
31. Receiving Application OID	2.16.840.1.114222.4.3.3.7	MSH-5.1			
32. Receiving Facility Name	CDC-EPH Surv Branch	MSH-5.2			
33. Name of the health department receiving the data	2.16.840.1.114222.4.1.10418	MSH-5.1			
		MSH-6.2		Based on the name, look up the OID for use in MSH-6.2 and also the information	

The bottom part of the *Configuration* tab refers to cells on the *dropDownValues* tab and indicates which range of dropdown values are mapped to particular HL7 fields. See next step for more details on the *dropDownValues* tab.

Static Values	Local code values Range (in dropDownValues Tab)	HL7 range is hard coded to replace "C" with "O" do not remove columns
Input Column Name		
Patient_id_type	C2-C7	
Patient_gender	C9-C13	
YHS	C173-C175	
Patient_race	C15-C20	
Patient_ethnicity	C28-C25	
Patient_state	C28-C87	
Ordering_facility_state	C28-C87	
Ordering_provider_state	C28-C87	
Testing_lab_state	C28-C87	
Ordered_test_code_system	C89-C91	
Test_result_code_system	C93-C95	
Result_status_code	C97-C100	
Specimen_type_code_system	C102-C105	
Specimen_source_site_code_sys	C107-C109	
Patient_gender	C111-C112	Must have more than one in range
Patient_location	C114-C121	
Symptoms_for_disease	C278-C275	
Disease_symptoms	C333-C351	
Patient_age_units	C134-C137	
Pregnant	C139-C142	
Abnormal_flag	C144-C161	
Ordered_test_code	C167-C169	
Test_performed_description	C176-C203	
Test_result_code	C206-C219	
Test_result_description	C206-C219	
Test_result_free_text	C206-C219	
Specimen_type	C238-C258	
Specimen_type_free_text	C238-C258	
Specimen_source_site_code	C260-C262	
Specimen_source_site_desc	C260-C262	
Order_result_status	C97-C100	
Test_result_units	C224-C236	
First_test	C278-C275	
Employed_in_high_risk_setting	C277-C292	
Patient_occupation	C294-C313	
Patient_residence_type	C316-C317	
Result_units	C300-C303	
Patient_id_assigner	C354-C358	
Patient_id_2_assigner	C354-C358	
Patient_source	C1100-C4245	
Ordering_facility_county	C1100-C4245	
Ordering_provider_county	C1100-C4245	
Testing_lab_county	C1100-C4245	

Step 10: The *dropDownValues* tab maps input values from your lab for certain fields that may be plaintext or locally coded to be standard values to be included in the HL7 output. Note that any input



values in the Column C of the *dropDownValues* tab will be replaced with corresponding values in Column G of the same row.

- On the *dropDownValues* tab, enter any transformation values for particular data fields as new rows at the bottom of the tab, if additional values are needed, else update to your local values in column C.
- Ensure that Column A, *HL7 element / Field Name* matches the name of the data column in Row 1 of the *Flatfile_Result_Use* tab.
- Also ensure that each row in Column C, *Local Code* represents all the local values that could be received from your system / are familiar to your users; those are the values that will populate the drop down menus.
 - Notes:
 - For all coded entries the following hierarchy applies:
 - If the input value for the code (i.e. Ordered_test_code or Test+performed_code, or Test_result_coded or Specimen_type_code or Specimen_source_site_code) matches a value in the Local Code (Column C) or the Standard Code (Column D) then the entire replacement value will be used and entries in the respective *_code_system fields will be ignored; if the input value does not match the values from the respective fields in the input file will be used.
 - If you need to map different local codes to the same standard codes (for example Detected and D both need to be mapped to detected, then you need to create a second version of the standard code entry in column D, or the tool will not process properly (the tool uses the replacement value from Column G, so that will not affect the HL7 file output values.
 - Transformation for county values starts on row 1100 (scroll way down!) – because many counties have the same name in different states, it is recommended that you include the state in the same field (we may update the tool in the future to use a combined search, but for now) to get the right county mapped.
- Column G *Replacement Value* is the standard value that will populate and replace your local code in the output file. Verify that that this replacement value is correct. In most instances you will want to use the standard code found in Column D. For example, in the screen below, a Local Code value of “Medical Record Number” in cell C2 (yellow) will be replaced with the value of “MR” as specified in cell G2 (orange), which is the standard code populated in cell D2.

NatELRFlatFile_GapAnalysis_HL7Generator - Excel

File Home Insert Page Layout Formulas Data Review View ACROBAT Tell me what you want to do... Riki Merrick

Clipboard Font Alignment Number Styles Cells Editing

G379

HL7 element / Field name	Local Description	Local Code	Standard Code	Standard Code Description	Standard Code System	Replacement Value	Comment
Patient_ID_Type		Medical Record Number	MR	Medical Record Number		MR	
Patient_ID_Type		Specimen Identifier	SID	Specimen Identifier		SID	
Patient_ID_Type		Patient Internal ID	PI	Patient Internal ID		PI	
Patient_ID_Type		Social Security Number	SS	Social Security Number		SS	
Patient_ID_Type		Patient External ID	PT	Patient External ID		PT	
Patient_ID_Type		Public Health Case ID	PHC	Public Health Case ID		PHC	
Patient_gender		Male	M	M		M	
Patient_gender		Female	F	F		F	
Patient_gender		Other	O	O		O	
Patient_gender		Unknown	U	U		U	
Patient_gender		Ambiguous	A	A		A	
Patient_race		American Indian or Alaska Native	1002-5	American Indian or Alaska Nat HL70005		1002-5^American Indian or Alaska Native^HL70005	
Patient_race		Asian	2028-9	Asian HL70005		2028-9^Asian^HL70005	
Patient_race		Black or African American	2054-5	Black or African American HL70005		2054-5^Black or African American^HL70005	
Patient_race		Native Hawaiian or Other Pacific Islander	2076-8	Native Hawaiian or Other Pacific Islander HL70005		2076-8^Native Hawaiian or Other Pacific Islander^HL70005	
Patient_race		White	2106-3	White HL70005		2106-3^White^HL70005	
Patient_race		Other Race	2131-1	Other Race HL70005		2131-1^Other Race^HL70005	
Patient_race		Asked but no answer / unknown	ASKU	Asked but unknown NULLFL		ASKU^Asked but unknown^NULLFL	
Patient_ethnicity		Hispanic or Latino	H	Hispanic or Latino HL70189		H^Hispanic or Latino^HL70189	
Patient_ethnicity		Not-Hispanic or latino	N	Not-Hispanic or latino HL70189		N^Not-Hispanic or latino^HL70189	
Patient_ethnicity		Unknown	U	Unknown HL70189		U^Unknown^HL70189	
Patient_ethnicity		Asked but no answer / unknown	ASKU	Asked but unknown NULLFL		ASKU^Asked but unknown^NULLFL	

Step 11: Once you are done entering transformation values in the *dropDownValues* tab, go back to the *Configuration* tab and ensure that all values from the *dropDownValues* tab match those listed in the bottom half of the tab. For example, it specifies that rows C15 through C21 will be input values for the field Patient_Race. To update the dropdown values on the Flatfile_Result_Use tab, select the entire column (and control-left click the top item to prevent validation in the header) and select “Data Validation” and update the source per what was entered in the dropDownvalues tab. The “Source:” input can be clicked and then values can be selected in the dropDownValues tab to populate the range.

Data Validation ? X

Settings Input Message Error Alert

Validation criteria

Allow:

List ☒ Ignore blank

Data:

between ☒ In-cell dropdown

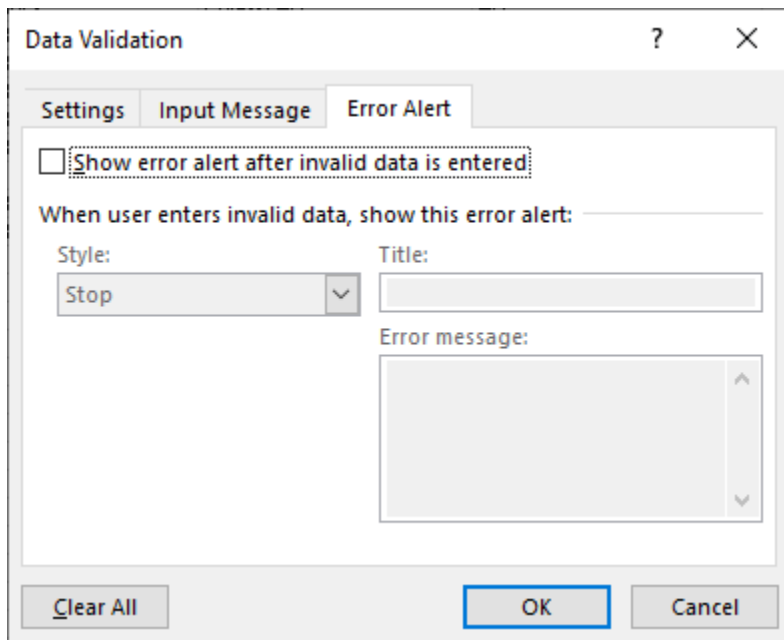
Source:

=dropDownValues!\$C\$15:\$C\$20

☐ Apply these changes to all other cells with the same settings

Clear All OK Cancel

Make sure that “Show error alert after invalid data is entered” is unchecked. This allows the macro to also check for HL7 code values.



The screenshot shows a Microsoft Excel spreadsheet titled "NatlFltAff_GephAnalysis_147Generator.xlsx". The spreadsheet is organized into columns with headers A through X. The data is presented in rows, with some cells containing text like "Patient ID", "Patient Name", and "Patient Address". The spreadsheet is viewed in a window titled "NatlFltAff_GephAnalysis_147Generator.xlsx - Excel".

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
Testing_Mat_num	Testing_Mat_ID	Testing_Mat_specimen	Patient_ID	Patient_ID_Orig	Patient_ID_Np	Patient_ID_Np_2	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig	Patient_ID_Np_2_Orig
1	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
2	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
3	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
4	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
5	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
6	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
7	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
8	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
9	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
10	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
11	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
12	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
13	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
14	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			
15	U4AC	042104493	P00000595	234567	STAR1PS All Pro-PR	03421673L	Public Health Laborator-PHC	DOVEILL	Jerry	F	White	60221954	Female	Hesperus or Lains	7301ROGERS	Apr42	FORT SMITH05519	AR	72903-4000	501-696-6279			



Step 13: Under the *Instructions* tab, click the “Generate HL7 from Manual Entry” button to generate a new output for your entered data. If a runtime error pops up, go through Steps 1 to 5 (especially Step 3) to ensure that all setup steps are correct. If no runtime error is generated or no message appears, go to the directories set up in Step 3, and you will find output files generated from data entered through the *Flatfile_Result_Use* tab. To send the HL7 file to the jurisdiction(s) that need it follow the agreements made / documented elsewhere for transport connections for this project.

[Trouble shooting other tool outputs etc.](#)

When the “Generate HL7 from Manual Entry” is selected, the following happens:

1. It outputs the HL7 batch to the output directory only if there are no errors (although there could be warnings in the NationalELRLog file). The HL7 file will generate if there are warnings.
2. If there are errors, it will output the error file (and warnings if any) to the error directory describing what happened.
3. A file named “NationalELRLog<timestamp>.txt with: “Not generating HL7 because of the following errors:” (with a list of the errors that prevented processing)
4. Use the error entries to fix the data being input into the “Flatfile_Result_Use” tab
5. If there are no errors, it will output a file named “NationalELRLog<timestamp>.txt with: “HL7 batched produced with no errors” and may have warnings in the file.