Jeff Murray's Programming Shop, Inc.

RW CAREWare 4.1/5.0

Lab Import Mapping Process

Version 1.5

July 2012

Unofficial

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Revision History
1.1 Release to Public
1.2 Add CAREWare 5.0 Changes
1.3 General Edits
1.4 Add Test Import Changes
1.5 General Edits

The CAREWare lab import is a series of sequential steps. Each step is labeled as a status that tells the user where the lab import record stands and each needs be completed before the next step can begin. All steps need to complete before the lab can be imported into CAREWare. It is a good idea to do a manual backup before doing any mappings.

The HL7 import process is an automated process, but the user can force it to begin processing by clicking on the "Process Queued Records" button located in the Lab Test Mapping Tool. CAREWare's internal timer will process HL7 records every five minutes, but the Process Queued Records button tells CAREWare to process the records instantly. Unless the user wants to wait five minutes for CAREWare to process records automatically, he or she should press the Process Queued Records button between the steps to ensure that the records are processed. This button only affects records that have been parsed already. The following are the basic steps for lab import.

1. Code Activation
2. Map Provider
3. Map Client
4. Client Not Found (For clients not found or does not meet threshold)
5. Map Test
6. Map Result (For qualitative results)
7. Complete

Code Activation

After Hypersend and/or the CAREWareQuestHubService are installed correctly, the application will download an HL7-formatted file to the incoming HL7 files folder. Its default location is "C:\Program Files\CAREWare\RW CAREWare Business Tier\incomingHL7Files". CAREWare has an internal timing mechanism that will check every five minutes to see if there are any files in that folder.

When CAREWare finds file(s) in that folder, it tries to parse the file(s). The first thing it checks is whether or not the provider is activated for the MSH6 field in that particular file. If the provider has not been activated, it moves the file to the parsing errors folder and an alarm will be logged. The default location for that folder is "C:\Program Files\CAREWare\RW CAREWare Business Tier\parsingErrorHL7Files". Files remain there until a user manually moves it. The segment should look like this.

```
MSH|^~\&|TST|...|JPROG|TESTABCD|
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The field holding "TST" is the MSH3 field that holds the Lab ID. The field holding "TESTABCD" is the MSH6 field that holds the provider ID. jProg will need these fields to generate an activation code for the provider. Once jProg creates an activation code, the user needs to activate the activation code. To activate the activation code, the user needs to log into Central Administration and press Ctrl+R. Once the activation code has been entered, the user must move the file(s) from the parsing errors folder into the incoming folder to be processed. If an HL7 file is activated and contains no parsing errors, it is moved to the processed file folder, whose default location is "C:\Program Files\CAREWare\RW CAREWare Business Tier\processedHL7Files". Every file that contains that same provider ID and Lab ID will automatically be parsed and will not have to be manually moved after the activation code has been activated.

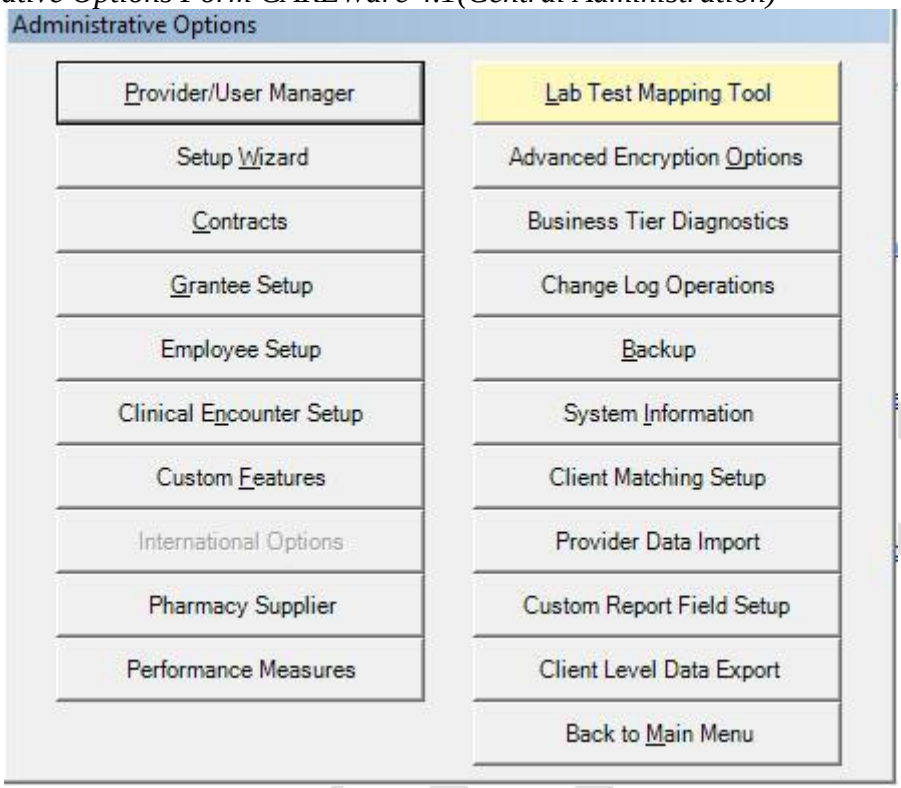
Map Provider

When the HL7 files have been parsed and placed in the processed HL7 files folder, the user is ready to start mapping. The first mapping step is to map the provider. In this step, the user sets the provider, the client matching field, the data source, and the threshold. To map the provider, the user needs to be logged into the Central Administration domain. He or she will need to click on Administrative Options, then Lab Mapping Tool, and finally Map Provider.

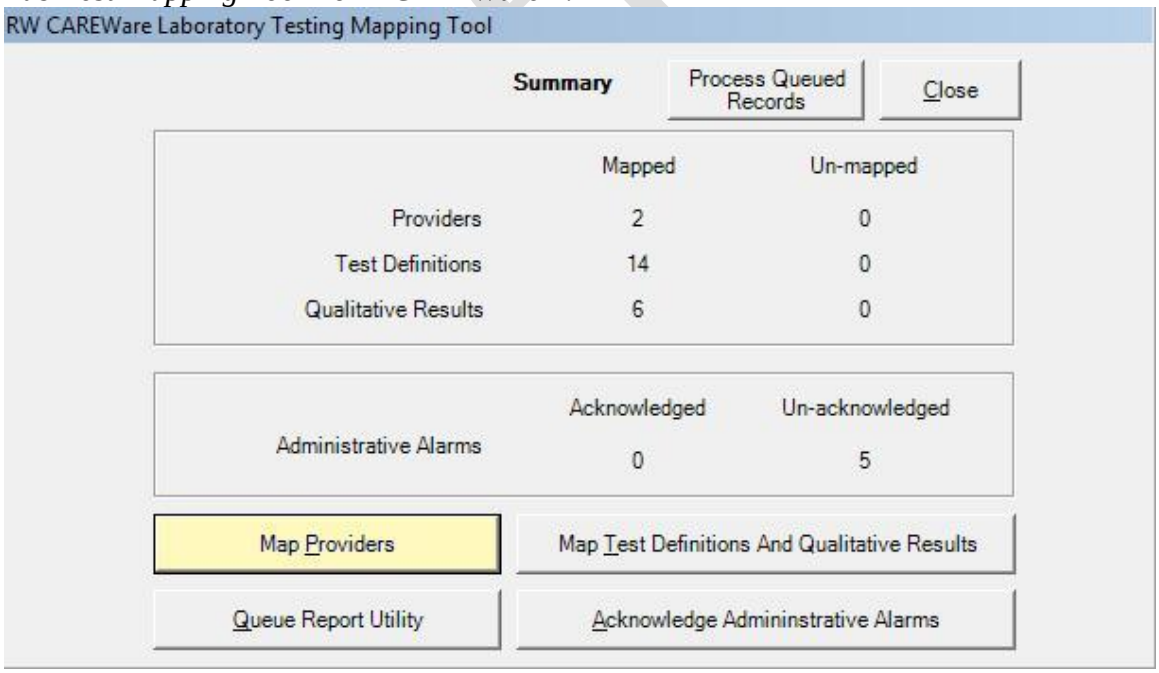
Main Menu Form CAREWare 4.1

Official

Administrative Options Form CAREWare 4.1(Central Administration)

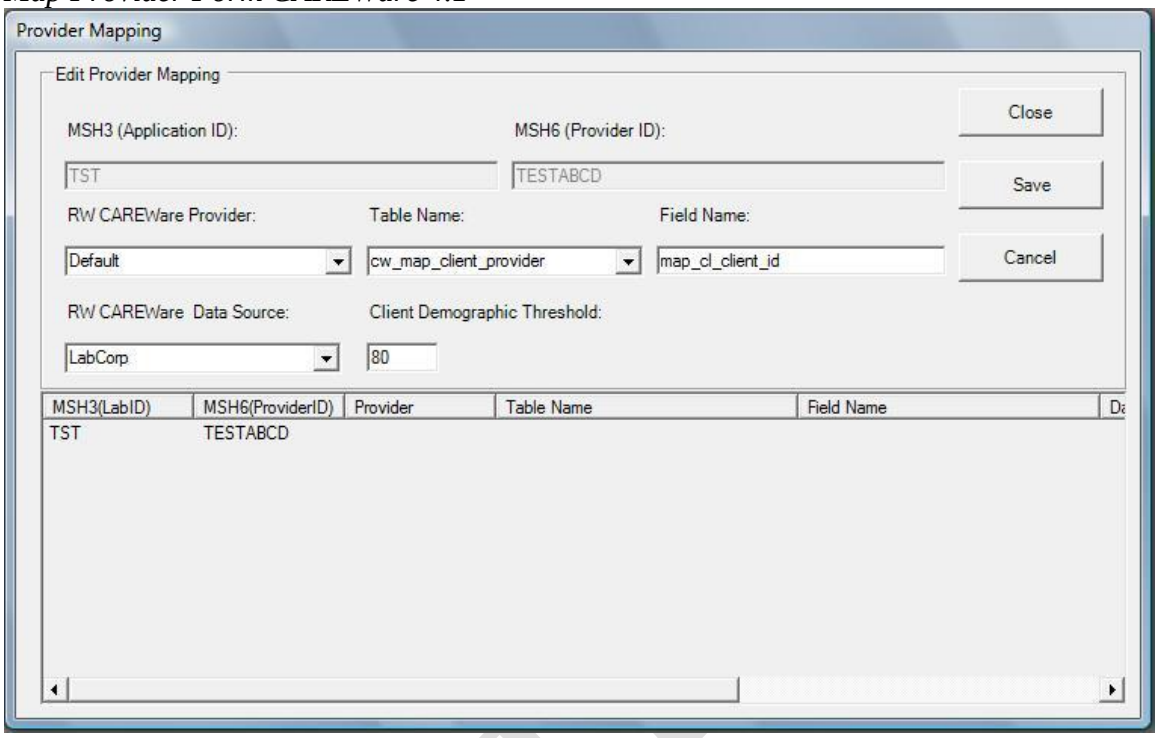


Lab Test Mapping Tool Form CAREWare 4.1



To map the provider, the user must select the provider from the list. Once selected, the controls will be enabled so that the user can set the provider, client, data source, and demographic threshold.

Map Provider Form CAREWare 4.1



The fields in the provider mapping screen are as follows:

MSH3 (Application ID)
Tells user where the HL7 file came from. This is set by the data source and is found in the HL7 file. This value cannot be edited.

MSH6 (Provider ID)
Tells user which provider the HL7 belongs to. This is set by the data source and is found in the HL7 file. This value cannot be edited.

RW CAREWare Provider
This holds the list of available providers that the HL7 file should be mapped to.

Table Name
This holds the table in which the matching client id is located in CAREWare. There are currently three tables in which the client id can be found. These three tables specify whether the matching client ID is the URN, Client ID, or a custom client field. If the matching client id is the client's URN, then the user needs to select "cw_client". If the matching client id is the Client ID, then

"cw_map_client_provider" needs to be selected. If the matching client id is a custom client field created in a CAREWare custom tab, then "cw_custom_client" needs to be selected. The matching client id is agreed upon by Lab Corp/Quest and the site itself. This needs to be agreed upon before going live.

Field Name
This holds the field name within the selected table name above. If "cw_client" is chosen, the user needs to type in "cln_urn". If "cw_map_client_provider" is chosen, the user needs to type in "map_cl_client_id". If "cw_custom_client" is chosen, then the user needs to type in the custom field name. *Important note: the custom field needs to be searchable.*

RW CAREWare Data Source
This holds the data source the HL7 file originated from.

Client Demographic Threshold
This sets the value that the client demographic information needs to match in order to be map the client. (See Client Demographic Threshold Score and Deductions)

Once all of these fields are set, the user needs to click Save to map the provider. Once mapped, the status of "Map Client" is set.

Map Client

If there is a client record within CAREWare that matches the matching client ID and meets the threshold, the status will change from Map Client to Map Test. For clients that are not found or did not meet the client demographic threshold, the status of Client Not Found is set.

Client Not Found

This step requires the user to manually map the client since the client was either not found or did not meet threshold based on the matching client id and the threshold that was set in the Map Provider step. Manual client mapping can only be done in a real time provider. To do this, the user must first be logged into the provider that the lab import is mapped to. The user may then click on Administrative Options, HL7 tools, and finally Client Mapping.

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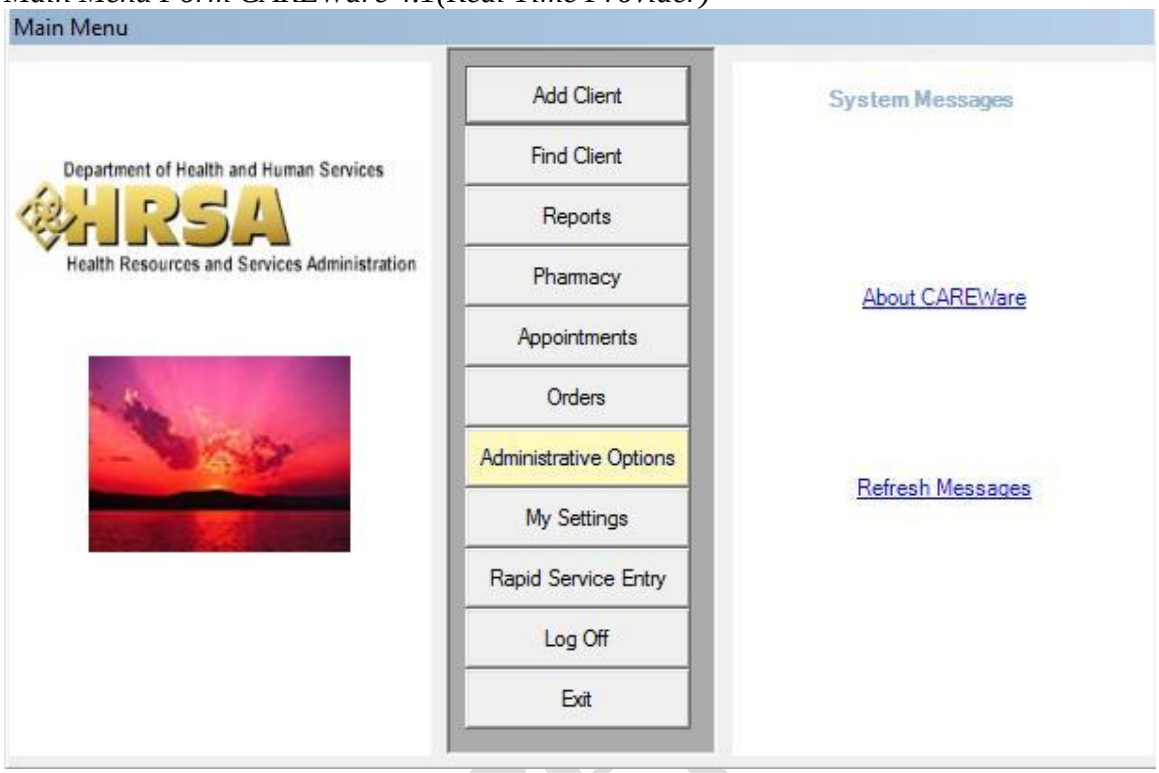
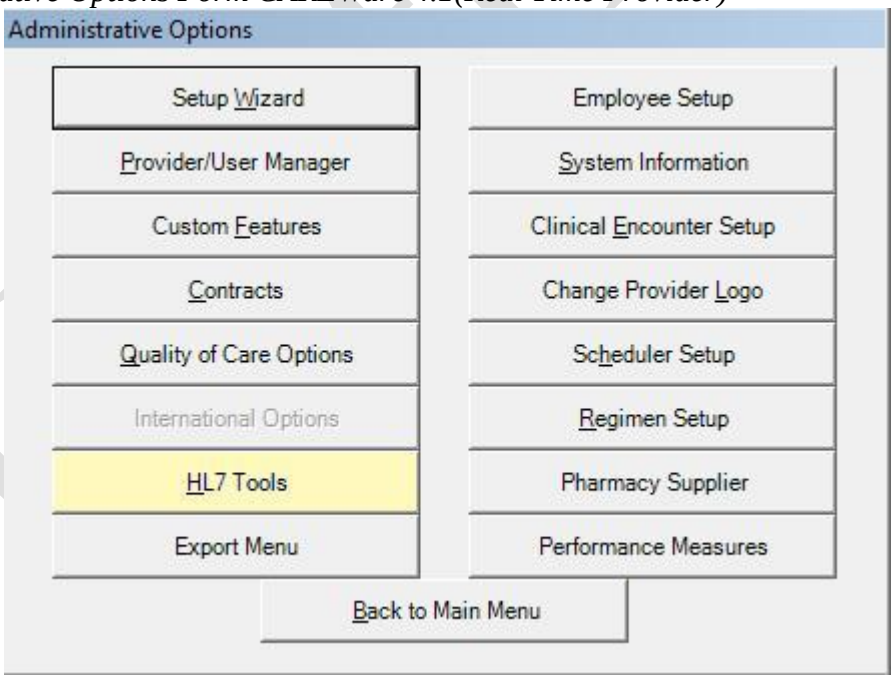
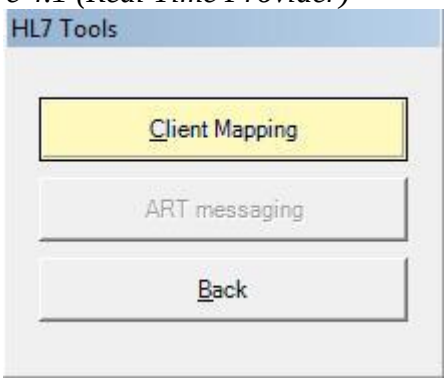
Main Menu Form CAREWare 4.1(Real Time Provider)



Administrative Options Form CAREWare 4.1(Real Time Provider)

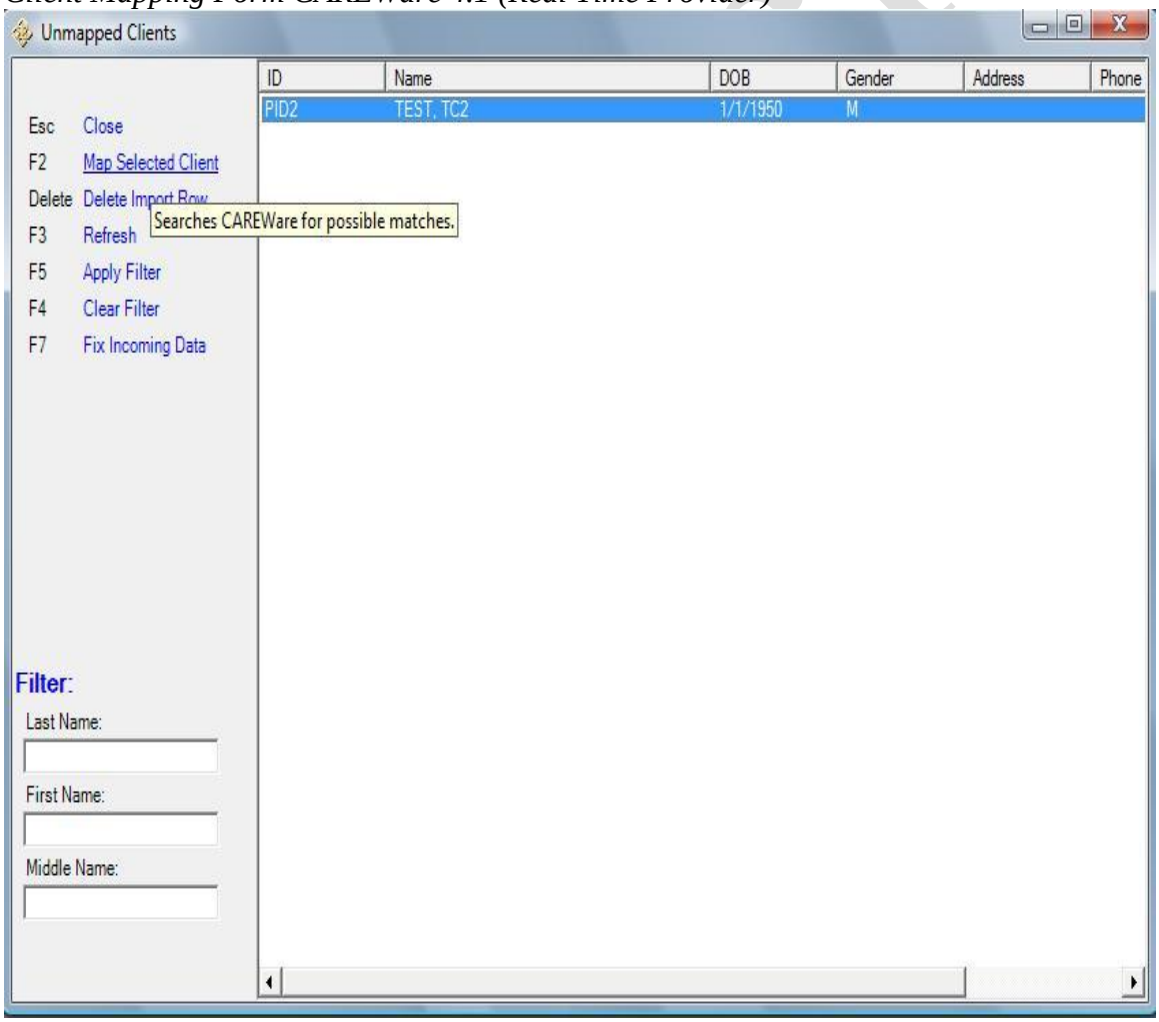


HL7 Tools Form CAREWare 4.1 (Real Time Provider)



Once this the Client Mapping button is clicked, there will be a form with all the unmapped clients. The user needs to choose a client from the list and select the Map Selected Client (F2) link.

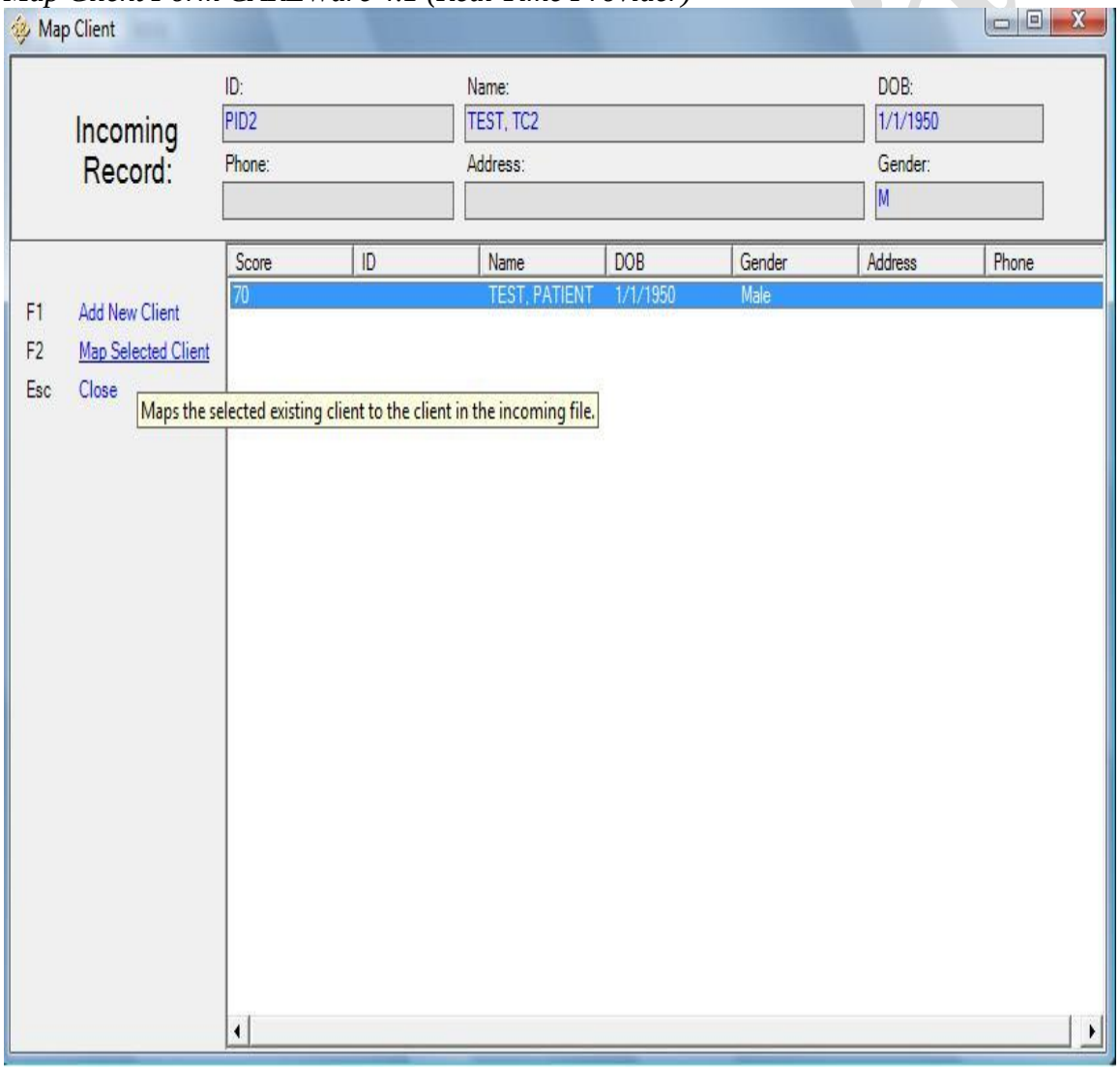
Client Mapping Form CAREWare 4.1 (Real Time Provider)



The user can also delete the unmapped client here if they do not wish to map that particular client. This will remove all records containing this client within the internal CAREWare HL7 table. The user can also fix the incoming data by selecting Fix Incoming Data (F7). In order for CAREWare to add a new client record, the client has to have a first name, last name, gender, and date of birth. This is the place to fix this.

For simplicity, this document will only concentrate on mapping clients with valid client demographic information. Once the Map Selected Client linked is clicked, a screen will pop up that allows the user to either map the selected client to a CAREWare client or add the client as a new client. The list on the bottom right contains clients that CAREWare believes might be a matching client. The user can select a matching client from the list and select Map Selected Client (F2) or Add New Client (F1) accordingly. The score column tells how closely the client matches.

Map Client Form CAREWare 4.1 (Real Time Provider)

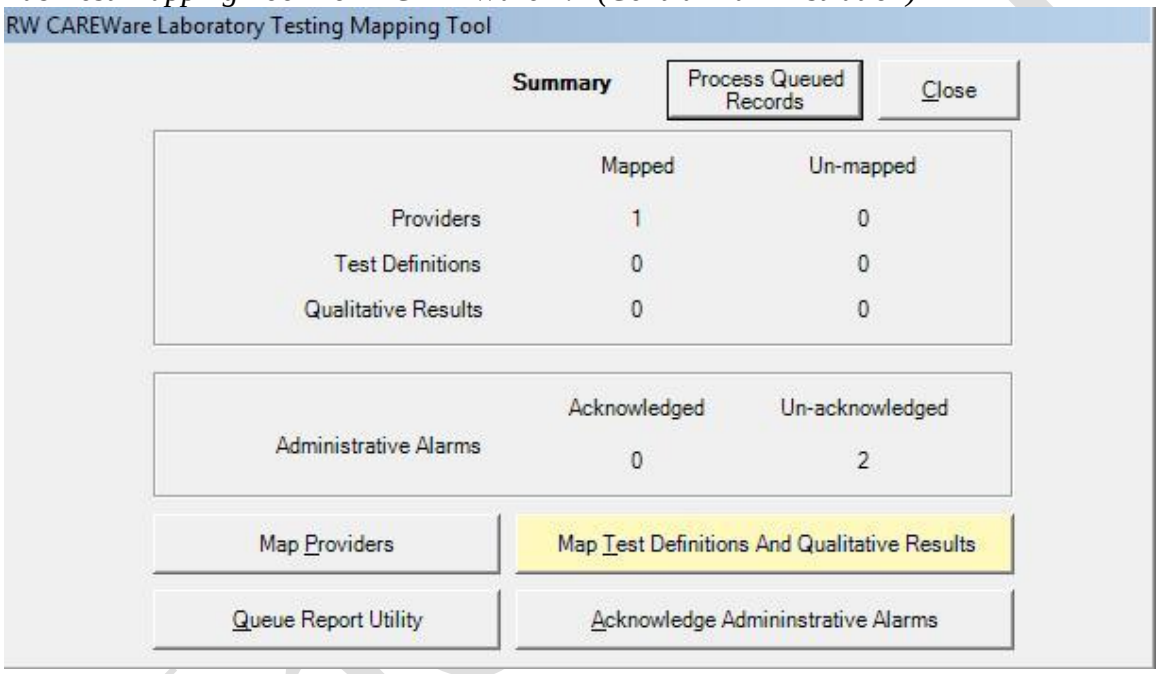


Once this is done, the status will change from Client Not Found to Map Test.

Map Test

This step involves mapping the HL7 results to a CAREWare Test definition. Specifically, it maps the result ID to a test definition created in CAREWare. To do this, the user needs to be in Central Administration again. To map the tests, the user must go back to the Lab Test Mapping Tool and click the Map Test Definitions and Qualitative Results button.

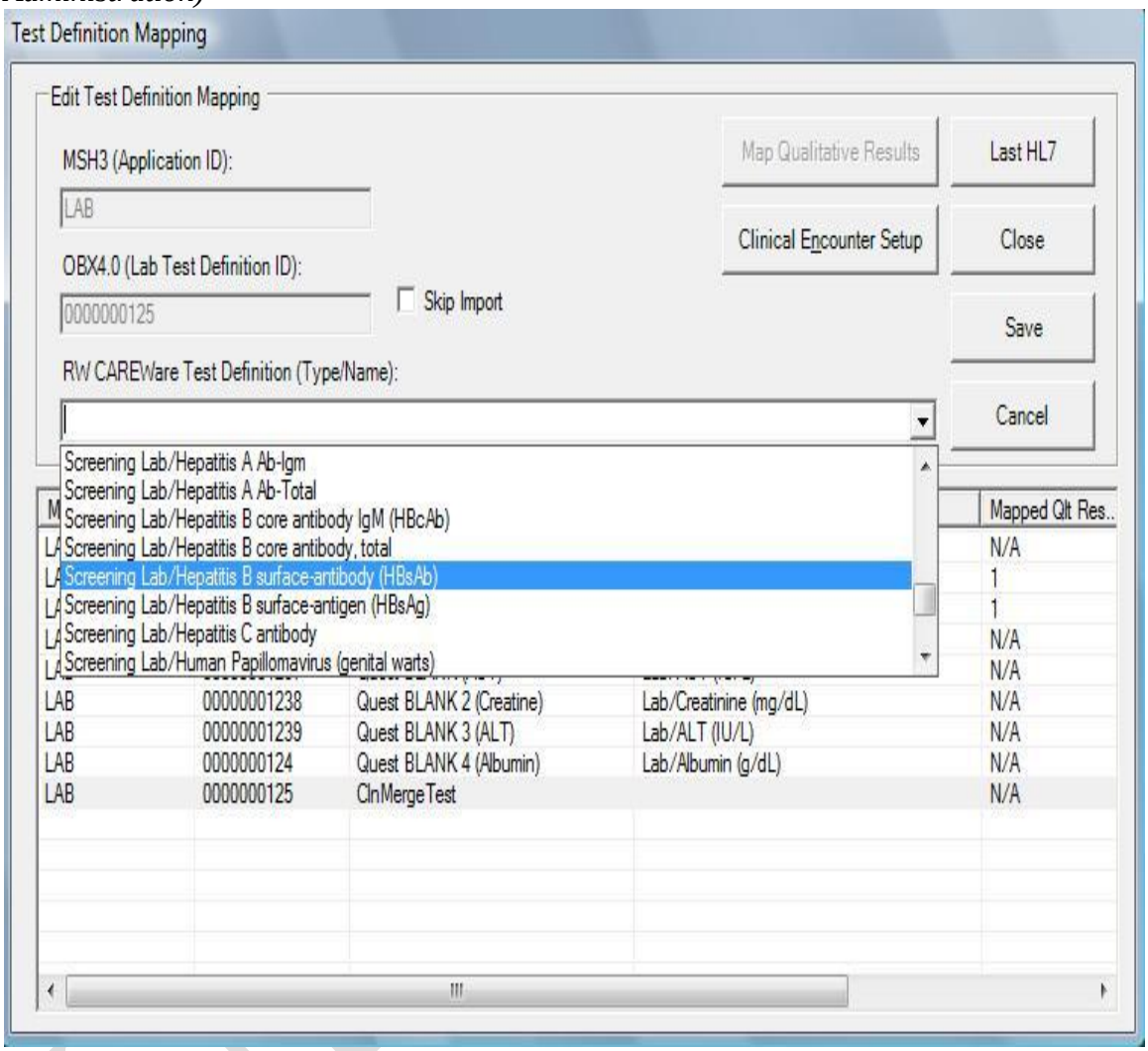
Lab Test Mapping Tool Form CAREWare 4.1 (Central Administration)



The Test Definition Mapping screen allows the user to map the HL7 test ID to a CAREWare Test Definition. When the user selects a result from the list on the bottom, the RW CAREWare Test Definition (TypeName) will be enabled. The user needs to decide which CAREWare test definition matches the HL7 test. If there are no CAREWare test definitions that match the HL7 test, the user can create a new test definition by selecting the Clinical Encounter Setup button (see the "Customizing Clinical Data" quick start guide on the HRSA CAREWare website).

If there's a matching CAREWare test definition, the user can select a matching CAREWare test definition from that list and click Save to save the mapping. If the test is a quantitative result, the status changes from "Map Test" to "Complete". If the result is a qualitative result, the status will be changed from "Map Test" to "Map Result". Note that, once saved, the column RW CAREWare Test Definition ID will be filled with the test definition the user has selected. This is important because it shows which test definitions have been mapped and which ones have not.

Map Test Definition and Qualitative Results Form CAREWare 4.1 (Central Administration)



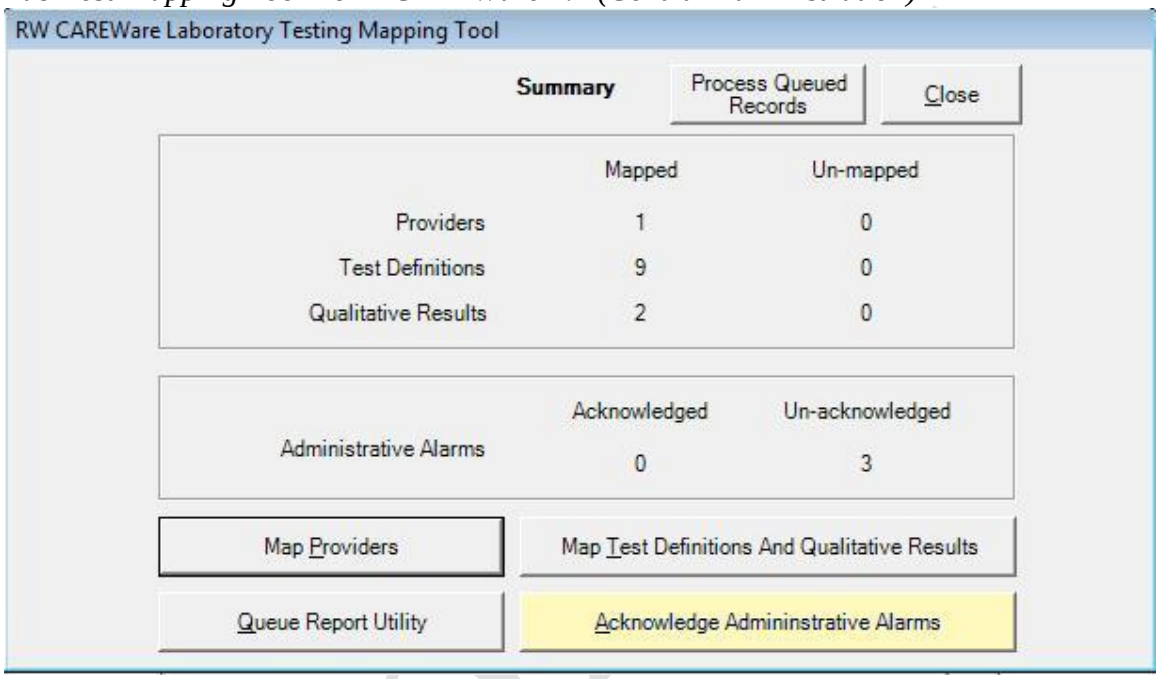
Map Result

Once a qualitative test definition is mapped to an HL7 test, the user can select the mapped qualitative lab definition to enable the Map Qualitative Results button. That button brings up the Map Qualitative Results screen, where the user can map the HL7 qualitative result to a result defined in CAREWare. The list is populated with results associated with the test definition the user selected in the Map Test step. Once the result is mapped, the status will change from "Map Result" to "Complete". (Congratulations, you have successfully completed the lab import process!) The user can verify that the lab was imported by checking the CAREWare client's clinical encounters.

Administrative Alarms

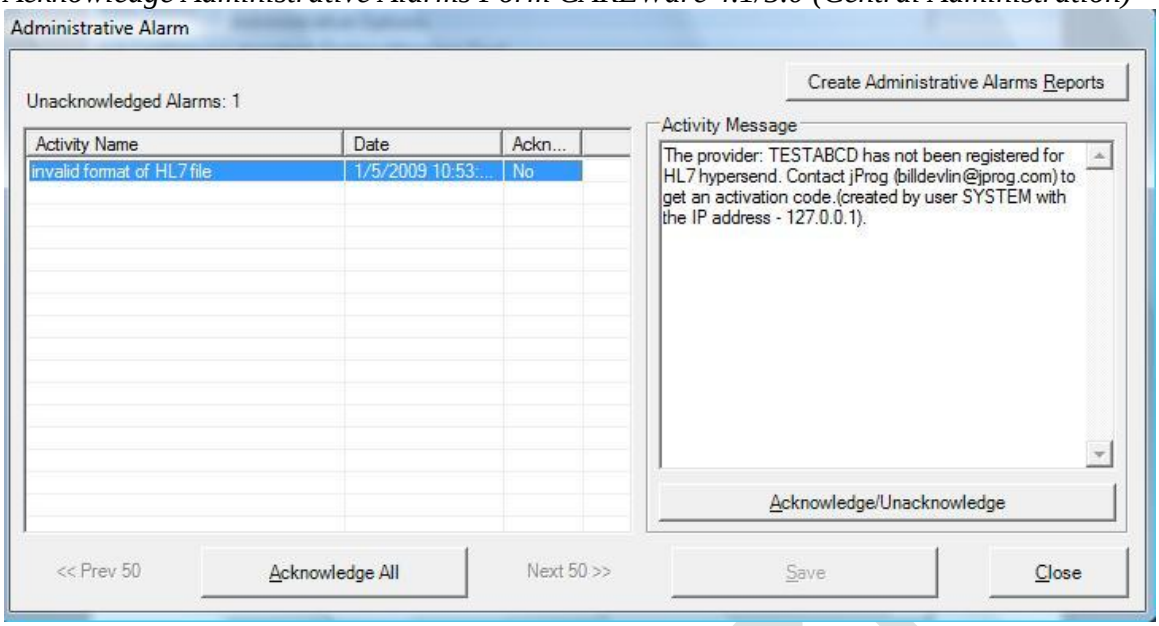
Throughout the lab import process, CAREWare generates alarms when error occurs. These alarms advise the user about what is needed to complete a particular step. To access the alarms, the user should click on Acknowledge Administrative Alarms button on the Lap Test Mapping Tool screen.

Lab Test Mapping Tool Form CAREWare 4.1 (Central Administration)



This document will concentrate on the most common of those alarms. The first alarm that a user will most likely come across is a provider not registered alarm. This alarm looks like this:

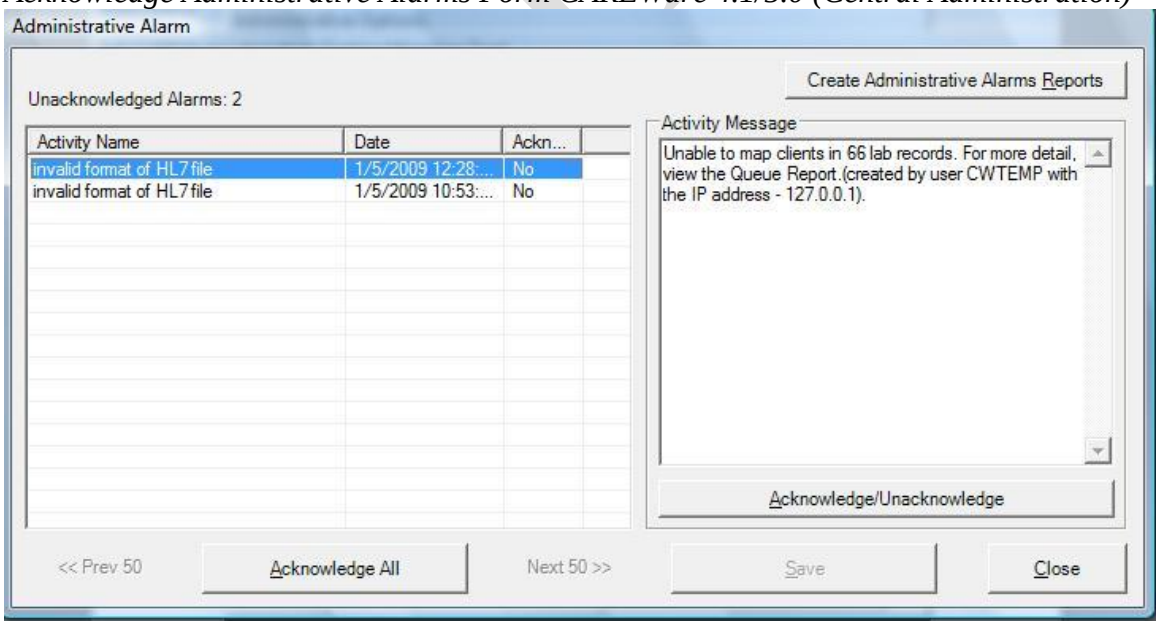
Acknowledge Administrative Alarms Form CAREWare 4.1/5.0 (Central Administration)



To solve this problem, the user needs to do the Code Activation step in the mapping process.

Another alarm that a user may come across is the Client Not Found alarm. This alarm tells the user that he or she needs to map one or more clients. The alarm looks like this:

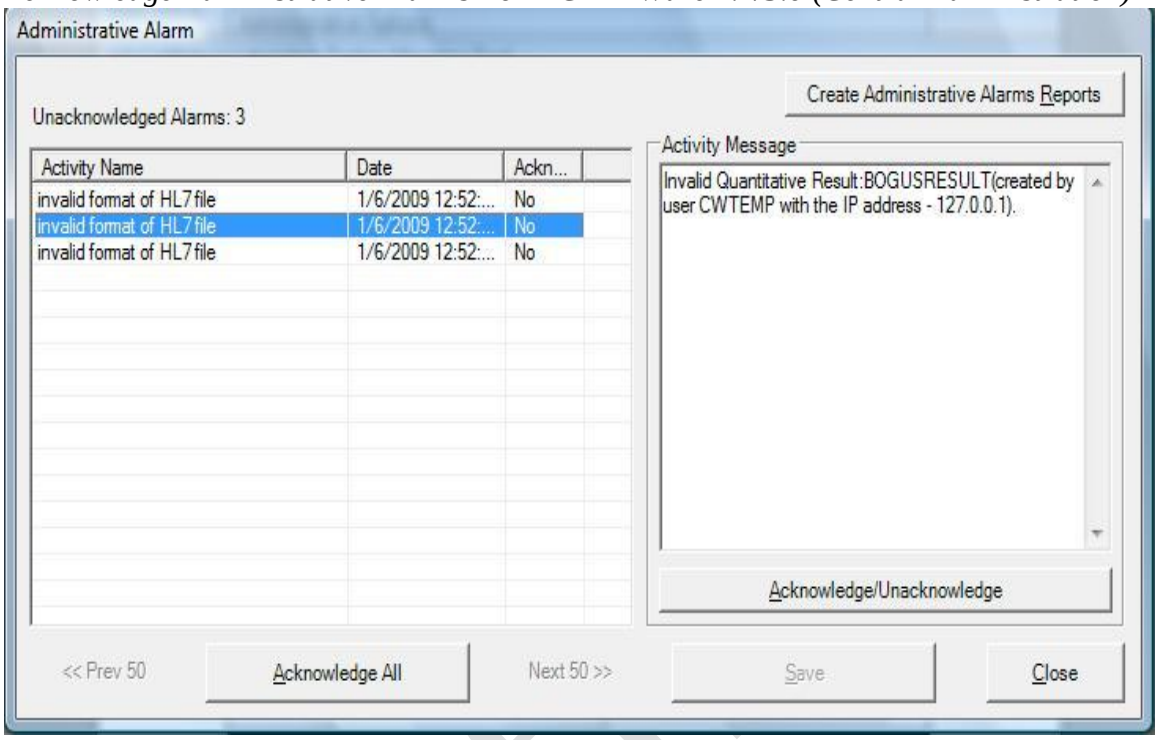
Acknowledge Administrative Alarms Form CAREWare 4.1/5.0 (Central Administration)



An alarm will generate if a user tries to map a qualitative result to a quantitative result. In this case, the status of the import will be Invalid Quantitative Result. To resolve this problem, the user should correct the test definition mapping as described in the Map Test

step. The user must find the test that was mapped incorrectly and map it to a correct one. The alarm will look like this:

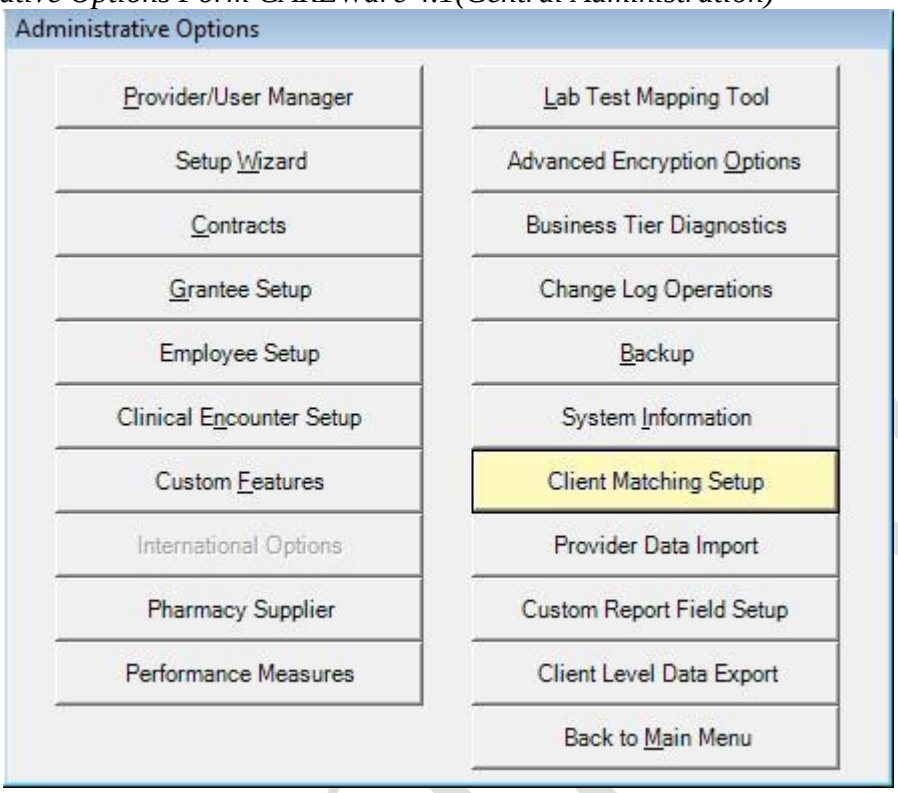
Acknowledge Administrative Alarms Form CAREWare 4.1/5.0 (Central Administration)



Client Demographic Threshold Score and Deductions

The client demographic threshold is a secondary check against data entry errors. CAREWare first tries to match the client by its comparing the ID in the incoming record to the IDs specified in the Map Provider step. If there is a match, CAREWare tries to match the client record using demographic information. The threshold determines how strict the match needs to be for matching demographic fields. The demographic fields used for matching are first name, last name, date of birth, and gender. Each client starts with a score of 100. For each misspelled letter or date, CAREWare reduces the score. The value of each reduction is based on values set by the user. To set the values, the user should go to Administrative Options and Client Matching Setup.

Administrative Options Form CAREWare 4.1(Central Administration)



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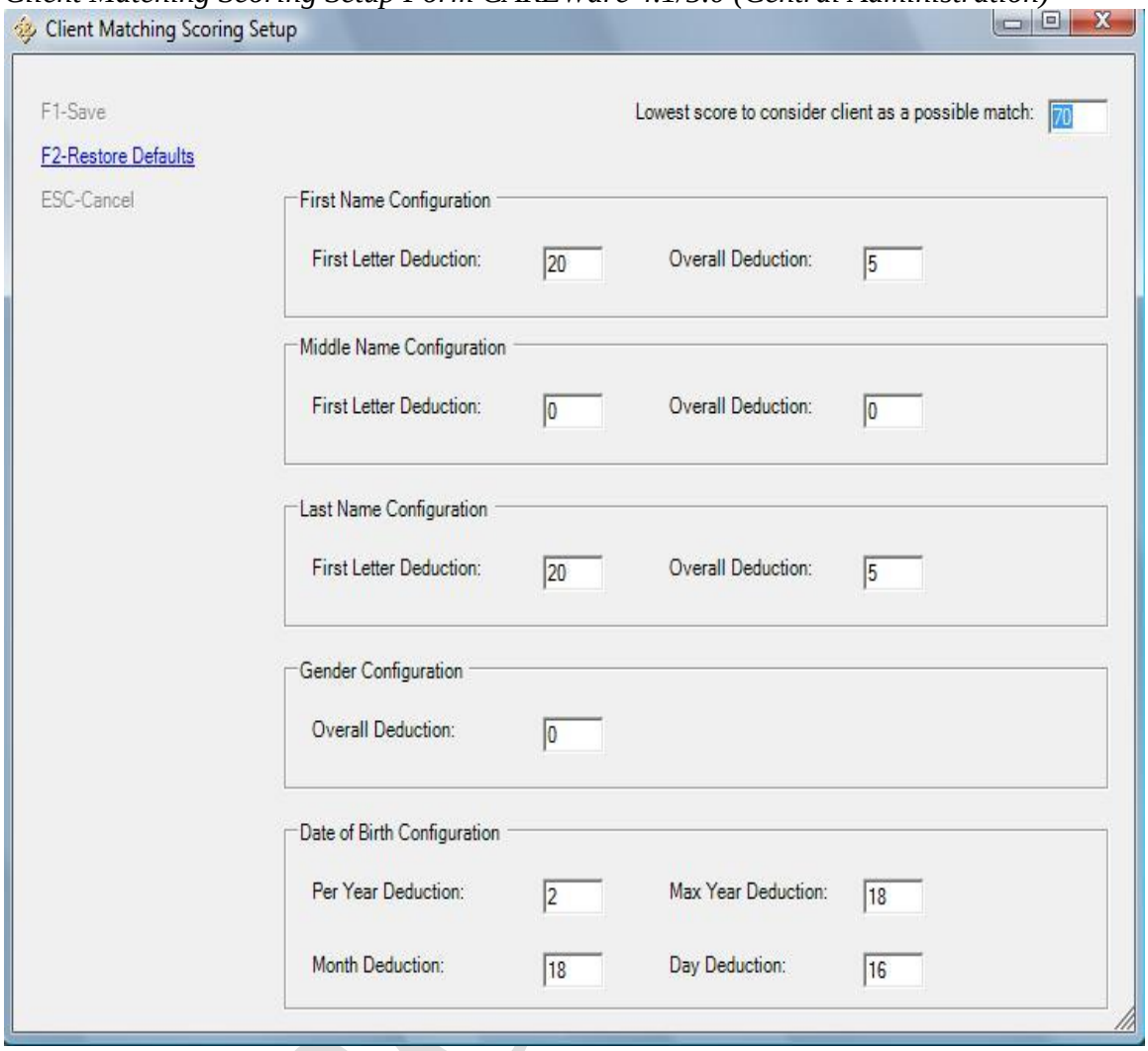
Client Matching Scoring Setup Form CAREWare 4.1/5.0 (Central Administration)



Here users can choose how much to deduct for each demographic field. If a client record matches completely, then its score will remain 100. If the client record has a misspelled last name, however, the score may be deducted to 80. As long as this score exceeds the threshold, the client will be mapped to that particular client. If not, the client will fall into the queue of unmapped clients and its status will be Client Not Found. In this case, the user has to manually map the client as described in the Client Not Found step. The default value set by CAREWare for the threshold for lab imports is 75.

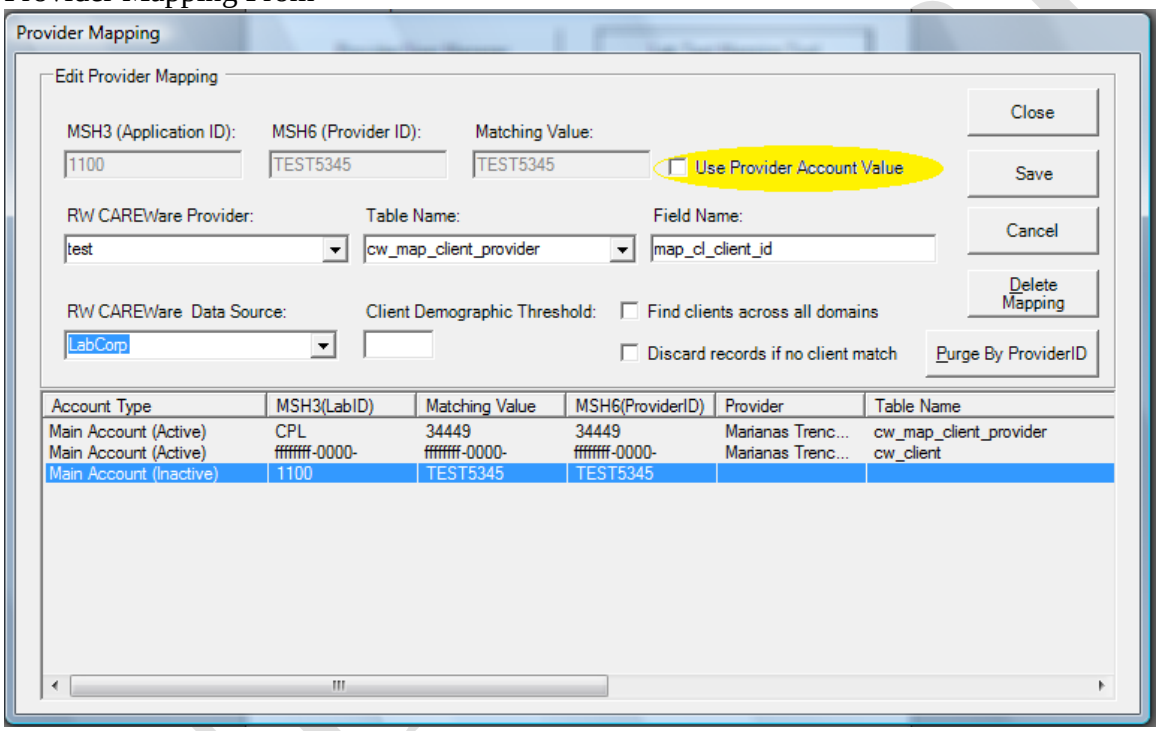
New HL7 features found in CAREWare 5

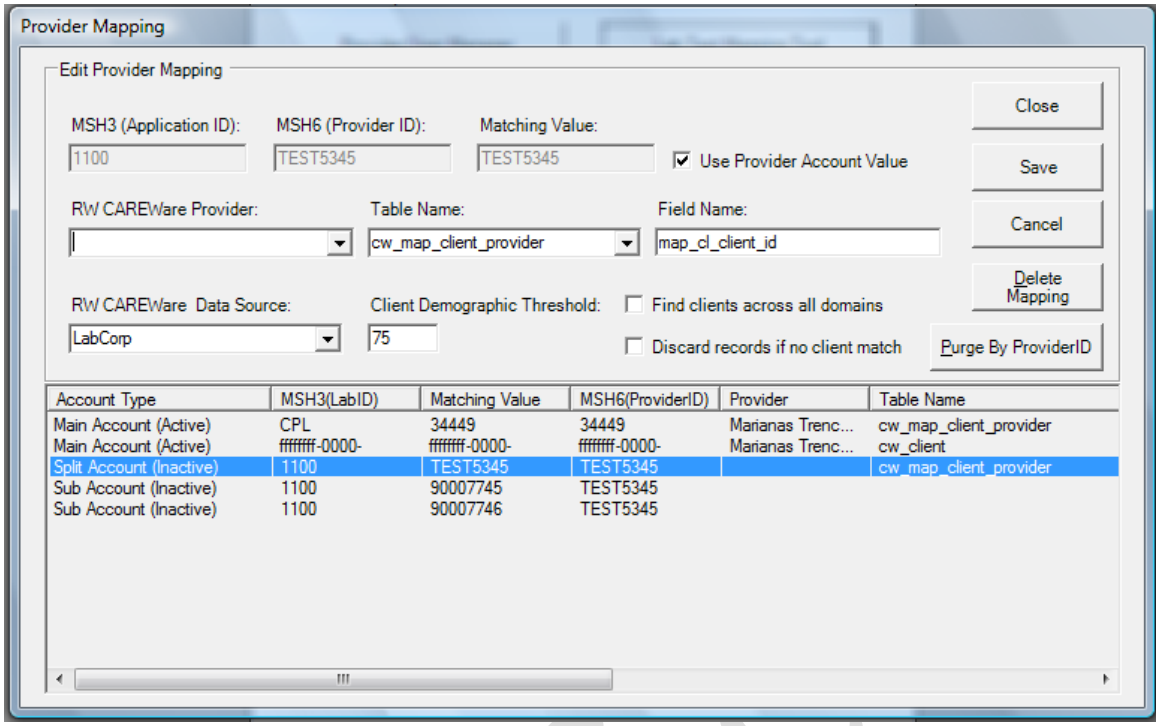
Domain Specific Changes

In cases where CAREWare needs to import data to different domains using Lab Corp's HL7, a new feature is added to identify separate domains by the Provider Account value

(PID 18 field). In order to use the Provider Account value, the data source needs to be from Lab Corp. The user will fill out the provider mapping as stated in the "Map Provider" section. The difference is when they choose Lab Corp. A checkbox will be visible to allow them to use the Provider Account value as the matching domain field. Once checked and saved, CAREWare will use the original MSH6 as a split identifier. Any file that contains that MSH6 will be directed to use the Provider Account field. After the records are processed again, the user will notice sub accounts below the main account that they have just split. The user will have to create mappings for these sub accounts. Each sub account should be mapped to different domains. It is ok if two or more sub accounts are mapped to one domain. Any sub account will need a new activation code before data can be imported to client records.

Provider Mapping From





Client Specific Changes

There are a few sites that want to search across domains to see if a client matches when using HL7. The "Find clients across all domains" checkbox will do this for them. If a client is found and the client does not belong to the domain then the data is going to, this will add that client to that domain automatically.

Another feature is to delete any clients that it does not find a match for. This is primarily for sites that are unable to filter out their CAREWare clients prior to sending HL7 files for CAREWare to process. This feature should be used with caution since it will force any records that normally would go into the manual client not found queue to be deleted automatically.

For any site that needs to know more details about a client before manually matching the incoming records to that client, CAREWare has added a Get Client Details link in the HL7 Client Mapping form. Once a user selects a client they want to know the details about and clicks F4 Get Client Details, the client form will be available directly from there. This should eliminate having to leave the form to do look up a client.

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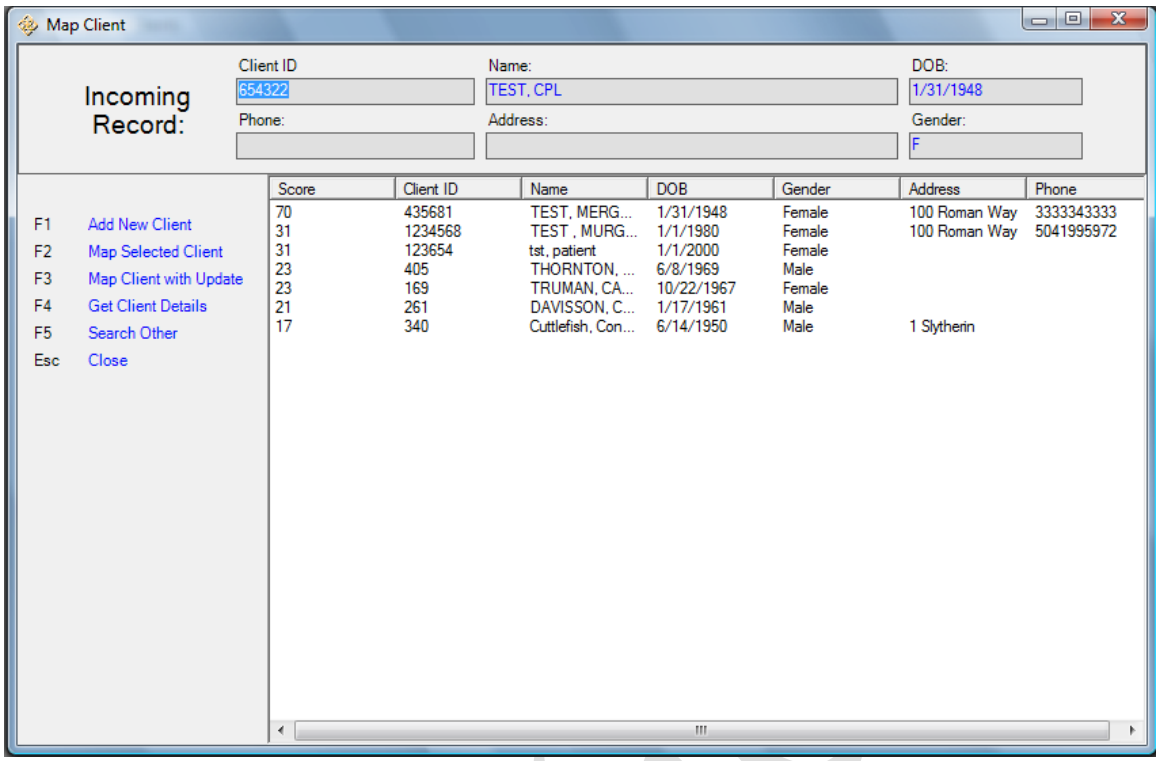
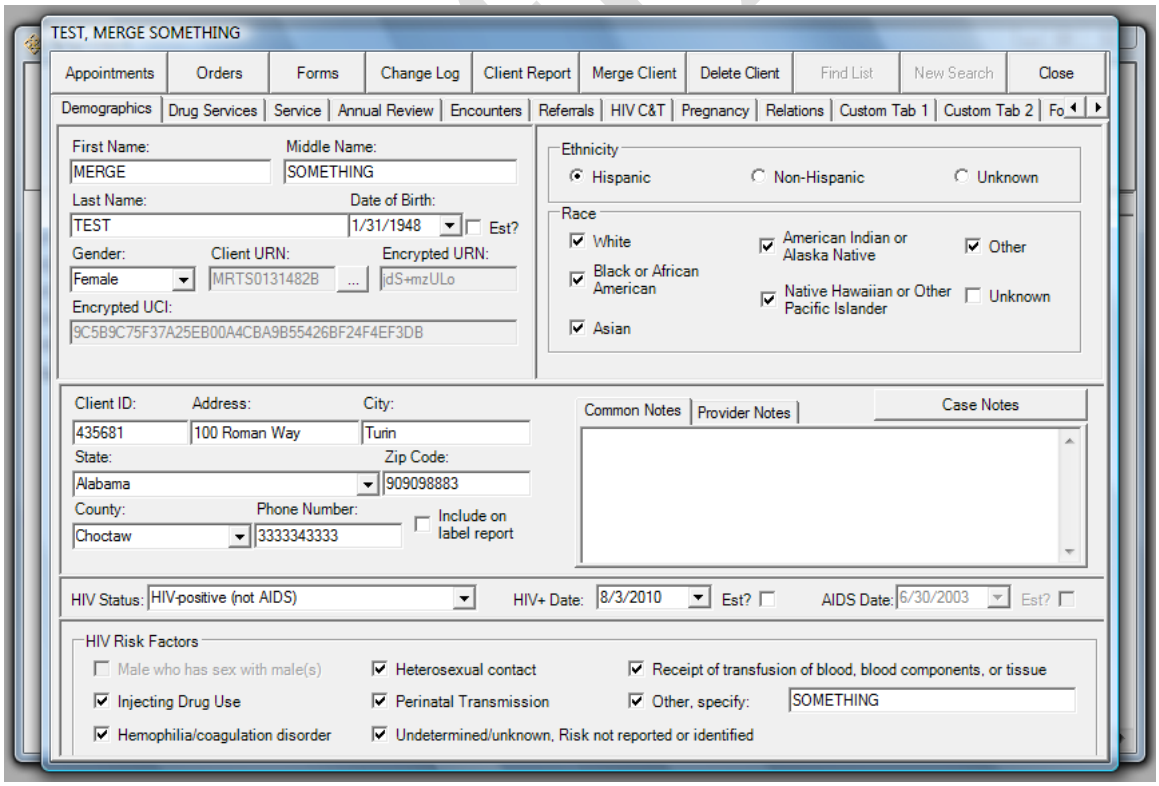
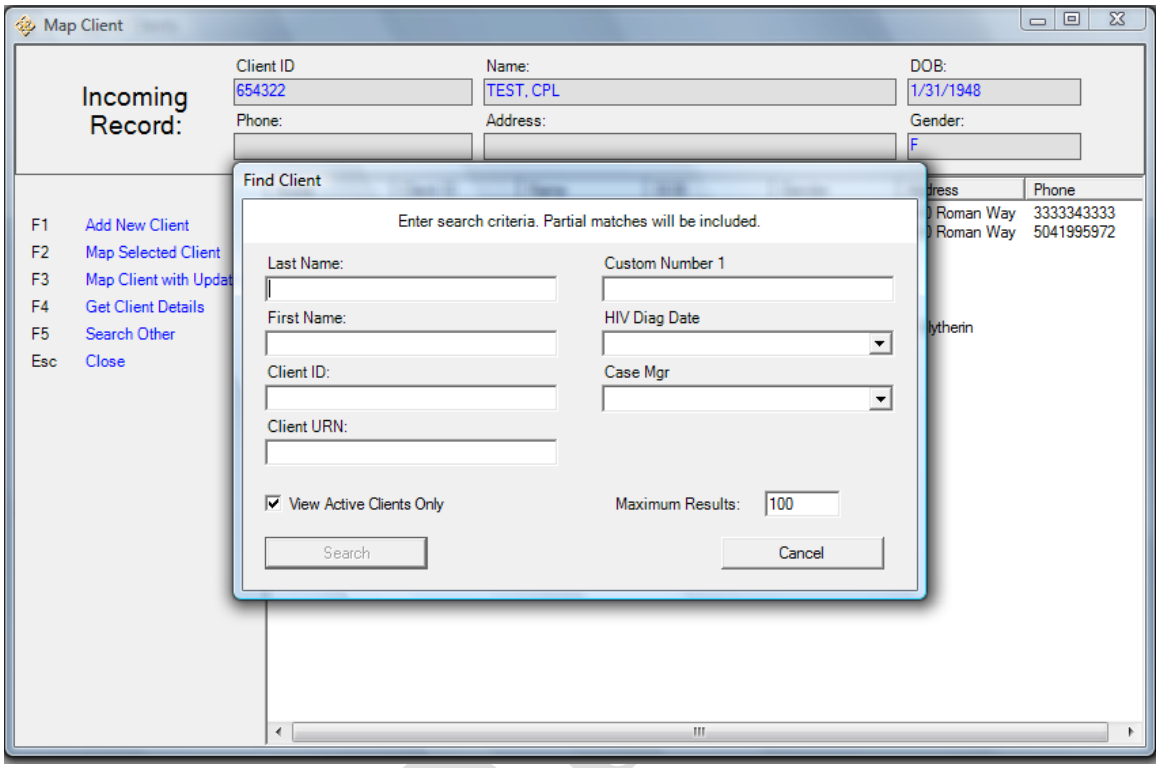
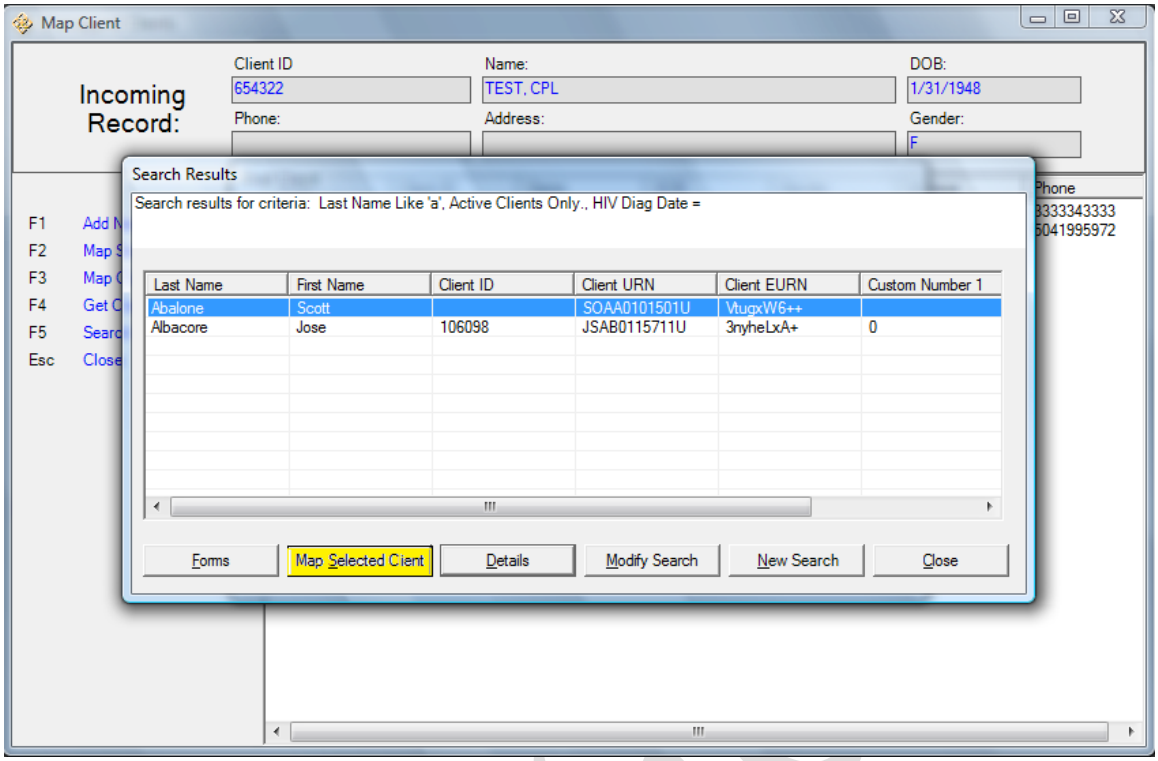

Map Client
Incoming Record:
Client ID
654322
Name:
TEST, CPL
DOB:
1/31/1948
Phone:
Address:
Gender:
F
F1 Add New Client
F2 Map Selected Client
F3 Map Client with Update
F4 Get Client Details
F5 Search Other
Esc Close
Score | Client ID | Name | DOB | Gender | Address | Phone
70 | 435681 | TEST, MERG... | 1/31/1948 | Female | 100 Roman Way | 3333343333
31 | 1234568 | TEST , MURG... | 1/1/1980 | Female | 100 Roman Way | 5041995972
31 | 123654 | tst, patient | 1/1/2000 | Female
23 | 405 | THORNTON, ... | 6/8/1969 | Male
23 | 169 | TRUMAN, CA... | 10/22/1967 | Female
21 | 261 | DAVISSON, C... | 1/17/1961 | Male
17 | 340 | Cuttlefish, Con... | 6/14/1950 | Male | 1 Slytherin


TEST, MERGE SOMETHING
Appointments | Orders | Forms | Change Log | Client Report | Merge Client | Delete Client | Find List | New Search | Close
Demographics | Drug Services | Service | Annual Review | Encounters | Referrals | HIV C&T | Pregnancy | Relations | Custom Tab 1 | Custom Tab 2
First Name: MERGE
Middle Name: SOMETHING
Last Name: TEST
Date of Birth: 1/31/1948
Est?
Gender: Female
Client URN: MRTS0131482B
Encrypted URN: jdS+mzULo
Encrypted UCI: 9C5B9C75F37A25EB00A4CBA9B55426BF24F4EF3DB
Ethnicity: Hispanic | Non-Hispanic | Unknown
Race: White | American Indian or Alaska Native | Other | Black or African American | Native Hawaiian or Other Pacific Islander | Unknown | Asian
Client ID: 435681
Address: 100 Roman Way
City: Turin
State: Alabama
Zip Code: 909098883
County: Choctaw
Phone Number: 3333343333
Include on label report
Common Notes | Provider Notes | Case Notes
HIV Status: HIV-positive (not AIDS)
HIV+ Date: 8/3/2010
Est?
AIDS Date: 6/30/2003
Est?
HIV Risk Factors
Male who has sex with male(s)
Heterosexual contact
Receipt of transfusion of blood, blood components, or tissue
Injecting Drug Use
Perinatal Transmission
Other, specify: SOMETHING
Hemophilia/coagulation disorder
Undetermined/unknown, Risk not reported or identified

Another link that was added is the Search Other. This is for cases where the user believes that there is a potential match but no patients or incorrect patients appear on the potential matches list. The user can do a custom search through the domain. If there are results and the user wants to use a particular patient to match, they can do so directly from the search results form.





Test Import Changes

Three major changes were added to the HL7. One is a way to import assay when viral load tests get imported. Another is a way to import HL7 Status and HIV/AIDS date. Lastly there's a feature to set up a range map for qualitative results.

When users select a viral load definition to map a particular test, a new drop down box will be visible. This new drop down box contains the available assays that will be mapped to the specified incoming test. Users can leave this value blank if they do not want to link an assay to the viral load test.

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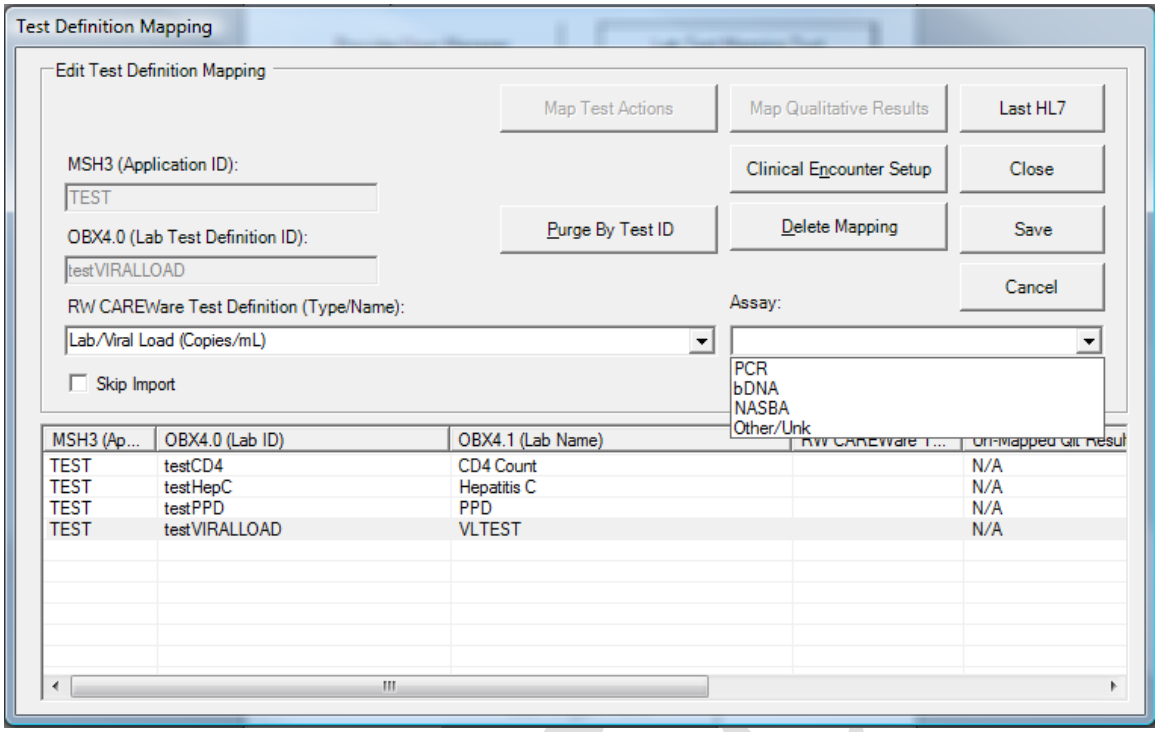


There is no mapping involved with the HIV Status and HIV/AIDS dates. CAREWare uses the NTE segments that follow the PID Segment to hold this data. Since there's no mapping involved, the HIV Status values must follow CAREWare's HIV status values. The values are below:

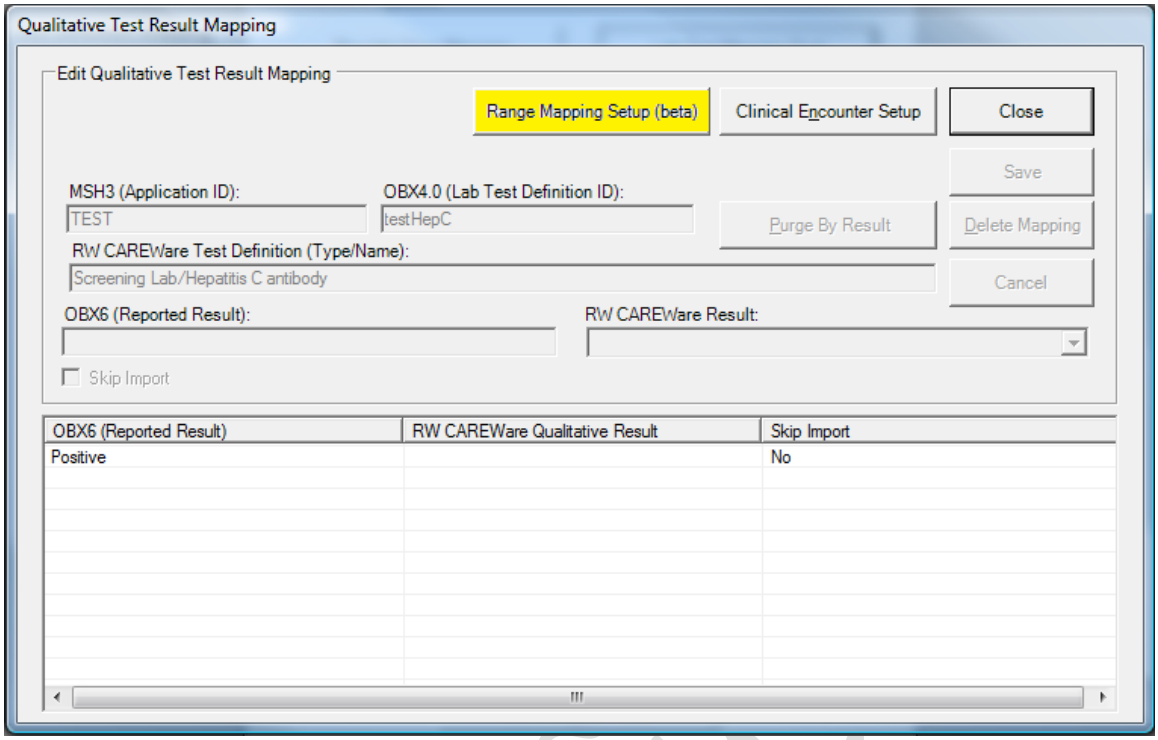
HIV-positive(not AIDS):	1
HIV-positive(AIDS status unknown):	2
CDC defined AIDS:	3
HIV-negative(affected)	4
HIV-indeterminate	5
Unknown	9

The HL7 element that holds the HIV Status is in the NTE segment in position 4 sub element 0. The HIV date is in the NTE segment in position 4, subsegment 1, The AIDS date is in the NTE segment in position 4, sub segment 2. CAREWare will process this if the NTE segment follows right after the PID Segment.

NTE|1|L|Comments|HIVStatus^HIVDate^AIDSDate

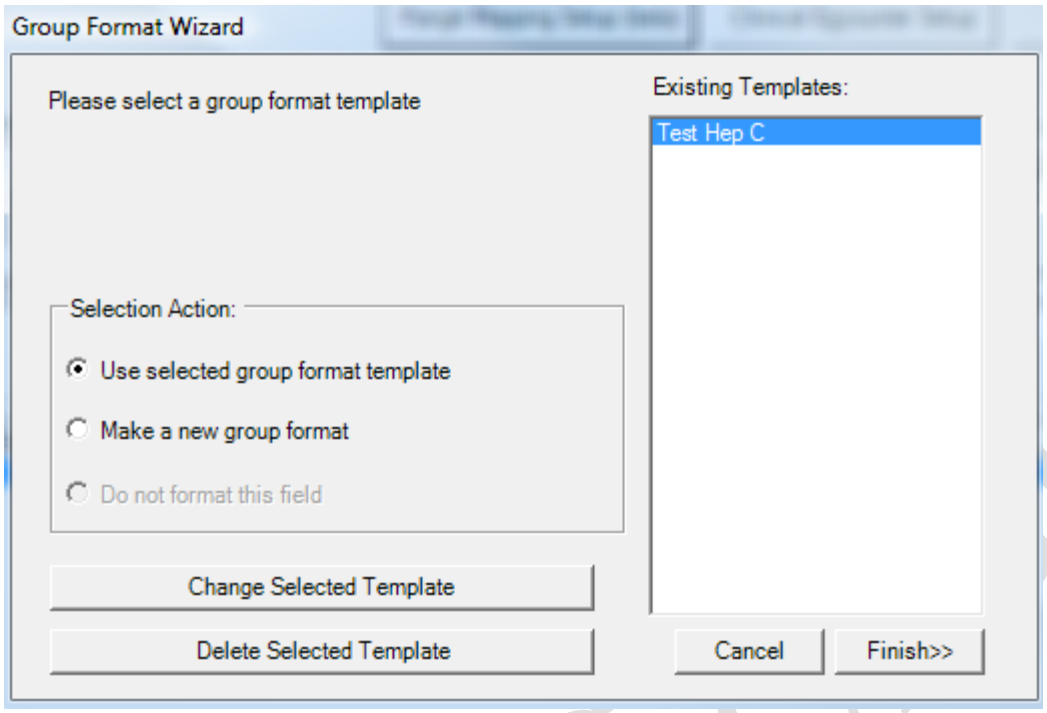
The range mapping is a feature added to auto map quantitative values to qualitative results for CAREWare's screening or screening labs. To access this, the user must choose the screening or screening lab that has been mapped to CAREWare's screening. The feature is accessed in the Map Qualitative Results form.

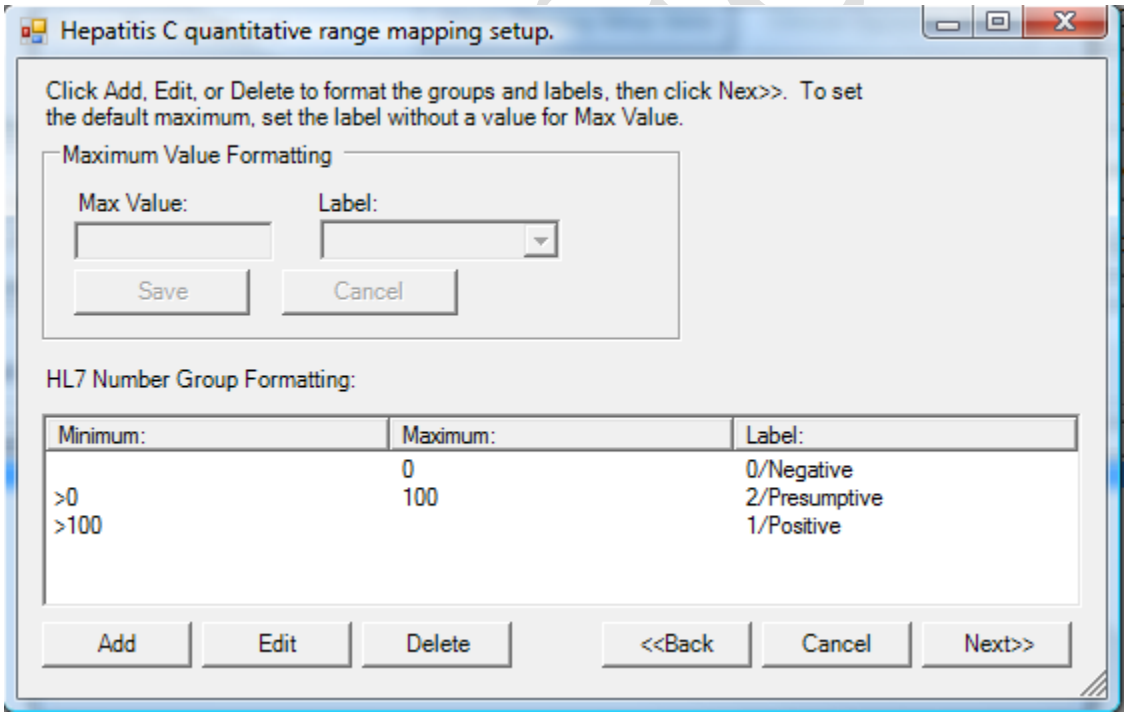
Unofficial

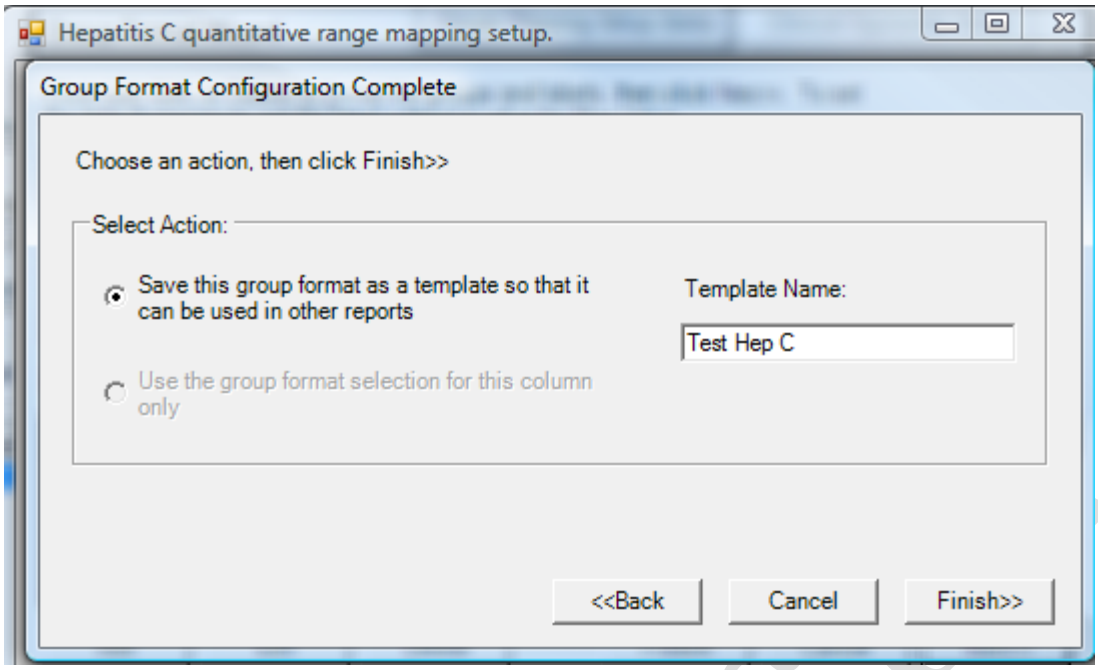


Users can use predefined range mappings or create new ones. In order to set up the range, the user must decide what the uppermost maximum value is and work backwards. For instance, if the user wants to create a range mapping that follows negative infinity to 0 is negative, greater than 0 to 100 is presumptive, and anything over 100 is positive, they must start with positive. User should not set a max value for the uppermost range. Once the range is set, values will automatically map themselves if they fall in these ranges. It will work for quantitative values only. Values with operators (<20) are not considered. These must be mapped singularly like other qualitative results.

Unoffic


Group Format Wizard
Please select a group format template
Existing Templates:
Test Hep C
Selection Action:
Use selected group format template
Make a new group format
Do not format this field
Change Selected Template
Delete Selected Template
Cancel
Finish>>


Hepatitis C quantitative range mapping setup.
Click Add, Edit, or Delete to format the groups and labels, then click Nex>>. To set the default maximum, set the label without a value for Max Value.
Maximum Value Formatting
Max Value:
Label:
Save
Cancel
HL7 Number Group Formatting:
Minimum:
Maximum:
Label:
0
0/Negative
>0
100
2/Presumptive
>100
1/Positive
Add
Edit
Delete
<<Back
Cancel
Next>>



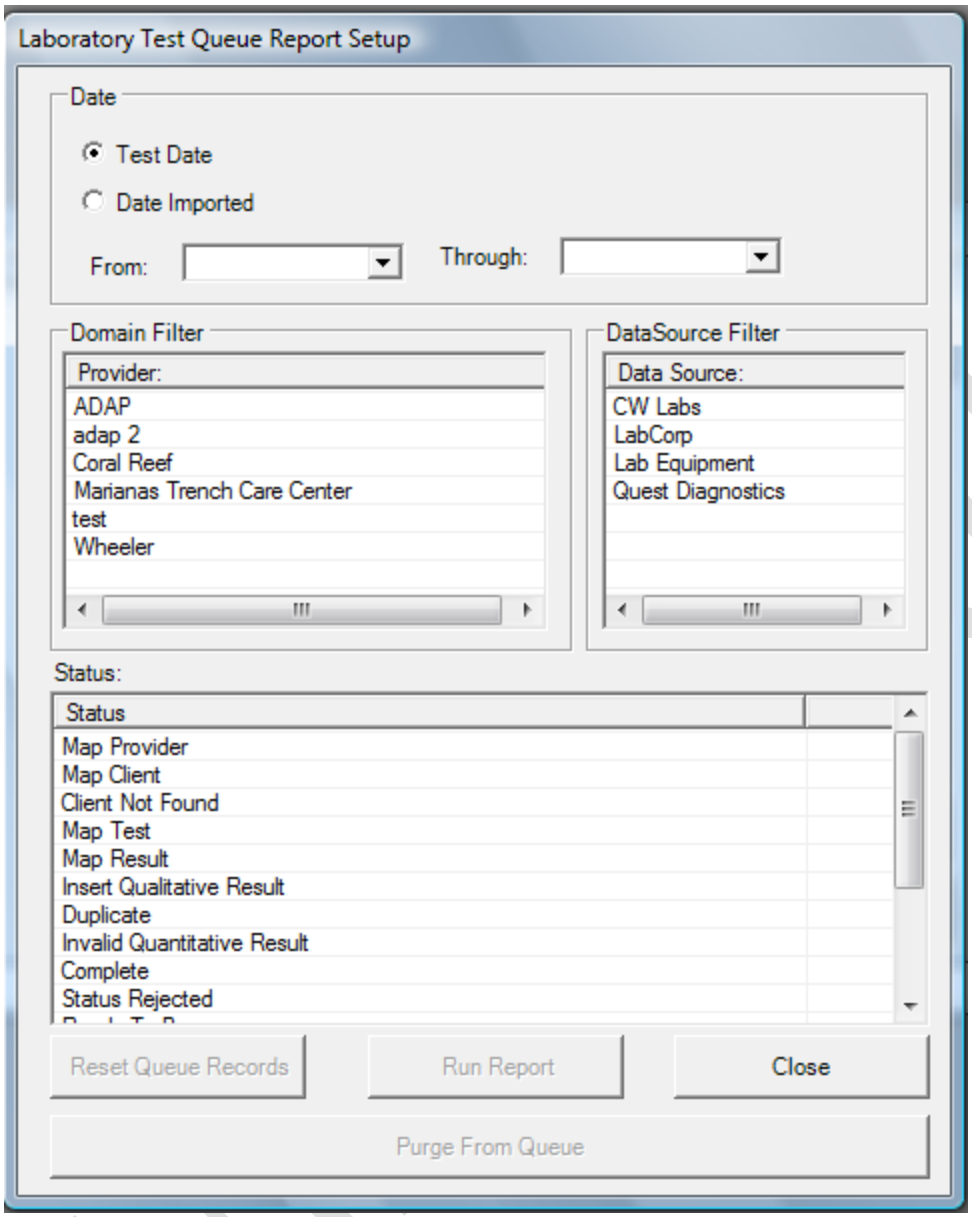
General Changes

The mapping tool has added a few delete methods to each of its mapping forms. The user can now delete the mappings or purge all records with a particular identifier. The mapping deletes can only be done if no records in the database are currently using it. Each stage has its own identifier to purge records. They are as follows:

1. Purge By Provider MSH3 and MSH6 (Sending ID and Receiving ID)
2. Purge By Test MSH3 and OBX 4.1 (Sending ID and Test Code)
3. Purge By Result OBX4.1 and OBX 6 (Test Code and Test Result)

Since more and more sites are now importing from multiple data sources and routing them to different domains, filters have been added to the Queue report utility. These filters will allow the user to check, reset, or purge the HL7 status by domain, data source, or both.

Unofficial


Laboratory Test Queue Report Setup
Date
Test Date
Date Imported
From:
Through:
Domain Filter
Provider:
ADAP
adap 2
Coral Reef
Marianas Trench Care Center
test
Wheeler
DataSource Filter
Data Source:
CW Labs
LabCorp
Lab Equipment
Quest Diagnostics
Status:
Status
Map Provider
Map Client
Client Not Found
Map Test
Map Result
Insert Qualitative Result
Duplicate
Invalid Quantitative Result
Complete
Status Rejected
Reset Queue Records
Run Report
Close
Purge From Queue