Chapter 20: Searching for Records and Patients

There are three search tools in SEER*DMS: Quick Search, Patient Lookup, and Data Search. Use the Quick Search or Patient Lookup when you are looking for a specific patient's data. Use the Data Search to review a set of patient sets or records; or to create an extract file containing patient set or record data fields.

- **Quick Search** – If your search is based on a single data field, enter the field's value into the Lookup box on the user bar. You may search for a patient's data by entering a Patient Set ID, Record ID, Import ID, patient name, date of birth, or SSN. The Quick Search also provides a shortcut for opening an AFL, follow-back need or group, contact, facility, or worklist task. It is a shortcut to the Data Search for searches based on Import ID or a list of Patient Set or Record IDs.
- **Patient Lookup** – Use the Patient Lookup to search for a patient's data based on multiple search fields or to search on fields not supported by the Quick Search. You may enter search values for standard patient identifiers such as name, SSN, date of birth, sex, accession number, and medical record number.
- **Data Search** – The Data Search allows you to define robust search criteria based on any record or patient set field, Import ID, Special Study ID, or type of worklist task. You may search for a set of records or patient sets by entering a list of Patient Set/Record IDs. Use the Data Search to assign patient sets or records to Quality Control tasks, to review unusual data, or to create small ad hoc extract files.

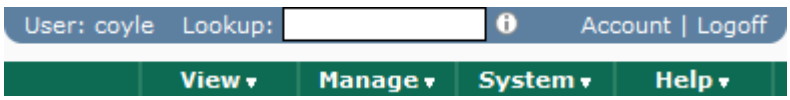
Once you find the data of interest, you may view or edit the data in the record or patient set editor. However, you must take precautions to ensure that you do not modify data that are being processed by others. To avoid the loss of effort, you should verify that the data are not involved in worklist tasks and are not being edited by another staff member (please refer to the *Direct Editing of Records and Patient Sets* section of this chapter for more information).

In this chapter, you'll learn about

- Quick Search
- Patient Lookup
- Data Search
- Data Search Action Menu
- Creating SQL Data Searches
- Direct Editing of Records and Patient Sets

Quick Search

The Lookup search box on the SEER*DMS user bar allows you to do quick searches. It will only be available if you have system permissions to view and/or edit patient data.



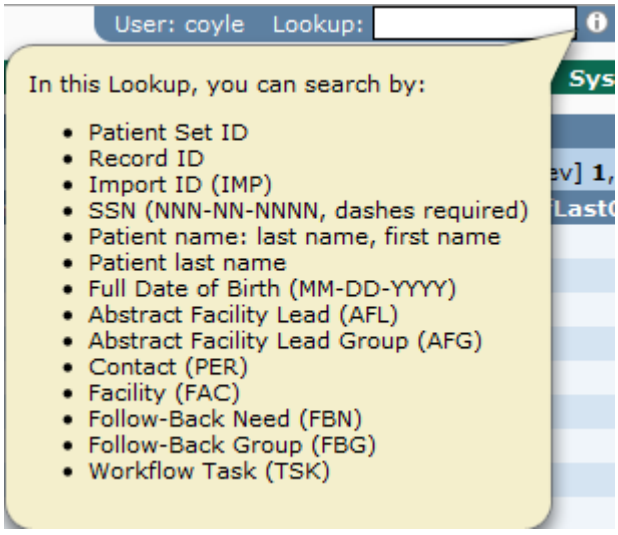
Enter the search text into the Lookup box and press Enter. If you enter a string consisting of all digits, the search will assume that you are searching by Record or Patient Set ID. The search fields supported by the Quick Search are listed below.

- **Patient Set or Record ID**. To open a patient set or record in the editor, simply enter the ID into the Lookup box. The ID prefix is optional (PAT-12345678 or 12345678 will work).

The patient set or record matching the ID will open automatically. To search for a set of patient sets or records, enter a list of IDs separated by blanks or commas. The Data Search will be opened and the ID filter will be set. The Data Search does not allow you to search for patient sets and records at the same time, therefore, the first ID will determine whether it is a record or patient set search.

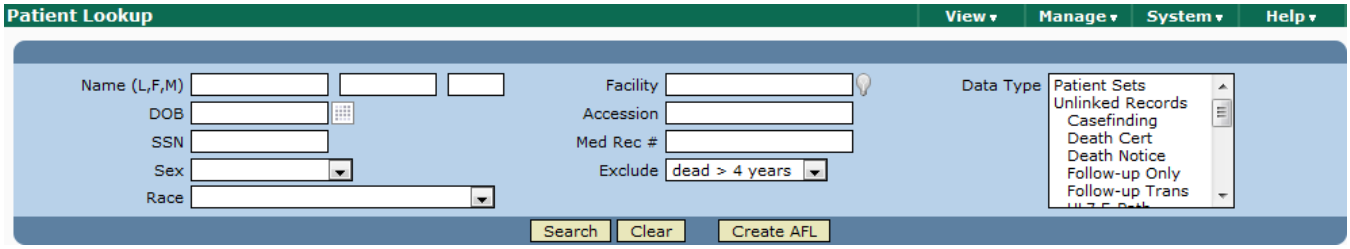
- **Patient Name.** You may enter "last name" or "last name, first name" into the Lookup box. The Patient Lookup will open and display the results of your search.
- **Date of Birth.** MM-DD-YYYY format is required. A valid month and year are required by the Quick Search. You may enter 99 for unknown day. The Patient Lookup with be opened with the results of your search. Patient Lookup results are limited to 100 matches.
- **Social Security Number**. A complete SSN in the 99-99-9999 format is required. The Patient Lookup will be opened with the results of your search.
- **Import ID**. Enter an Import ID into the Lookup box to search for records in that import. The IMP prefix is required. The Data Search will automatically open. The fields displayed by default are determined by registry configuration settings. Data Search permissions are required for searches by Import ID.
- **Worklist Task ID**. Enter a single Worklist Task ID with the TSK prefix. The worklist will automatically open and the worklist filters will be set to show the specified task.
- **AFL, Contact , Facility, or Follow-back Need ID –** If you have the appropriate permissions, you may open an AFL, Contact, Facility, or Follow-back Need by entering the appropriate ID. The AFL, PER, FAC, or FBN prefix is required. This allows you to bypass the manager when you wish to view a specific AFL, Contact, Facility or Follow-back Need.
- **AFL or Follow-back Group ID**. Enter a single Follow-back or AFL Group ID (the FBG or AFL prefix is required). The AFL or Follow-back Manager will automatically open and the filters will be set to show the items in that group.

Click the information icon next to the Lookup box for a reminder of the search fields that are supported.



Patient Lookup

The Patient Lookup can be accessed from the View menu or you can click the Lookup link in the user toolbar. The Patient Lookup enables you to search for a patient's data based on personal identifiers (Name, DOB, SSN, Sex, Race, Accession Number, Medical Record Number). The Data Type, Facility, and Exclude criteria can be used to limit the search to a subset of data.



Search Fields in the Patient Lookup

SEER*DMS uses registry-specific matching algorithms to compare the patient information specified in the search fields to patient sets and unlinked records in the database. The Patient Lookup matching algorithm is documented on the Matching help page in SEER*DMS.

A weighted matching scheme may be implemented in the registry-specific algorithm. In weighted matching, a score calculated for each possible match provides a mechanism to sort the results by the likelihood of the match. Entering multiple identifiers quickens the search and increases the score of true matches. It is recommended that you enter information into as many fields as possible or enter a unique identifier, such as Social Security Number. If searching for a patient with a common name, it is particularly important to enter values into as many search fields as are known. At a minimum, you must enter one of these fields; SSN, Last Name, DOB, Accession Number, or Medical Record Number.

The Standard search fields are listed below.

- **Name (L,F,M)** – Three search fields are provided for searching by patient name. You may enter a full or partial name in any or all of the boxes. The boxes are displayed in the order of last name, first name, middle name. However, you may enter "Last, First" into the first box. SEER*DMS will automatically parse the text into the two fields for the search.
- **DOB** – Enter date of birth in MMDDYYYY or MM-DD-YYYY format. If you only know the patient's year of birth, enter 99 for day and month (e.g., 99-99-1961). A valid month and year are required when other patient identifiers are not specified (last name or social security number).
- **SSN** – A complete Social Security Number must be entered. The value may be formatted as 999999999 or 999-99-9999.
- **Sex** – A drop-down list enables you to search for data based on a valid code for sex.
- **Race** – A drop-down list enables you to search for data based on a valid code for race. One value for race may be selected.
- **Accesion** – A complete Accession Number must be entered. Accession Number is the facility's identifier for a CTC. A search by Facility ID and Accession Number should return a single result. However, if you do not know the Facility ID or believe the facility may be coded incorrectly then you should search only by Accession Number.
- **Med Rec #** – A complete Medical Record Number (MRN) must be entered. Medical Record Number is the facility's identifier for a patient. Two or more patients may have the same Medical Record Number if those MRNs were assigned by different facilities. You have the option of searching by Facility ID and MRN (one result should be returned); or you may search by MRN without the facility, but multiple results may be returned.

You must specify a value for at least one of these fields: last name, Social Security Number, Date of Birth, Accession Number, or Medical Record Number. The Patient Lookup is designed to search for data for a specific patient; you cannot use it to generate a generic list of data by sex, race, record type, or facility. To create such a list, you should either use the Data Search, as described later in this chapter, or query the database using an external tool.

Limiting the Search

You may specify the records and patient sets to be searched by entering values for facility, data type, and the "exclude" field. Unlike the Search Fields, these criteria are never weighted. They are used to make a definite determination of whether a record or patient set is "in" or "out" of the search results.

- **Facility** – Limit the search to patient sets with admissions or treatments related to a specific facility (this may be the reporting or treating facility), or to unlinked records that were provided by the facility. Leave this field blank to search all data regardless of facility.
- **Exclude** – Exclude patient sets and records for patients who have been dead for more than the specified number of years (based on vital status and date of last contact). Leave this field blank to search all data regardless of vital status. The default setting for this field is determined by a User Preference setting. To change the default, click the Account link in the user toolbar (next to the Lookup search box).
- **Data Type** – Search all patient sets and unlinked records, or limit the search to one or more data types. To include linked records in the search, you must include patient sets. The patient set to which the record is linked will be returned. To select more than one data type, hold down the CTRL key and click each desired type. To deselect a type, click it a second time while holding the CTRL key.

Executing the Search in the Patient Lookup

Enter as much information as known into the form and click Search. As many as 100 matches will be displayed. The results will be sorted by score with the best matches listed first. The results will include records and/or patient sets which, according to your registry's matching algorithms, yielded a score greater than zero when matched using the search and exclusion criteria. To view the algorithm, click the *Patient Lookup* link shown below the results table.

You may click an ID to open a record or patient set in an editor. If the data are involved in a worklist task, a link will be displayed in the Tasks column. The link indicates the user who is assigned to the task or that the task is unassigned. Other data columns are described below.

To search for a new patient, click the Clear button. Patient information that you entered will be removed, the Facility field will be cleared, and the Exclude field will be set to the system default. The Data Type is retained to allow you to search for a specific data type for multiple patients.

Patient Lookup Search Results

The columns listed below are shown in the search matches. The value in the table will be shown in bold if it is an exact match to a search field. If the matching algorithm supports partial matches for Social Security Number and Date of Birth, only the matching fragment will be shown in bold. Fields not listed may have been involved in the search. For example, the matching algorithm may compare last name to maiden name or alias last name.

- **Score** – A value calculated by the matching algorithm that allows the results to be sorted by the likelihood of the match. You may click the score to view a summary of the calculation. Results with the highest score are displayed first.

- **Type** – Data type. Patient Set or a record type will be listed. If the match is a record and the record's reportability status is something other than "reportable", an icon will be displayed:
  - [N] Non-reportable
  - [A] Auditable
  - [U] Unknown (reportability flag not set; screening has not been completed)
  - [N/A] Not applicable; the record type is not screened (e.g., supplemental records)
  - --- No icon is displayed if the record is reportable.
- **ID** – Patient Set or Record ID. Click the Information Icon next to the Record's or Patient Set's ID to see a select set of fields. To browse all pages of the record or patient set, click the Record's or Patient Set's ID.
- **Last Name, First Name, M** – Patient's last, first, and middle name. If the text is an exact match to search criteria, it will be shown in bold. If the name is too long to display, an ellipsis will be shown at the end of the name (…).
- **DOB** – Date of birth.
- **SSN** – Social Security Number.
- **Sex** – Coded value for sex. Hold your mouse over the value to view text description.
- **Race** – Race indicated in the first race field of the patient set or record. Hold your mouse over the value to view text description.
- **DOLC** – Date of last contact.
- **VS** – Vital status.
- **Tasks** – If the data are in a worklist task, a link will be displayed in the Tasks column. The link will be "unassigned" or the username of the person to whom it is assigned.

Data Search

The Data Search can be accessed from the View menu. Use the Data Search if you are:

- looking for a set of records or patient sets that are similar in some way
- and/or you want to create an extract of data fields
- and/or you want to create QC Tasks for a set of data.

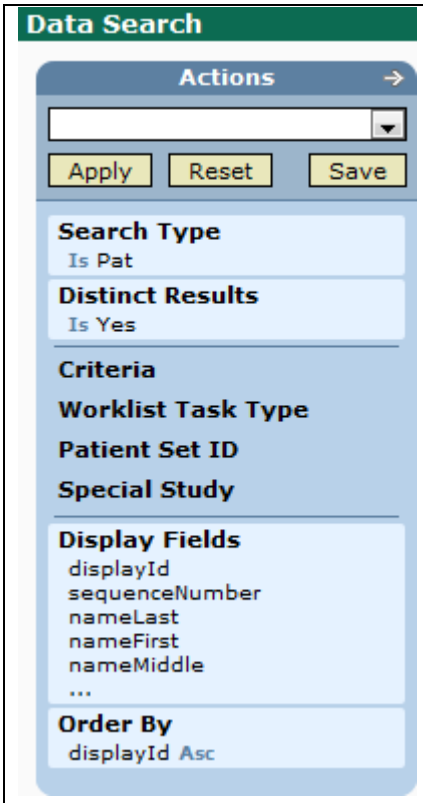
There are several system permissions that control access to the data search. Typically, coders should be given access to Patient Set and Record data searches, but system permissions related to exports and SQL searches should be assigned to a limited number of staff. The system permissions related to data searches are described below.

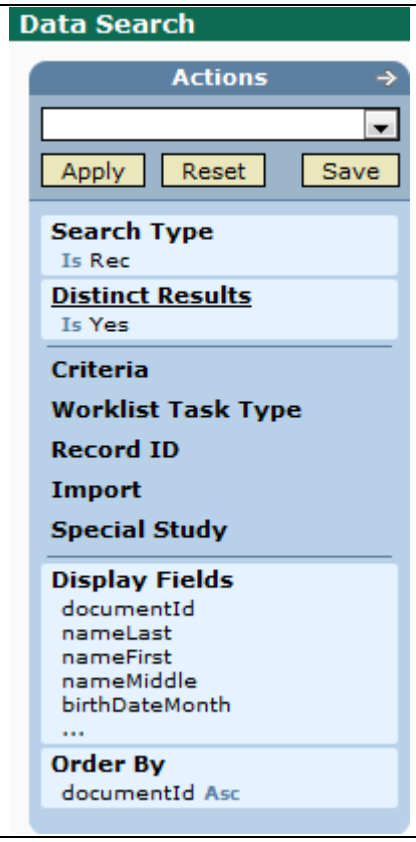
- *data_search_export* – Create export files from listings created in the Data Search. This permission is required to extract data from Patient Set, Record, or SQL searches.
- *data_ search_filter_manager* – Modify, delete, and assign saved searches (or filters) in the Data Search. This gives the user access to all saved searches that they have the ability to execute.
- *data_search_pat* – Create a Data Search to create a listing of patient sets. This permission is also required to search for a set of patient sets by entering a list of patient set IDs into the Lookup box in the toolbar.
- *data_search_rec* – Create a Data Search to create a listing of record. This permission is also required to search for a set of records using the Lookup box in the toolbar.

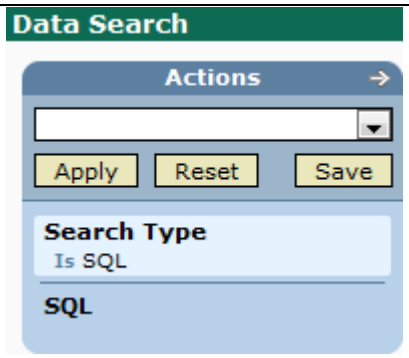
- *data_search_run_sql* – Execute SQL Data Searches. A user with this permission can run SQL searches made available to their account. They cannot create SQL unless they also have the data_search_write_sql permission. They cannot gain access to a saved search unless someone assigns it to their account; or they have the data_search_filter_manager permission.
- *data_search_write_sql* – Create SQL data searches. This provides read only access to all data (patient data, staff productivity, etc.). This permission should be restricted to registry managers, QC managers, and staff who write SQL for managers.

Search Type

In the Data Search, you must set the Search Type first because it will determine the type of fields that are available in other search filters (as shown below). You can search for patient sets or records separately; or you can use SQL to run a query against any table in the database.



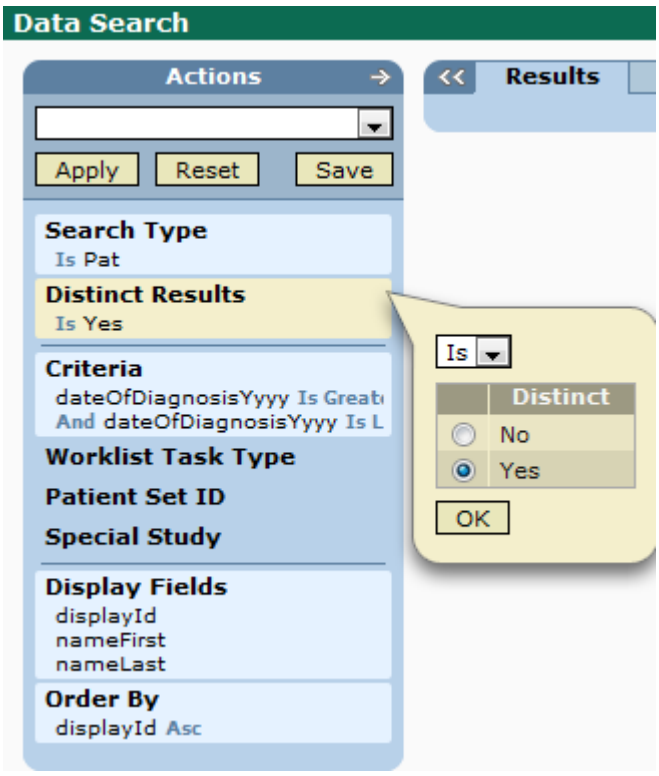




The Patient Set and Record searches have nearly identical filter sets. There is one additional filter for Record searches – the Import ID filter.

SQL searches have just one filter. You can paste SQL into the SQL filter and review the results in the system.

Distinct Results



Distinct Results – if yes, each row in the results will be unique.

If set to No, results may include duplicate rows.

Examples:

-- You search for CTCs diagnosed between 1973-2008

-- And you set your display fields to "Patient Set ID" and "Name"

-- And so the criteria include a CTC-level field, but display fields are all at the patient level.

If Distinct Results = No, you will get duplicates for patients who have 2 or more diagnoses in 1973-2008. "PAT-12345678, John Doe" could be listed twice.

Recommendation: Set Distinct Results to yes. Only set it to no if the query is very slow and you either know that your search cannot include duplicate results; or you do not mind having duplicates in your results.

Distinct Results will prevent you from having duplicates in your results. *It comes into play when the search criteria fields are at a more detailed level than the display fields.* It is strongly recommended that you set it to Yes, but setting it to No will speed up some complicated searches.

Before setting it to No, be sure that you understand that you may have duplicate rows in your results. Review the example shown above. The criteria include a CTC-level field, year of diagnosis, but the display fields are all at the patient level. As an example, John Doe and the Patient Set ID will be listed twice if he had a prostate and a lung cancer diagnosis during those years. If you do want a separate result for each cancer then you should include cancer fields in the result fields (you could include tumor record number, sequence number, or site). If you only want patient name and ID, set distinct to yes so that you only get one result per patient.

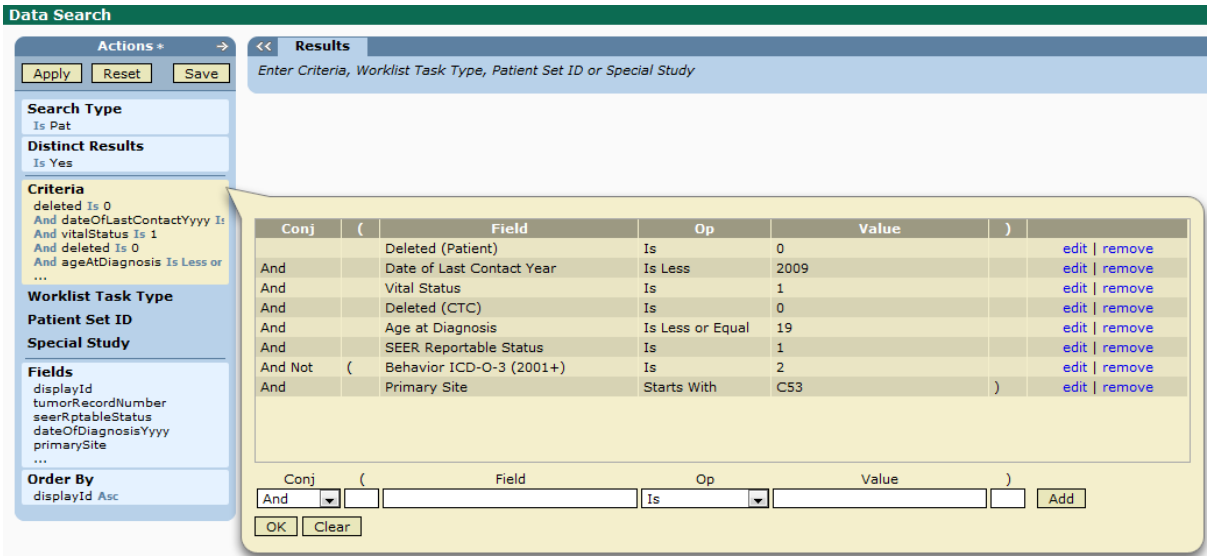
Criteria

The criteria determine which patient sets or records are returned in the results. You can create a fairly complex, multi-line statement. The lines are joined with conjunctions: "and", "or", "and not", "or not"; and you can enter parentheses when the Boolean logic requires it. Be sure to click the OK button when you have completely defined the criteria.

Your search will return a result set based on the full criteria statement and-ed with all other filters. For example, the result set for a Patient Set Search is determined as follows.

Patient Set Results = *Criteria Statement* + *Worklist Task Filter* + *ID Filter* + *Special Study Filter*.

Only use a filter to reduce a list. A filter should be cleared if you want all items regardless of that filter's values. For example, do not select anything in the Worklist Task Type filter if you want all data regardless of whether it is in the worklist.



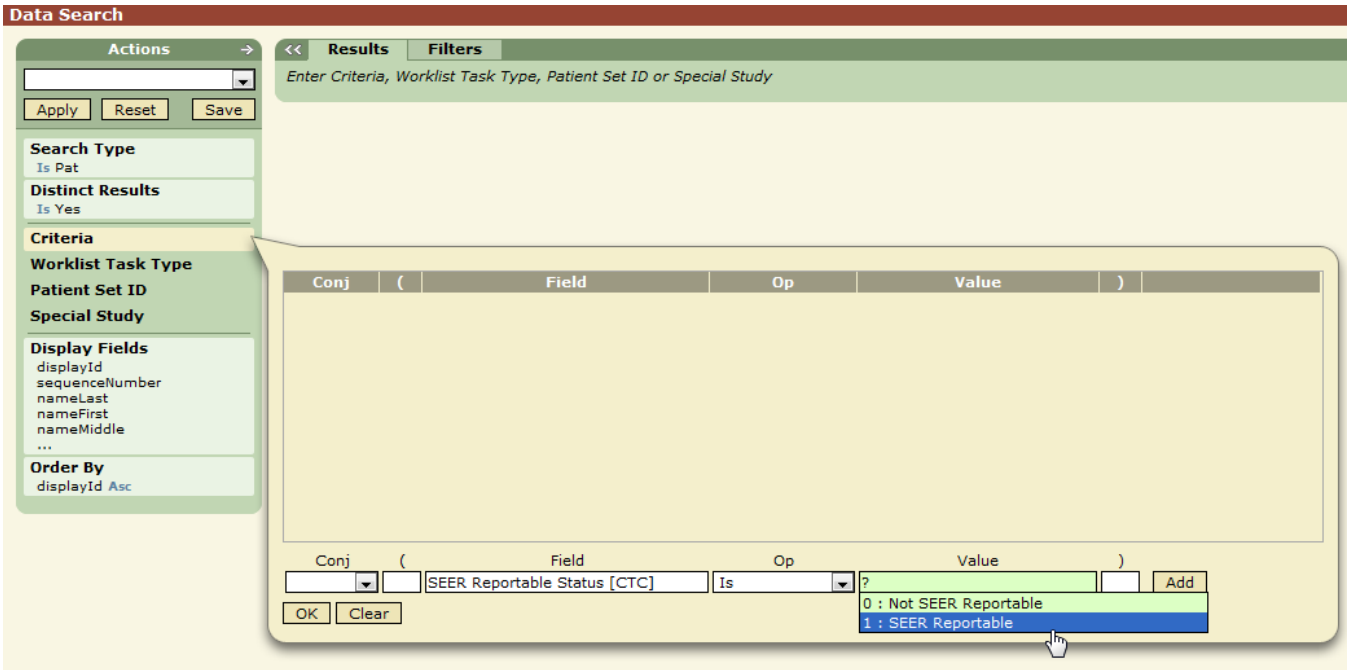
The statement above will return Patient Sets that meet these criteria:

- Not deleted
- Date of Last Contact prior to 2009
- Vital Status = Alive
- And have at least one CTC that meets these criteria:
    - CTC is not deleted
    - Age at DX <= 19
    - SEER Reportable
    - Not cervix in situ

Using Auto-complete to Search for a Field

An auto-complete search is used to find fields for the Criteria, Display Fields, and Order By features. There are several fields that are stored in different types of data. For example, last name is a field in Patient Set Informants, Patient Set Aliases, and the Patient Set itself. Be careful to verify the data entity when you select a field.

Enter a question mark to view the lookup values for a field.



Worklist Task Type

In a record search, the Worklist Task Type filter allows you to search for records that are the focus of a worklist task. You would not use the Data Search just to find records in the worklist. You should use the worklist for that. But you can use the Data Search to find records that meet other criteria and are in the worklist; or records that meet some criteria but are not in the worklist.

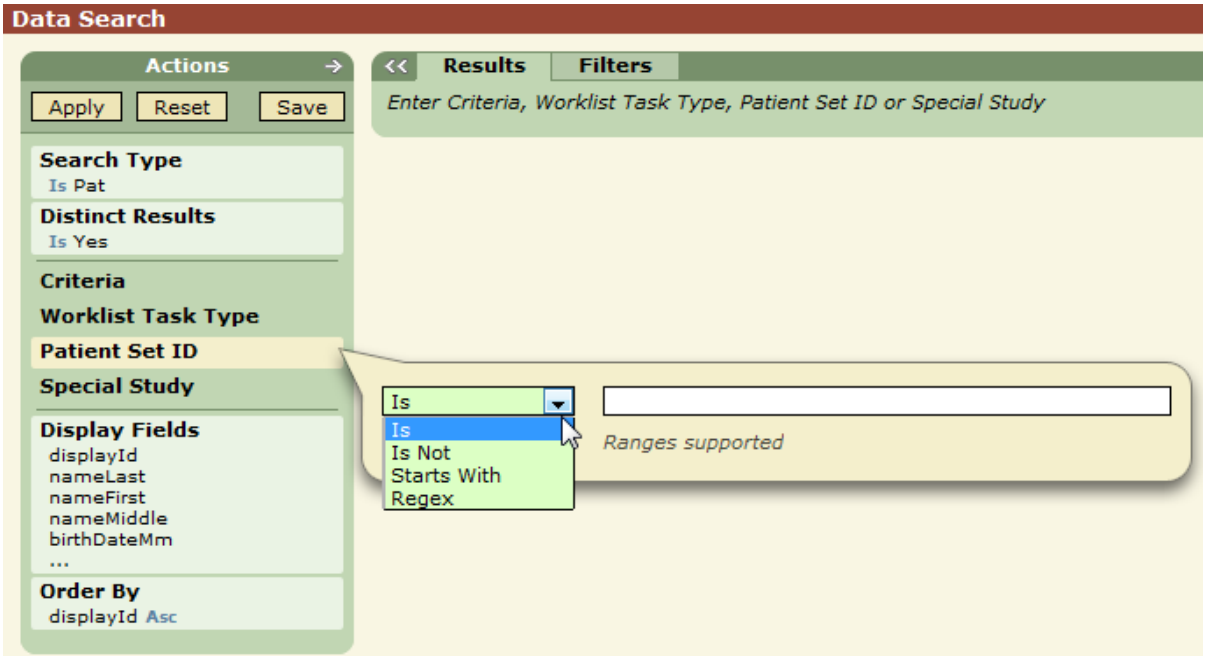
This filter only considers the record that is the focus of the task. For example, records listed as possible matches in Match-Consolidate are not considered by this filter. Records can be the focus of these tasks:

- Consolidate or Consolidate FUP
- Match-Consolidate or Supplemental Match
- Path Screening or Screening
- QC Record
- Resolve Record Errors
- Review Special Studies

You can search for "Is Missing" to find records that are not in the workflow. You can search for "Is Not Missing" to search for records that are in any type of task.

In a Patient Set search, the Worklist Task Type filter allows you search for Patient Sets that meet other search criteria and are in the worklist; or you can use this filter to exclude patient sets that are in the worklist. It is important to understand that there are only a few patient set tasks (Review Data, Resolve Patient Set Errors, Visual Edit Patient Set, and QC Patient Set). You cannot use this filter to search for patient sets that are possible matches in match-consolidate; or are currently involved in a consolidate task. The incoming record is the focus of those types of tasks. One common use of this filter in a Patient Set Search would be to search for Patient Sets that are failing an edit but are not in Resolve Patient Set Errors tasks. (To search for Records or Patient Sets with a particular edit, set the Criteria to Edit Rule ID is <Edit ID>.)

ID Filter



Use the ID Filter to search for patient sets or records by ID.

- You can search for a single ID or paste a long list of IDs into the filter. Each ID in a list must be separated by a blank or a comma.
- The PAT- and REC- prefixes are optional.
- Use "Is Not" to exclude certain patient sets or records from your search.
- The results of the ID filter will be "and-ed" with the Criteria statement and the other filters.

Special Study Filter

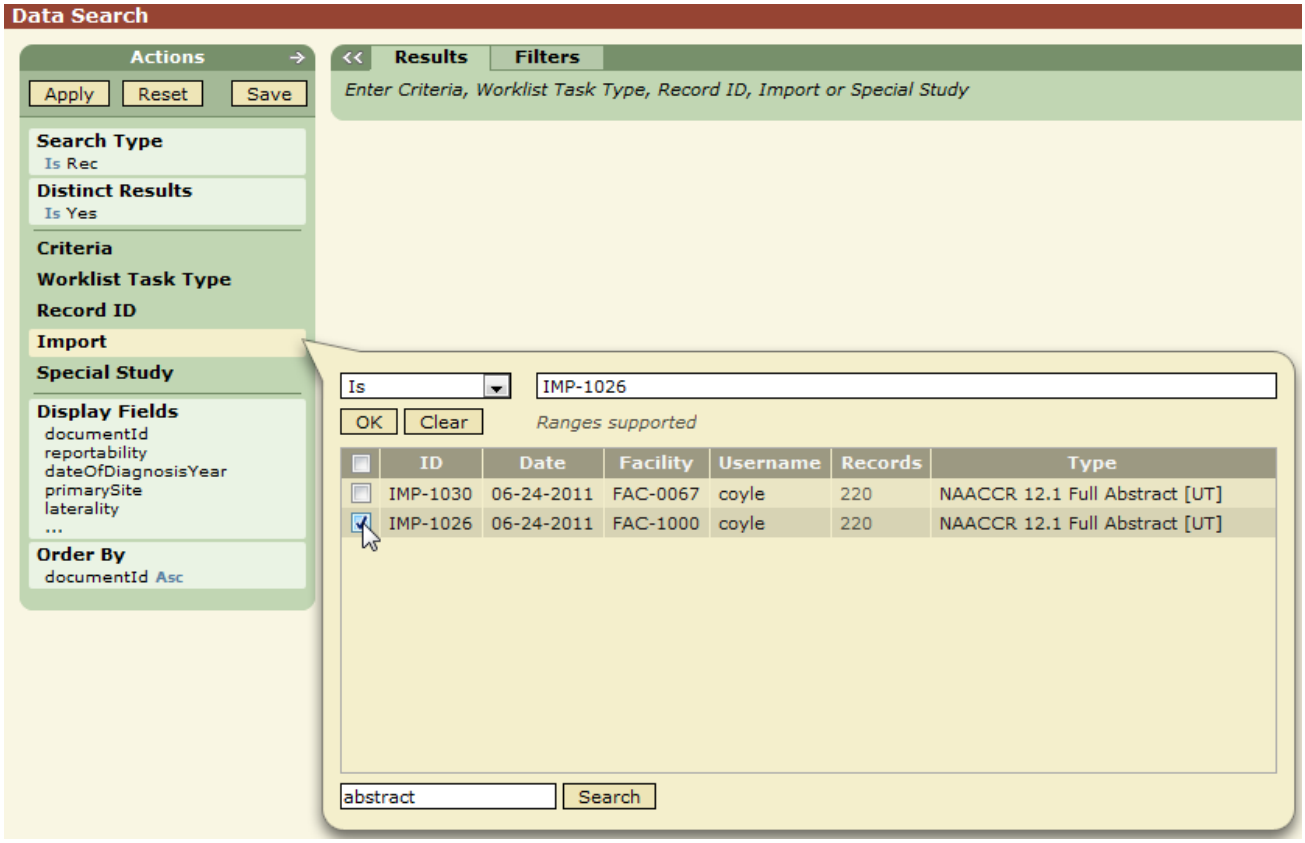
Use the Special Study Filter to search for patient sets or records by study.

- You can search for records or patient sets that are in a certain special study.
- Or use "is not" to search for data that are not in a specific study.
- Or search for data not in any study (use the Missing option).

Import ID Filter

Use the Import filter to search for records loaded in a specific import. This filter is only available when Search Type is set to Records. All imports are listed when you first click Import. Use the search box at the bottom to find the Import ID. The search text will be matched against Import ID, File Type, Username, and Facility ID.

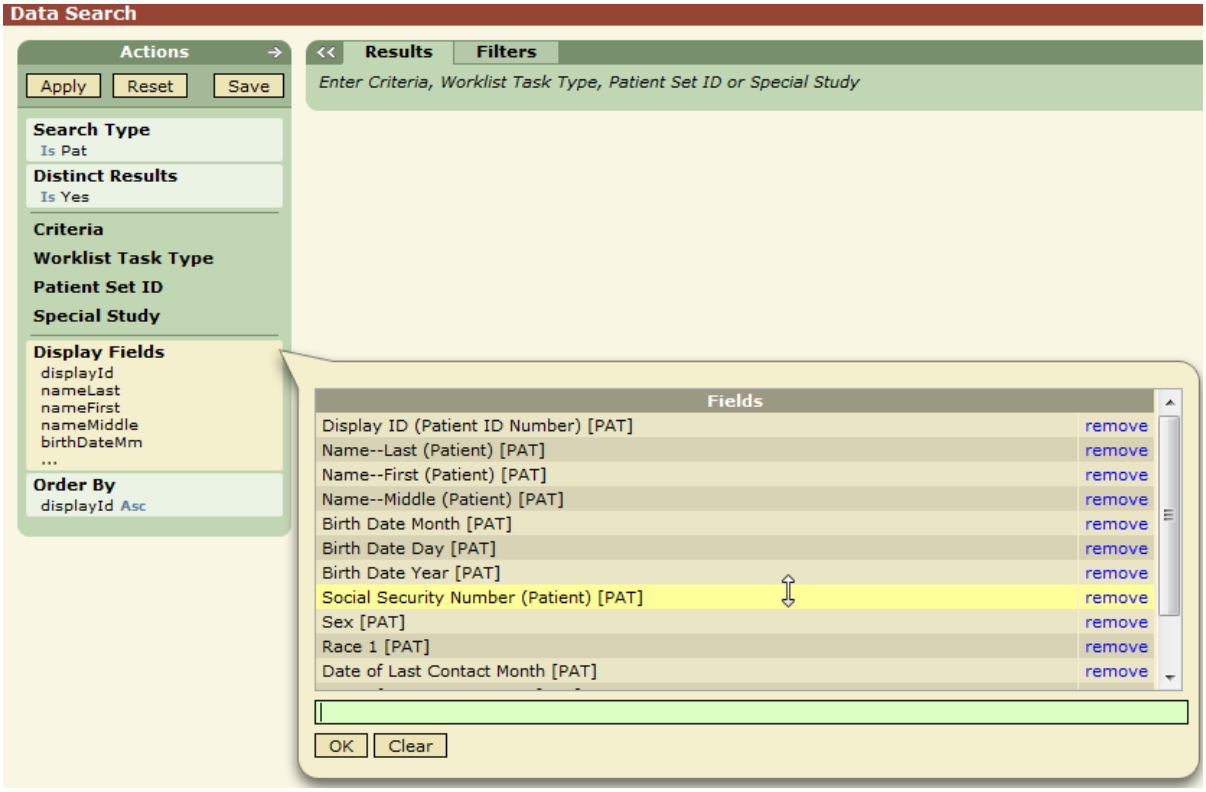
Complete the filter statement of *"Import <is or is not> Import ID"*. To do this, you may enter an Import ID into the text box at the top; or check the box next to the import in the search list. You may enter a set of IDs or even a range of IDs.



Display Fields

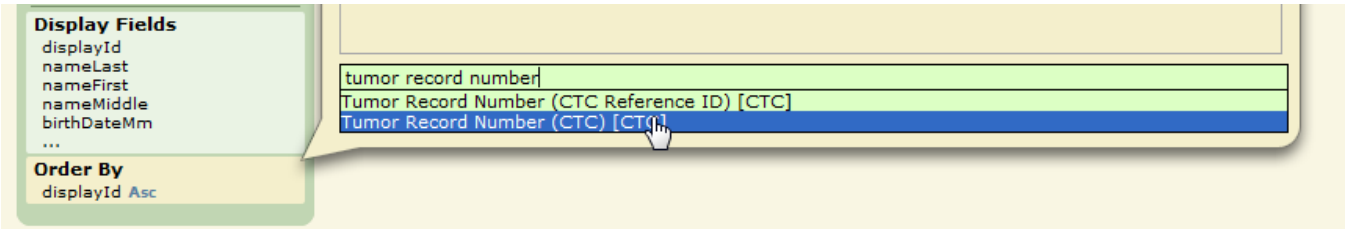
The Display Fields option defines the columns shown in the results table. You can specify the order of the columns by moving the fields up or down in the list. The default list of Display Fields is defined in the registry configuration; some registries only include patient level demographic fields in the default set while other registries include tumor-level fields.

To change the order of the fields, grab the field with your cursor and move it up or down in the list. A field is highlighted when it is selected, as shown below.



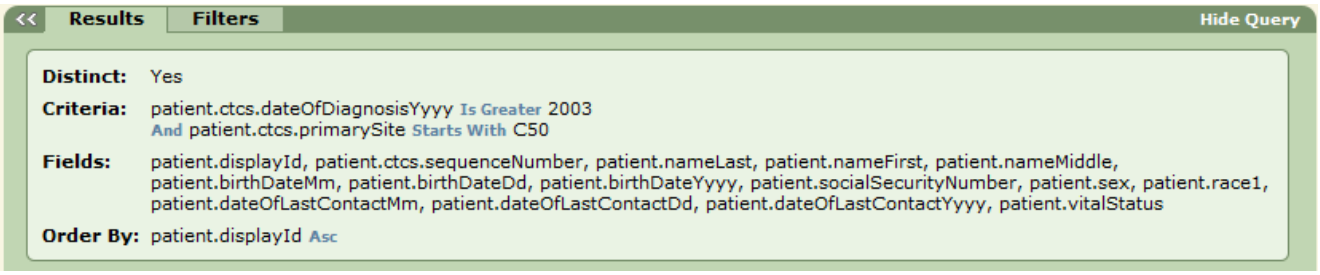
Order By

Use Order By to define the sort order of the results. The default sort order is Patient Set or Record ID in ascending order. You may specify multiple sort fields and you may specify ascending or descending for each. You results can only be sorted by fields that are listed as Display Fields. Use the auto-complete search box to find a field. Click **Ascending** to toggle to **Descending** and vice versa. Once a list is created, you may grab a field to move it up or down in the list.

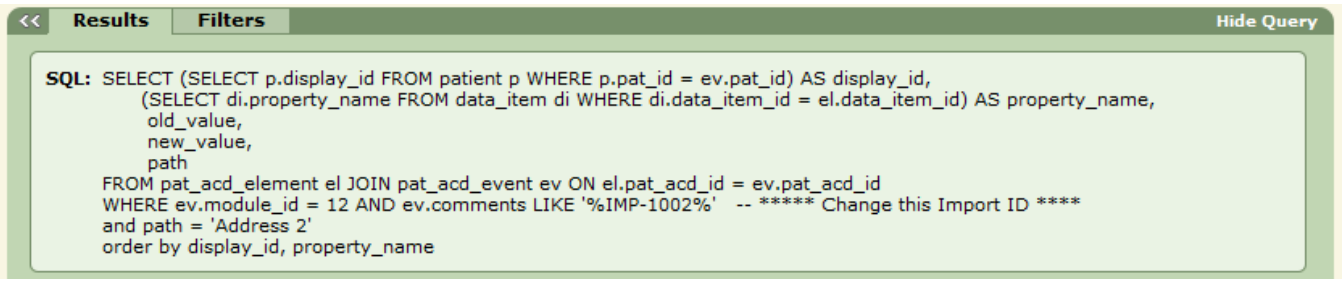


Show Query

To view the source code used for the search, click the Show Query link in the upper right of the results table. For Patient Set and Record searches, a summary of the specifications will be shown. This provides a convenient way to debug a search that is returning unexpected results.

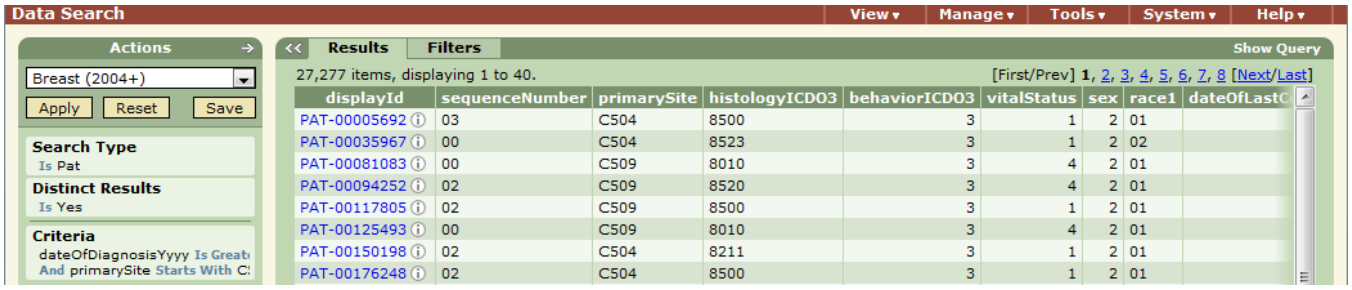


If it is an SQL search, the SQL code is shown:



Reviewing Results in the Data Search

The data returned by your search will be displayed in the Results section of the screen.



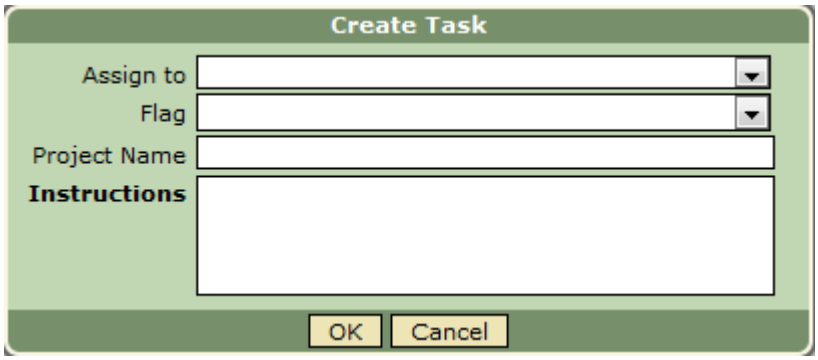
- The total number of results is shown at the top of the Results tab.
- 40 results are displayed per page. There are page controls on the right side of the screen.
- You may open a Record or Patient Set by clicking its ID.
- Click the double arrow next to the word Results to hide the filter panel and expand the width of the results table. Click it again to re-open the filter panel.

Data Search Action Menu

The Actions associated with the Data Search are:

- **Save Filter** – If you frequently search for the same type of data, you do not need to redefine your search each time. Saved searches are available in the drop-down list and Filters tab. All users can see saved searches that they created and searches made available to them by another user. Users with the *data_search_filter_manager* permission can access all saved searches. A data search manager can create searches for others to use and provide technical support to users who have saved searches.
- **Delete Filter** – Use this to remove the current search.
- **Create QC Tasks** – A QC Task can be created for each record or patient set in the results. You will be prompted to provide instructions for the coders who complete the tasks. You will be able to assign the tasks to another user, assign them to your own account, or leave

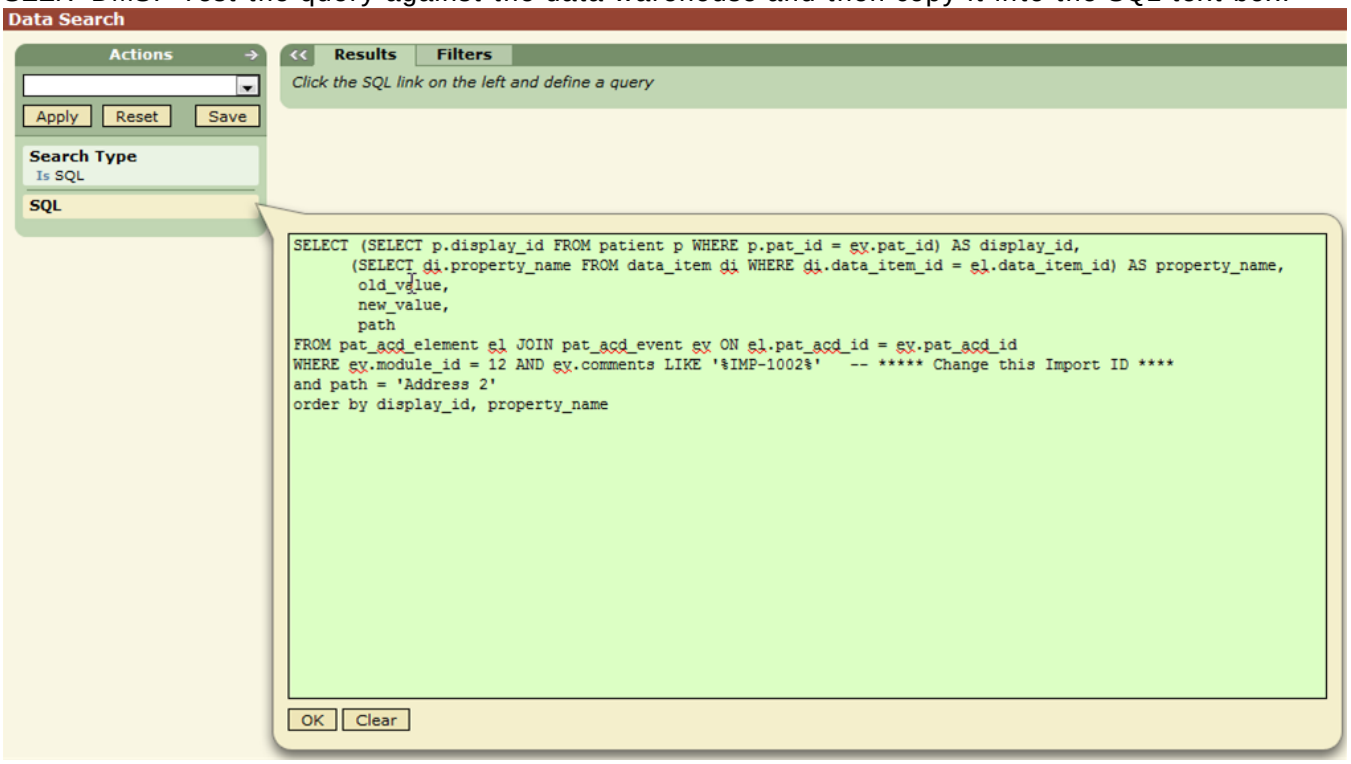
the user field blank to create unassigned tasks. If appropriate, you can set a worklist flag and/or assign a name to the QC project.



- **Export** – Use the **Export** option to create a text file containing all rows and columns in the results. This option is only available to users with the *data_search_export* permission. The export file will be a Comma Separated Values (CSV) text file, this is a common file format that can be opened in Excel and other spreadsheet applications.
- **Help** – Select **Help** to review the Data Search tutorial (PDF). The tutorial is available in an interactive format online at seer.cancer.gov/seerdms/manual.

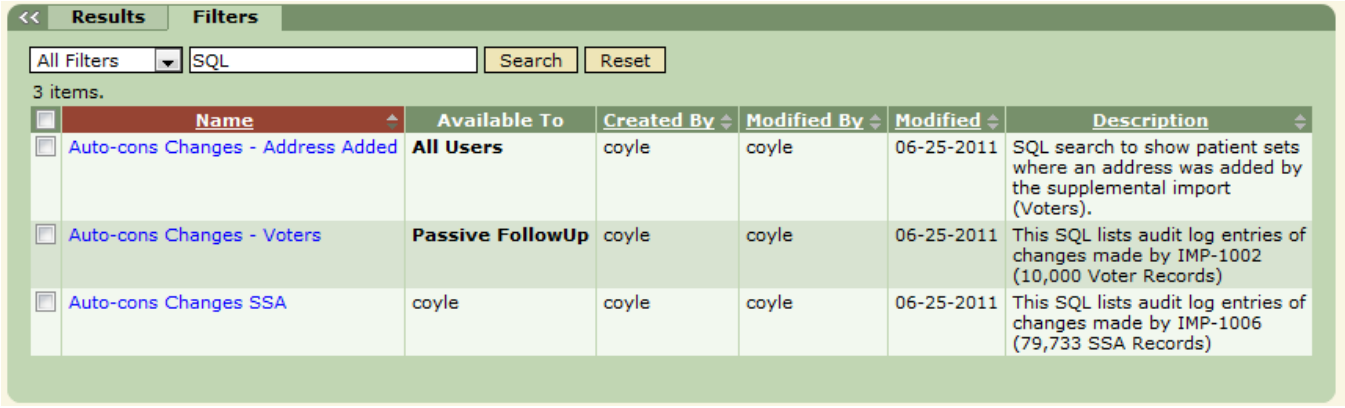
SQL Data Searches

The *data_search_write_sql* permission is required to create SQL Data Searches. This permission should be restricted to advanced users who have experience writing SQL queries. All SQL should be written and tested in an external application like SQL Workbench before being used within SEER*DMS. Test the query against the data warehouse and then copy it into the SQL text box.



The *data_search_run_sql* permission allows users to execute SQL Data Searches made available to their account. They may have written the SQL data search or it may have been written by someone else and made available to their account, all users, or users with their role. This screen shot shows 3 SQL searches listed on the Data Search Filters tab. All were created by the same

user. The first can be executed by all users with the *data_search_run_sql* permission. The second search can be executed by users with the Passive Follow-up role who have the run SQL permission. The third can only be executed by the user who created the search.



Direct Editing of Records and Patient Sets

Requires system permission: *pat_edit, pat_edit_demographics, pat_read_only, rec_edit, or rec_read_only*

SEER*DMS enables users to edit records or patient sets accessed via the Patient Lookup or Data Search. Your read/write access to data is not restricted to workflow tasks. This creates the possibility that two users may open the same record or patient set simultaneously. It is also possible for you to open a record or patient set that is currently being processed in an automatic task, or that is involved in a manual task. Prior to editing data that you access via the Patient Lookup or Data Search, please review the information below and follow the appropriate steps to avoid having your or another user's changes overwritten.

If you attempt to modify data that has been modified by another user or process:

Two users may open and edit the same record or patient set. If this happens simultaneously, the first person to attempt to save the data will be able to successfully save their changes. If the other person attempts to save changes, SEER*DMS will display an error message indicating that the record or patient set has been modified since the data were opened in the editor. SEER*DMS will post an error message with instructions:

- Error: These data have been modified by another person or process; your changes cannot be saved. Print the data if you need a listing of your current values. Reload the data by selecting Undo Changes from the menu. You should review the revision history in the audit log prior to re-entering and saving your edits.
- The same message will be displayed if the data were modified by a process after you opened the editor but before you saved the data. In either situation, you should review the audit log to determine which user or process modified the data and what changes were made. You may continue editing, if appropriate.

If you attempt to modify data involved in a worklist task:

You may modify a patient set or record that is in a workflow task. For some tasks, there is no conflict and your work may complete the task. For example, you open a patient set via the data search and that patient set is in a Resolve Patient Set Errors task. No warning will be displayed in the editor because there is no potential conflict. If you clear all edits and save the task, the worklist task will be completed and the patient set will exit the workflow.

However, there could be a conflict if you edit a record that is in a Consolidate task. You should either open the task and make the appropriate changes to the patient set and/or record; or contact the person to who the task is assigned.

If there is a potential conflict with a task, an Alert will be posted in the record or patient set editor. SEER*DMS will post a warning message and provide a link to review the task. It is generally recommended that you access and edit data in the context of the pending task. You should certainly review the task prior to making changes, to ensure that you and another staff member are not duplicating efforts or editing the same data simultaneously.