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CWLAB File Format

Version 1.3

Overview

Although CAREWare already imports laboratory data through specific HL7 specifications controlled by major US laboratories, these formats tend to be centered on their specific all encompassing laboratory processes and can change at any time.
Once CAREWare has read these HL7 messages there are existing CAREWare features that help users manage the incoming lab data. One example is a feature that helps users match up labs to clients where mistakes exist in the incoming IDs or demographic information. Another example is a feature that helps users match test type codes and qualitative result codes to CAREWare tests and codes.
This format is designed to be produced by commonly available tools capable of exporting to tab-delimited files in a one-row-per-test basis. CAREWare will then automatically convert each line in the text file in to a compatible HL7 message that will then be processed by existing CAREWare features.

Revisions

Version 1.3:
- Update HL7 positions to correspond to HL7 standard

Version 1.2:
- Update column to match coding. The first element should be the MSH 3 Lab ID (Sending Application).
- Update max size for each field based on updates to the CW DATA database.
- Added default paths for incoming and processed CWLAB files.

Version 1.1:
- Add general import process steps.
- Correct typing errors.

File Format

File Extension

The file extension for this format will be CWLAB so if you make a file named My Lab Export is should be called: My Lab Export.CWLAB

Default Incoming Folder For *.CWLAB files

"C:\Program Files\CAREWare\RW CAREWare Business Tier\CWLabsSouceFiles"
Tab delimited files should be placed here for formatting. Users can edit this path in the common storage tab in the CW Admin utility.

Default Successful Processed Folder for *.CWLAB files

"C:\Program Files\CAREWare\RW CAREWare Business Tier\CWLabProcessedFolder"
Any tab delimited files that are successfully formatted will be placed here. Users can edit this path in the common storage tab in the CW Admin utility.

Text Format

We highly encourage UNICODE, although our stream reader can handle a number of other formats.

Column Delimiter

Each column is separated by the TAB (ASC 9) character. There is no tab after the last column. You should always separate columns with a TAB, even if the column is blank.

Line Terminator

Each line should be terminated with either a single carriage return CR (ASC 13), or a carriage return line feed combination CRLF (ASC 13 followed by ASC 11)

File Header

This file does not have header information. The first row contains the first lab record.

Column Data Types

Text

Text can contain any combination of characters and numbers except for TAB, CR and LF. Note the specific column or receiving clinic may have additional restrictions as to the format and characters allowed.

YYYYMMDD

This is a specifically formatted date. All dates must conform to this format regardless of the date format set in the culture settings. Single digit months and days must be padded with zeros. For instance a birth date of 17-Sep-1950 would be 19500917. A specimen date of 1-Feb-08 would be 20080201.

Table Column Definitions

Position

A one based column number.

HL7 Position

Where the data will be put in the resulting HL7 file.

Column Name

The name given the column in this format.

Type

The type of data that is required to be in the column.

Max Length

The maximum number of characters

Required

The file will not be parsed if any required fields (marked yes) are missing/blank.

Position	HL7 Position	Column Name	Type	Max Length	Required
1	MSH3	Lab ID (Sending Application)	Text	180	Yes
2	MSH6	Provider ID (Receiving Application)	Text	180	Yes
3	PID2	Match Patient ID	Text	30	See patient matching description
4	PID3	Lab Reference	Text	250	No
5	PID5	Last Name	Text	40	See patient matching description
6	PID5	First Name	Text	25	See patient matching description
7	PID5	Middle Name	Text	25	See patient matching description
8	PID7	Date of Birth	YYYYMMDD	8	See patient matching description
9	PID8	Gender	Text	1	No
10	OBR8	Specimen Date	YYYYMMDD	8	Yes
11	OBX2	Result Value Type	Text	2	Yes
12	OBX3	Test Type ID	Text	38	Yes
13	OBX3	Test Type Name	Text	50	Yes

14	OBX5	Test Result	Text	72	Yes
15	OBX6	Unit of Measure	Text	100	No
16	OBX7	Reference Range	Text	5000	No, See reference range description.
17	OBX11	Test Status	Text	1	No, See test status description
18	NTE4	Notes	Text	5,000	No

Format Column Definitions

MSH6 Provider ID

The ID that has been assigned to the clinic that uses CAREWare and that the test result is intended for. The receiving clinic and the lab will reach agreement on what this ID will be.

MSH3 Lab ID

The ID that has been assigned to the laboratory that conducted the test and prepared the export. The receiving clinic and the lab will reach agreement on what this ID will be.

PID2 Match Patient ID (External ID)

This is the ID that identifies the patient in CAREWare.

PID3 Lab Reference (Internal ID)

This is an optional code that can be inserted by the lab to help them identify the test if questions arise.

PID5.0 Last Name

The last name of the patient the specimen was taken from.

PID5.1 First Name

The first name of the patient the specimen was taken from.

PID5.2 Middle Name

The middle name of the patient the specimen was taken from.

PID7 Date of Birth

The date the patient was born on.

PID8 Gender

A one character code for the gender of the patient. Note that the file does not impose a coding system other than it is one character.

OBR7 Specimen Date (Observation Date/Time)

The date the specimen was obtained from the patient.

OBX2 Result Value Type

Specifies the type of data that will be found in the OBX6 Test Result column. Valid values are:
 NM = Numeric data
 CE = Coded entry
TX = Text Data
ST = String Data

OBX3.0 Test Type ID

The coded value that the laboratory has assigned to the test that produced the value. For instance if the code the label used for CD4 Count was 000234, then that is what would go into this filed.

OBX3.1 Test Type Name

The name of the type of test preformed. And example would be "CD4 Count".

OBX5 Test Result

The value produced by the test. Note the value must be compatible with the result value type column. This file format does not impose a coding scheme for CE (qualitative) type results. If the value is a quantitative result it may begin with:
<=
>=
=
>
<
If the value is just a number, = is assumed.

OBX6 Unit of Measure

A place for the lab to communicate the unit of measure used for the test. No format is required.

OBX7 Reference Range

The range of low and high values a lab result should be between. For HL7 import/export, this value is set when the clinician or user adds the lab test definition. When importing/exporting, CW does not check these values. Thus, this field is optional.   In order to check to see if a lab result falls out of range, the user must use custom reports. Error flags are shown when a user manually adds or edits the lab result. HL7 files with reference ranges will be displayed in the comments.

OBX11 Test Result Status

There are three statuses that CW processes. The three statuses are C for Corrected, F for Final, and P for Pending.   This field is an optional. If the field is empty, CW will treat it as a final result. The rules for processing the result statuses are as follows:

1. If a "C" is in the HL7 field, the record in CW will automatically be edited no matter what.
2. If a "F" is in the HL7 field, the record in CW that has a "F" or "P" status will be edited.
3. If a "P" is in the HL7 field, only records of a "P" status in CW will be edited.

NTE4 Notes

A place for the lab to send any comments about the test. This is free text and cannot contain control characters like tabs or carriage-returns.

Multiple steps in import process

1) File is put in the incommingCWLAB folder

2) File is parsed and converted to HL7 file

If file cannot be parsed or converted

File is moved to the parsingErrorHL7Files directory and an administrative alarm is logged.

3) HL7 file is parsed

If file cannot be parsed or required fields are missing

File is moved to the parsingErrorHL7Files directory and an administrative alarm is logged.

4) The lab is mapped to the clinic

See "How CAREWare handles lab and provider matching"

5) The patient ID and demographic user is matched

See "How CAREWare handles patient matching"

6) The test type code is mapped

See "How CAREWare handles test type codes"

7) If the lab has a qualitative result the qualitative result is mapped

See "How CAREWare handles qualitative result codes"

8) The incoming lab record is place in the patient record

How CAREWare handles lab and provider matching

Since a single CAREWare installation can house multiple clinics/providers on a server, and a single clinic/provider can handle imports from multiple labs that may use different coding systems, CAREWare has established a process called provider mapping to insure that data makes it to the correct provider and the correct result mappings are used. To make this process work smoothly it is important that you keep the MSH3 Lab ID and the MSH6 Provider ID consistent across exports.

How CAREWare handles patient matching

Matching IDs

Agreeing on the ID

CAREWare can be configured to use the Central URN/Unique ID or the clinics Clinic ID. The only way to completely automate the import of the lab data is for the lab to supply a patient identifying code that exactly matches a code in CAREWare. If supplying a common patient ID is not possible then you can still import lab records, but a CAREWare user will need to go through a manual matching processes with each client in the file.

How CAREWare finds the patient record the lab is intended for

CAREWare goes through a two step matching process with incoming lab records. It first tries to match by finding a client associated with the intended provider with an ID matching the value in PID3 Match Patient ID.

What happens if there is a match

The demographic fields in the incoming record are compared to the existing client record and scored. The score is compared to the threshold that is set with the incoming provider record and if it is greater than or equal to the threshold then the lab record is marked to import. If you want the lab records to be imported regardless of the score, for instance if the lab cannot provide demographic information, set the threshold to zero for the incoming provider map record.

What happens if there is not a match or the demographic check score is too low

The incoming record is put in a queue to be matched manually by a user.

How CAREWare handles test type codes

This format does not impose a coding structure, instead you can use any coding structure that is constant over time and that the lab and CAREWare clinic can reach agreement on. CAREWare users will use user tools to map your lab codes to CAREWare labs. When the lab codes are imported in CAREWare there is a check to see if the code has been mapped to a CAREWare lab. If the code is already mapped the lab will move to the

next step in processing, otherwise the lab code from OBX4 Test Type ID and OBX4 Test Type Name will fall into a queue for user action.

How CAREWare maps qualitative results

If the OBX3 Result Value Type is CE (Coded element), CAREWare will check an internal mapping table, if the value has already been mapped to the CAREWare qualitative code, the correct CAREWare code will be inserted and the record will be imported, otherwise the new code will fall into a queue for user action.

How CAREWare handles duplicate, pending and corrected tests

The basic rule with the import is if a new lab comes in for the same provider for the same patient with the same lab code with the same specimen date, the existing record will be overwritten with the newer record. To make this format easy to implement we did not put status flags.

If for some reason you need to change correct the Provider ID, Lab Type Code or Specimen Date you will need to handle that process outside the CWLAB lab file format.