

Health Care Analytics Solution

User Guide v3.04



Legal Notices

Warranty

The only warranties for MICRO FOCUS products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. MICRO FOCUS shall not be liable for technical or editorial errors or omissions contained herein.

The information contained herein is subject to change without notice.

Restricted Rights Legend

Confidential computer software. Valid license from MICRO FOCUS required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Copyright Notice

© Copyright 2006 - 2015 Micro Focus

Trademark Notices

Adobe® is a trademark of Adobe Systems Incorporated.

Microsoft® and Windows® are U.S. registered trademarks of Microsoft Corporation.

UNIX® is a registered trademark of The Open Group.

Contents

Glossary of Terms.....	4
Introduction	6
Privacy and Security.....	6
Login.....	7
Home Page	9
Admin Console	9
Overview of the HCAS Workspace	10
Structured and Unstructured Data	11
Search.....	11
Query Filters.....	13
Conceptual Search	22
Document Folders.....	23
Exporting a Cohort to another Data View.....	25
Data Visualisation	26
Bar Chart View	27
Topic Map View	31
Table Viewer	33
Results View.....	37
Document View, or DocView	39
Using Document Folders in DocView.....	41
The Concept Tree	42

Glossary of Terms

Action buttons	Action buttons are available through the HCAS workspace and different actions. They may be word based or icon/symbol based. Further drop down menus may be viewable by using action buttons
Boolean operators	Boolean Operators are used to connect and define the relationship between the search terms you have chosen to apply in your filters
Common Operators	The operators that are available for each data element in a filter or group. They vary by the type of data element
Concept	A particular level from within the taxonomy as a search filter
Concept parent	The highest level of an ontology
Concept Search (or Semantic Search)	This is searching by concept rather than a specific word. By searching for a concept you will get all the terms and language in an ontology associated with the concept
Concept Tree (or Ontology Tree)	Viewable in the attributes pane within docview, the concept tree displays all identified concepts. By clicking on the check box at any level in the tree (or leaf node) you can highlight the matching terms in the data pane.
Concept+	A Concept+ search includes the concept parent, its synonyms, and all of the child nodes including their synonyms. It is more comprehensive than using Concept on its own
Document Folders	Document Folders are lists of records. You can assign the output of your query to a folder. You can save them in their native unit or as a patient list if you wish to use the query output in another scope. You can also use folders within docview to assist with workflow.
Document viewer (or Docview)	The docview is where the complete set of data is viewable. This is where patient identifiable information is viewable. The docview is available by clicking on the clickable link of a record in the results view in the The docview is divided into two panes: the data pane, and the attributes pane
Docview Attributes Pane	The attributes pane displays the attributes of the record. It has the applied filter set in which an individual filter variable can be clicked on to highlight where that variable appears in the docview data pane. It displays any folders the record has been manually put in. It also has the concept or ontology tree which has check boxes to display or remove the highlighting in the data pane or which can be searched using the “search tags” box
Docview Data pane	The data pane displays the data within the record. It has individual tabs which display data by data source. The data pane also contains text highlighting for concepts and selected filter variables.
Export	Export is used in two ways in HCAS. The first shows moving data between scopes (export from one scope to another as a tagged folder) the second is the act of exporting a data extract from HCAS into another system using CSV format.
Filter	This is a series of data connected by Boolean operators which is used to develop your query. Filters can be named, saved, shared and edited.
Filter variables	Filter variables are individual data elements that you can select to include on your filter. There are many different ways you can add a variable to a filter from within a view or by using the “ADD+” button in the query pane.
HCAS	Health Care Analytics Solution (MICRO FOCUS); also referred to as HCAS Discover
IDOL	Intelligent Data Operating Layer – A unified machine learning platform for enterprise search and big data analytics which is a component of HCAS.

Health Care Analytics Solution User Guide

Ontology	A set of concepts and categories in a subject area or domain that shows their properties and the relations between them. For HCAS this is SnoMed, ICD10 and the New Zealand Universal List of Medicines (NZUILM)
Ontology Tagging	The process of identifying and visualising concepts and categories in the unstructured data.
Pane	Part of the Workspace where a group of activities or actions will occur. These are usually right and left, or defined by a purpose (e.g. Filters).
Parametric filter	A query filter based on enumeration of predefined data elements (parametric variables).
Parametric variable list	On the right of the Bar chart view, within the visualization pane is a list with corresponding sub lists of parametric variables you can use to display your output within each scope. These are grouped by data source.
Query Pane	This part of HCAS workspace is where you change scopes, and construct your queries. Within this Pane are two tabs; one for filters and one for folders.
Scope	A specific set of data that is visualised in HCAS. Each has its own native record unit. And is accessed by clicking on the corresponding radio button in the query pane. There are six Scopes in HCAS but not all are viewable to all users.
String search or word search	This is used to find a specific word or string in the data variable you are querying. String searches must be exact for matches.
Structured Data	Structured data refers to kinds of data with a high level of organisation and definition. When information is highly structured and predictable, HCAS can more easily organise and display it in creative ways
Tab	A mechanism for letting two or more data visualizations share the same pane or view. By clicking on a Tab you make that specific data or information viewable.
Tags	Tags refer to specific enumerated data which is present in an HCAS record. For structured data, tags may be natively defined by the IT systems (eg, the assignment of "M" and "F" for patient sex). For unstructured data, HCAS automatically assigns tags based on the presence of SNOMED CT concepts within the record.
Taxonomies	A classification system; a way of grouping things together. For HCAS this is each ontology and its defined groupings and levels
UI	User Interface; the application screen
Unstructured Data	Unstructured data is not organised in a pre-defined manner, (eg, a free-text field). It is text-heavy, but may contain data such as dates, numbers, language or facts we want to search. In HCAS this information comes from the written medical note (electronic)
Vertica	Vertica Analytics Platform, designed to manage large, fast-growing volumes of data and provide very fast query performance; a component of HCAS.
View	The way data from a Scope is visualised in the Workplace. There are 4 main views in HCAS (barchart, topic map, table view, and results list view) as well as the DocView which shows details of a specific record.
Visualisation Pane	This pane is the area of the workspace where the output of your queries is visualized.
Workspace	The overall HCAS screen displaying all the UI components of the HCAS Solution

Introduction

Healthcare Analytics Solution (HCAS) analyses and understands unstructured data in context. It is designed to connect healthcare workers directly with their data through self-service analytics. It is built on the MICRO FOCUS IDOL and Vertica platform. The system harnesses healthcare taxonomies and coding systems as well as a specialized interactive user interface to address healthcare related queries and enable actionable visually-driven analytical reporting. This User Guide document describes and explains the use of particular MICRO FOCUS HCAS components and features. *Note:* some components and feature are implementation specific, and may depend on your deployment configuration or on the available data.

Privacy and Security

Important Message on Privacy and Security

Patient identifiable information is viewable at the DocView level within HCAS and in data export from HCAS. You should only access a patient's clinical records if you are actively involved in their clinical care or as part of a quality improvement process which requires identified patient information.

Access for any other reason is unethical and may be considered professional misconduct.

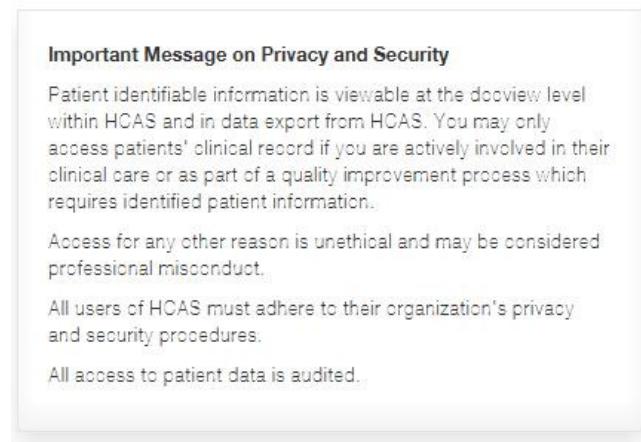
All users of HCAS must adhere to their organizations privacy and security procedures.

All access to patient data is audited.

When using HCAS in a working environment always ensure your computer is locked when leaving your desk and patient identifiable information is not viewable to any other persons.

Login

Note: By logging into the HCAS Discover application, you acknowledge you have read and accept the terms and conditions relating to data privacy and security.



To login to the HCAS application:

1. Open an Internet Browser window.
2. In the address bar, enter the URL, <http://mschchcap1:8080/discover-hc>, and then press the Enter key.



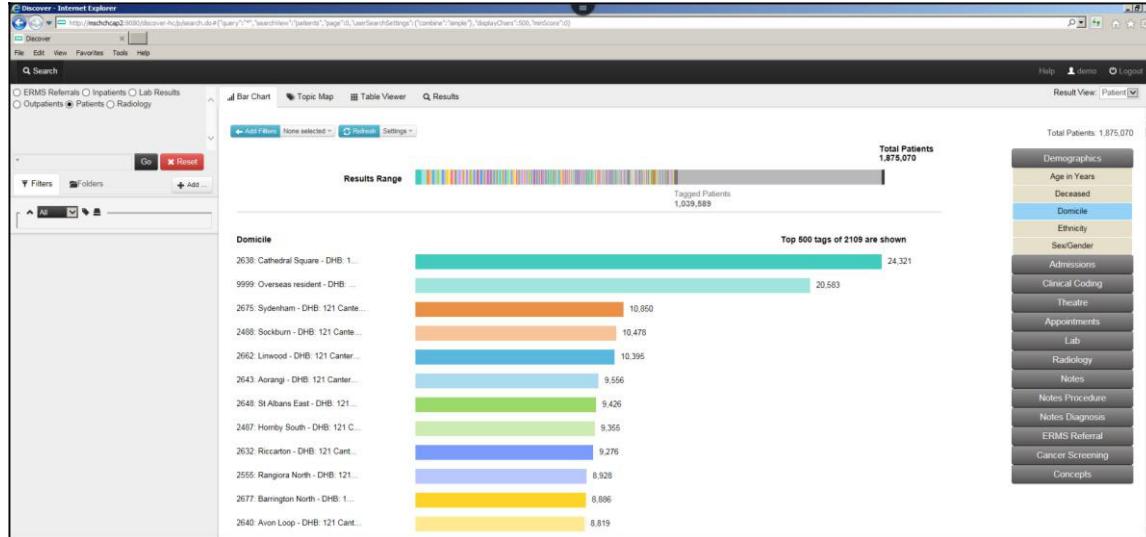
3. In the UserName and Password text fields, enter your login credentials and then click the Login button.

A screenshot of a login form titled "Login to Discover". It has two text input fields: "UserName:" and "Password:", both with placeholder text. Below the fields are "Reset" and "Login" buttons. A note at the bottom states: "Please note: By clicking on the Login you agree to the stated Terms and Conditions".

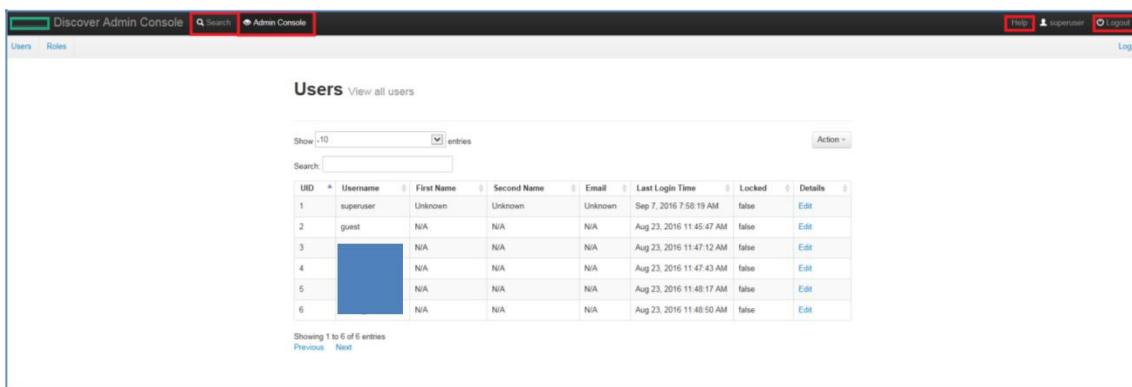
Health Care Analytics Solution User Guide

4. The main HCAS Workspace page is displayed with the Patients Scope of the HCAS application displayed as the default setting.

Note: this page is displayed for all non-admin users as the default login page.



5. If a user has Administrator access then the Home Page is displayed, as described in the next section.



Home Page

At the top-left corner of the **Home** page, the **Search** and **Admin Console** tabs are displayed. At the top-right corner of the page, the **Help** and **Logout** options are displayed.

Click on **Admin Console** to access admin functions. Note: these admin functions are only available if the user has admin access rights.

The screenshot shows the 'Discover Admin Console' interface with the 'Admin Console' tab selected. The main content area is titled 'Users' with the sub-instruction 'View all users'. A search bar at the top right includes a dropdown for 'Show' (set to '10') and a 'Search' input field. Below the search bar is a table listing six user entries. The table columns are: UID, Username, First Name, Second Name, Email, Last Login Time, Locked, and Details. The data in the table is as follows:

UID	Username	First Name	Second Name	Email	Last Login Time	Locked	Details
1	Unknown	Unknown	Unknown	Unknown	Sep 7, 2016 7:58:19 AM	false	Edit
2	N/A	N/A	N/A	N/A	Aug 23, 2016 11:47:47 AM	false	Edit
3	N/A	N/A	N/A	N/A	Aug 23, 2016 11:47:12 AM	false	Edit
4	N/A	N/A	N/A	N/A	Aug 23, 2016 11:47:43 AM	false	Edit
5	N/A	N/A	N/A	N/A	Aug 23, 2016 11:48:17 AM	false	Edit
6	N/A	N/A	N/A	N/A	Aug 23, 2016 11:48:50 AM	false	Edit

Below the table, a message says 'Showing 1 to 6 of 6 entries' with links for 'Previous' and 'Next'.

Click on **Search** to access the main **HCAS Workspace**; see the section later in this guide.

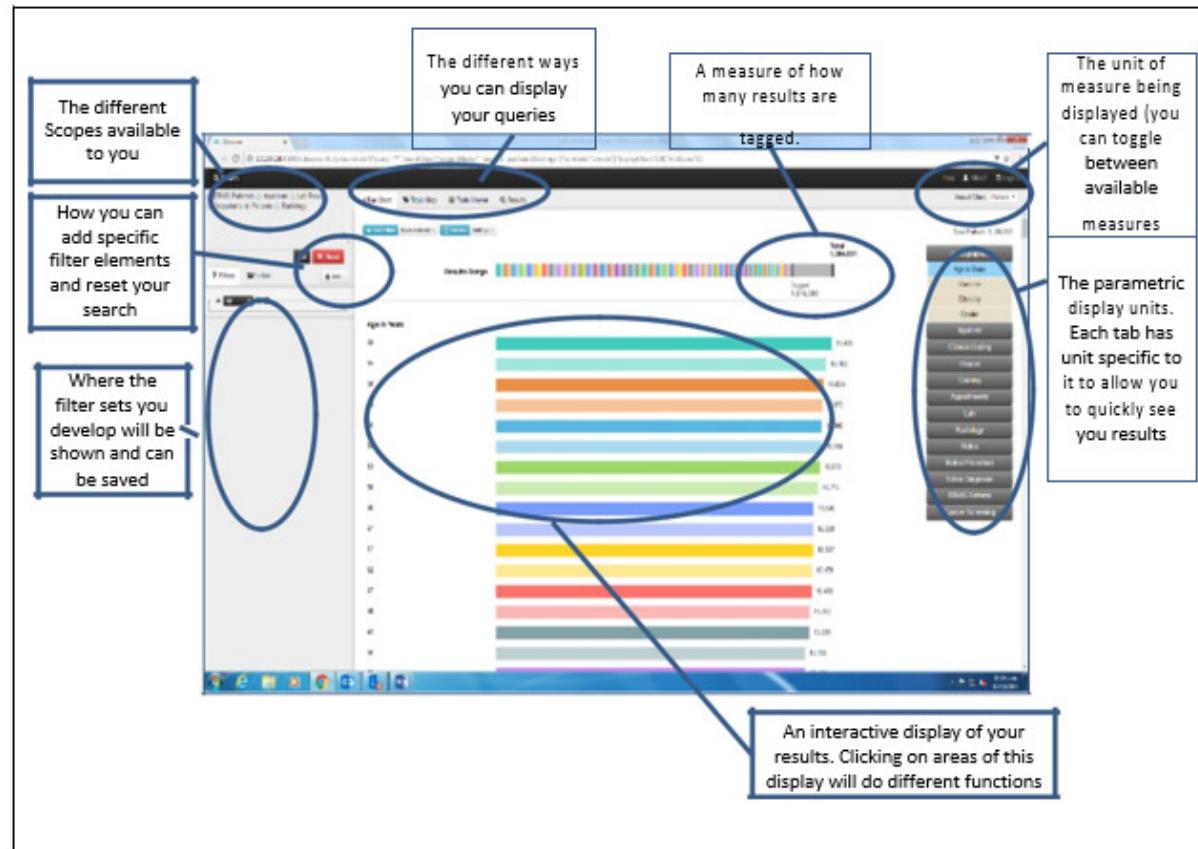
Admin Console

The availability of the **Admin Console** tab is based on User access rights. That is, if a user has administrator rights, then the **Admin Console** tab will be available for the user to perform user management tasks such as creating user accounts and roles and assigning privileges.

This screenshot is identical to the one above, showing the 'Discover Admin Console' interface with the 'Admin Console' tab selected. The 'Users' page displays a list of users with the same columns and data as the previous screenshot. The table data is as follows:

UID	Username	First Name	Second Name	Email	Last Login Time	Locked	Details
1	Unknown	Unknown	Unknown	Unknown	Sep 7, 2016 7:58:19 AM	false	Edit
2	N/A	N/A	N/A	N/A	Aug 23, 2016 11:47:47 AM	false	Edit
3	N/A	N/A	N/A	N/A	Aug 23, 2016 11:47:12 AM	false	Edit
4	N/A	N/A	N/A	N/A	Aug 23, 2016 11:47:43 AM	false	Edit
5	N/A	N/A	N/A	N/A	Aug 23, 2016 11:48:17 AM	false	Edit
6	N/A	N/A	N/A	N/A	Aug 23, 2016 11:48:50 AM	false	Edit

Overview of the HCAS Workspace

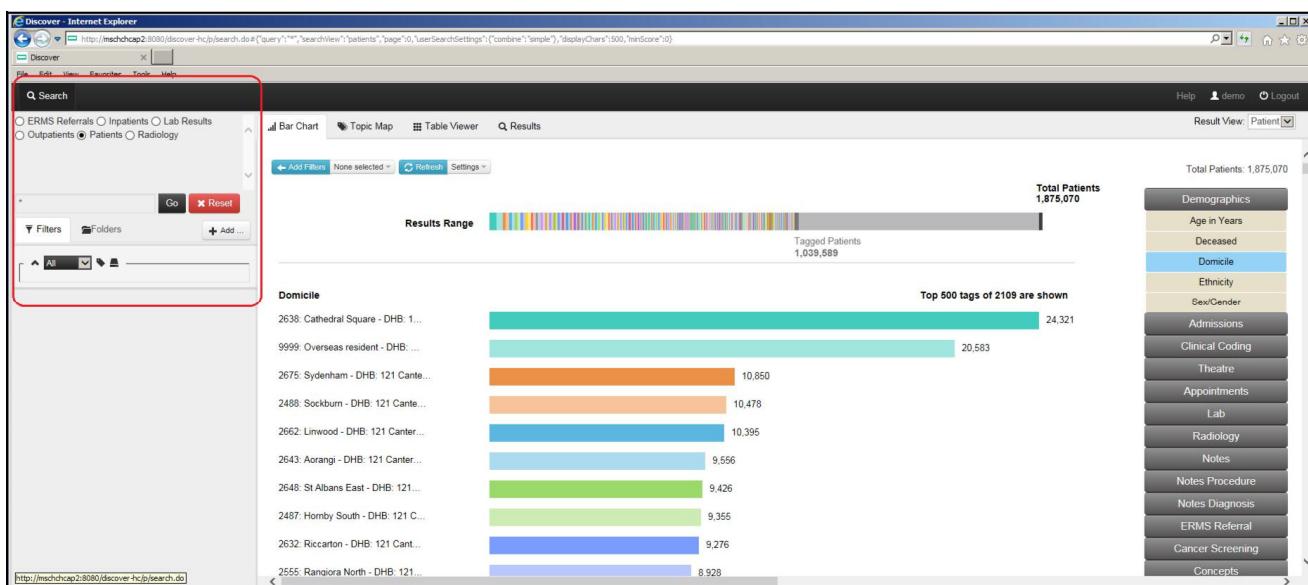


Structured and Unstructured Data

From the user interface, both structured and unstructured data are processed and available for search and visualisation. It is not mandatory for a user to understand the underlying data structures in order to effectively use the system, although this knowledge is valuable for advanced usage. Where structured data elements are available, the system may offer a variety of search mechanisms depending on data type configuration at deployment. For example, patient age may be available as both a numeric field and a parametric field with specific patient age ranges already defined. Textual information may be processed at a string level, or as enumerated types. For example, there may be a large but distinct list of diagnosis codes, which the system has automatically identified. Unstructured text is annotated with structured metadata based on conceptual processing.

Search

Some of the features of the **Search** page are described in this section.



In the left pane of the **Search** page, the Search section is displayed. This section contains a list of radio button options to display Scopes, which are views of organized datasets.

Search

ERMS Referrals Inpatients Lab Results
 Outpatients Patients Radiology

User Tip

The number of scopes you are able to see depends on your access type

Scope selection radio buttons – These buttons allow you to select a specific dataset for your queries. A Scope defines the framework by which your results are retrieved and is critically important to how you interpret your results. The results you see are counted with respect to the “native record unit” of the Scope, such as admissions, lab events, or entire longitudinal patient records.

Example. Let's say you are searching for CT exams which occurred during Jan 2016 in Christchurch. The exact same search may yield different results in each Scope:

Patient Scope – 141 total results - this means that 141 patients were identified as having a CT exam in Jan 2016 in Christchurch

Inpatients Scope – 56 results - this means that 56 Inpatient admissions were identified as having a CT exam in Jan 2016 in Christchurch

Radiology Scope – 276 total results - this means that 276 radiology events were identified as having a CT exam in Jan 2016 in Christchurch

Thinking about the complex relationships within the source data is also important to correctly interpreting HCAS results. Individual data elements may be absent or present, and can be present in one-to-one, many-to-one, or one-to-many relationships.

Example: zero-to-many ICD10 codes may be associated with an Inpatient admission. This means that the number of tagged values may be less than, equal to, or greater than the number of admissions, which is most easily examined in the Inpatients Scope. You are searching for records with ICD10 codes for both asthma and diabetes

Inpatients Scope – 67 results – Both asthma and diabetes were coded simultaneously for these 67 Inpatient admissions

Patient Scope – 132 results – These 132 patients have codes in their records for both asthma and diabetes. These codes may appear simultaneously during a single admission or independently during separate admissions. Codes may also appear several times within a single patient record if the patient has multiple hospital admissions.

Also keep in mind that data changes over time. For example, a patient's domicile address may change over time in their records. So a single patient may be represented in multiple domiciles in certain Scopes.

The available Scopes in HCAS for the Canterbury DHB are:

- **ERMS Referrals** – Individual referral data
- **Inpatients** - The group of events occurring within an inpatient stay (between admission and discharge)
- **Lab Results** – Individual lab test events and associated results
- **Outpatients** – Outpatient appointment info
- **Patients** – The group of events associated with a specific patient
- **Radiology** – Radiology studies



Go and **Reset** buttons – You can enter the search criteria in the text field and click the **Go** button to view the search results. You can click the **Reset** button and revert the changes that you have made.

User Tip

It is always good to get into the practice of clicking go when you add or change a filter

Query Filters

The query filter components indicate which filters are currently being applied to data. The query pane allows you to create and refine query parameters including selecting for datatypes (for example, parametric, text, numeric, and conceptual types), Boolean operations, and filter grouping. Building query filters is usually an iterative and interactive process where a filter is applied, and the resulting data will be immediately available for examination. Query filters may be saved for recall or inclusion in subsequent queries at a later date.

Super-User Tip

The Yellow highlight in the filter pane shows you which filter you are working on.

The Blue highlight shows you which nested group you are working on, if you are using nested groups

User Tip

Take the time to map out the parameters of your query before you begin to build your filter. It will save you considerable time when you develop the filter as well as reducing processing time with HCAS.

Clearly define your filters before using them (e.g. Do you want to filter on patients domiciled in Canterbury or patients who have used the Canterbury Health system? Do you want to look at admissions or outpatient visits?)

It is NOT recommended to build complicated queries in the Patient scope as this may be slow due to the large amount of data. This is particularly true for Concept searches. Try to use the most relevant scope for your search, e.g. Inpatient, or ERMS Referrals

Some of the features of the **Filter** tab are as follows:

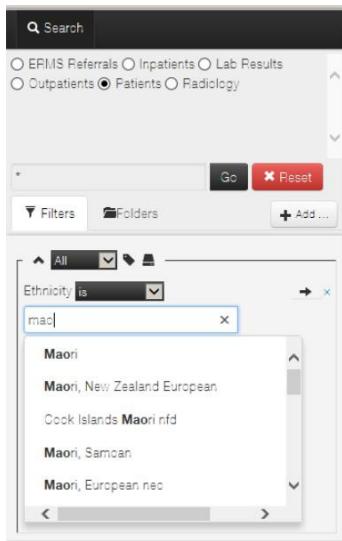
Filter types - A number of base filter types are available through Canterbury DHB configuration such as strings, numeric variables, dates, and free text. These types are specific to UI data components.

+Add – Based on the configuration of the application, you can use the **+Add** button to add structured and unstructured filter fields. When a particular data element is added, it will be displayed as a new blank filter element.

Autocomplete – when you enter type into the filter text box, the system will search for matching text values and autocomplete the entry. For example, if you select Ethnicity as a +Add filter field and type ‘mao’ into the text box, the system will search and return a drop down selection list with values either starting with or containing ‘mao’.

Health Care Analytics Solution User Guide

Note: autocomplete is NOT case-sensitive and only works on fields that have been configured as parametric fields (identified as fields that are displayed on the right hand side of the screen but are also available as +Add filter fields). Also, autocomplete responses may be influenced dynamically by data in the result set.



Super User Tip

Always start in the most granular scope available for the type of search that you are performing, e.g. Inpatient or ERMS referral.

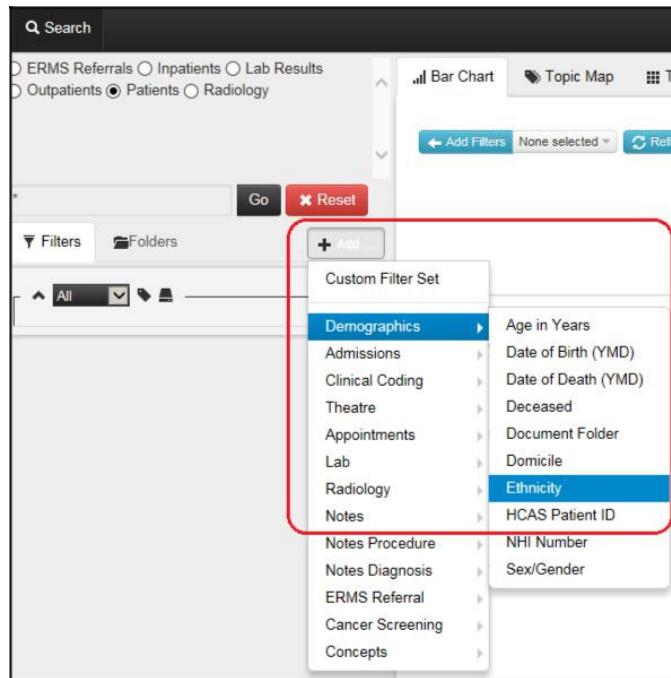
Despite the comprehensive filter capabilities, because the patient scope provides a longitudinal view of the entire patient record and also has the most comprehensive data coverage, it may also be slower to respond for the same reason.

The screenshot shows a detailed list of filter options under the 'Lab' category. A red box highlights the 'Lab' category in the main navigation tree. The list includes: Has Lab?, HCAS Lab Result Key, Lab Abnormal Result Indicator, Lab Requesting practitioner, Lab Responsible practitioner, Lab Service/Test Requested, Lab Test Accepted, Lab Test Comments, Lab Test Complete?, Lab Test Enquiry Date (Y), Lab Test Enquiry Date (YM), Lab Test Enquiry Date (YMD), Lab Test Filler Facility, Lab Test Location Code, Lab Test Measurement Unit, Lab Test Reported Date (YMD), Lab Test Request Date (YMD), Lab Test Result, Lab Test Result Numeric, Lab Test Viewed Date/Time, and Lab Test Viewed?

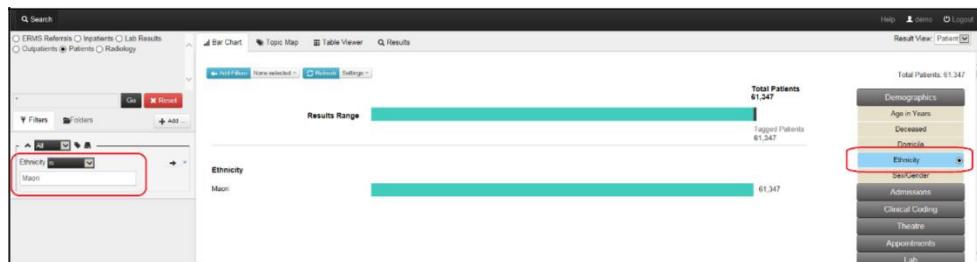
Health Care Analytics Solution User Guide

To add filters:

1. In the left pane, click the **+Add** button, and then select a filter type.

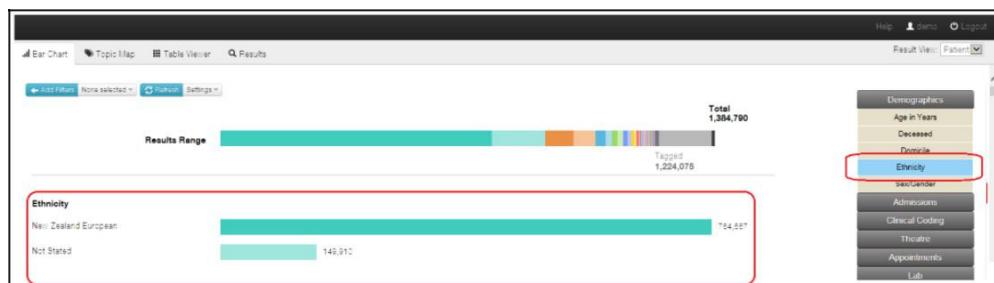


Note: when you add a parametric filter using **+Add**, a button is displayed beside the right side filter indicating which parametric field/s are being used in the current filter selection.



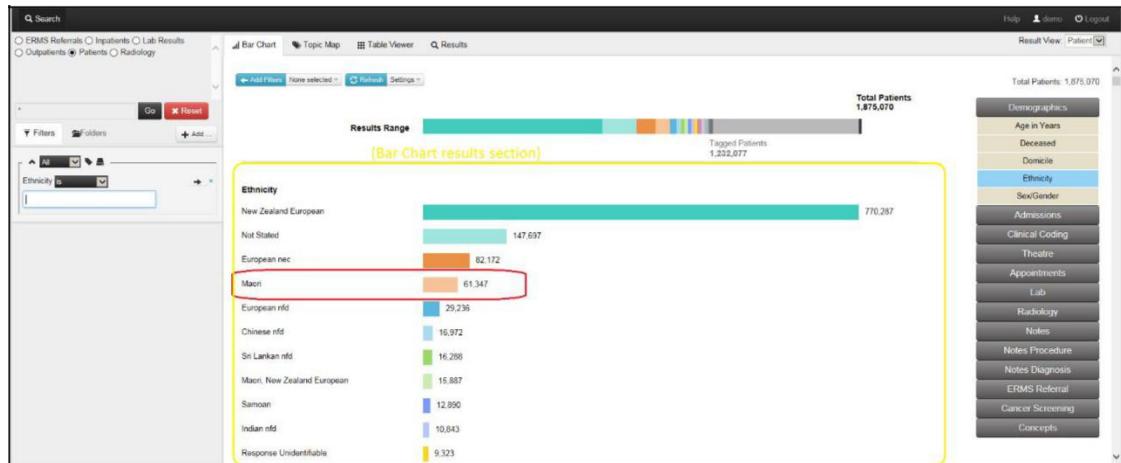
Or

In the right pane, select a variable to display from the parametric variable list:

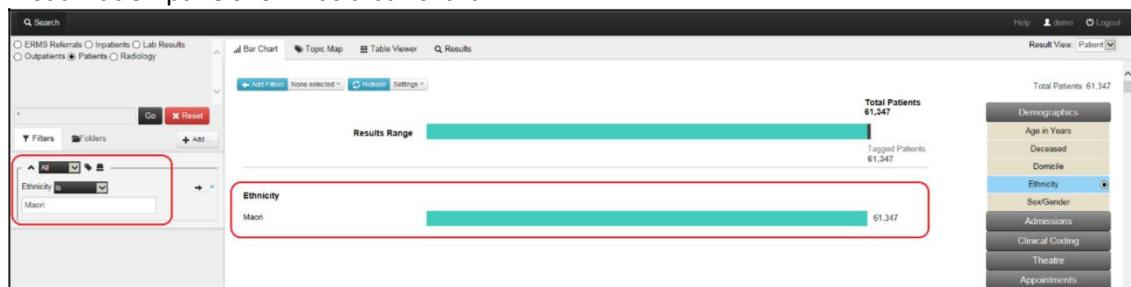


Note: When a parametric variable is being displayed in the bar chart, that filter variable is highlighted in blue in the parametric variable list.

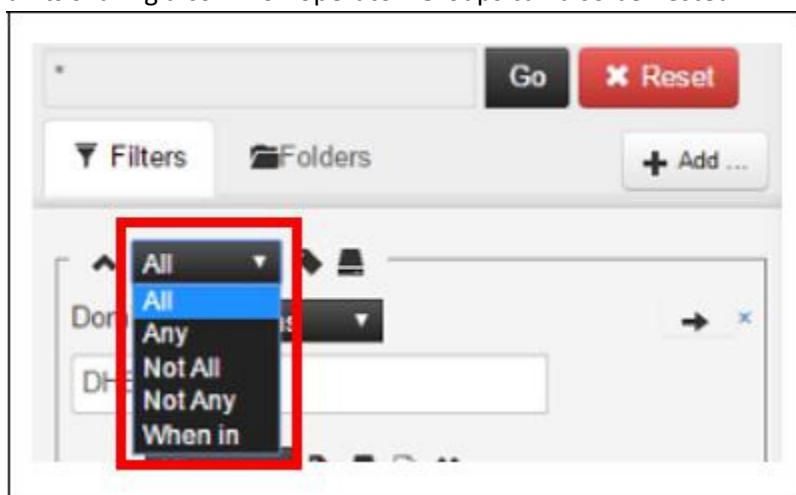
- The tags associated with the selected filter type are displayed in the filter bar chart results section.



- In the Details pane, click the desired parametric variable value from the results to add it as a filter, for example, **Maori**
- The selected filter is now displayed on the **Filters** tab, and the results are displayed in the visualization pane shown as a bar chart.



Common Operators - Each filter or filter group is associated with a drop-down list box with options such as Any, All, Not any, Not all, and When in. These options can be used to group base filters into units sharing a common operator. Groups can also be nested.



All – Does a logical AND using the associated filters
Any – Does a logical OR using the associated filters

Not All – Does a logical NAND using the associated filters **Not**

Any – Does a logical NOR using the associated filters

When in – Applies the associated filters together at the most granular level. Normally filters are applied independently at the highest level of the Scope selected.

For example: in Patient Scope, you search for patients with an ICD10 code for both asthma and diabetes and find that HCAS returns 82 patients. This is the number of patients who have these codes assigned at some point within their patient history. Changing the query filter to use the When-in operator returns 56 patients. This is the subset of patients from the previous query who have both asthma and diabetes coded within the same admission.

Add Tag and Save filter set - the **Add Tag** and **Save filter set** icons are displayed to the right of the base filters. These icons can be used to assign a descriptive name and to save filter set.



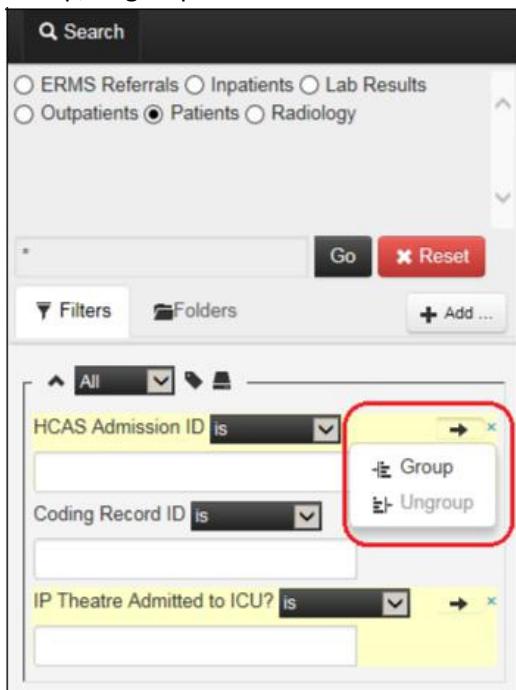
An Arrow and a Close icon - The **Arrow** and **Close** icons are displayed to the right of individual query filters. The **Arrow** icon is used to change filter groupings and the **Close** icon is used to deactivate or remove filters

The image shows a screenshot of the HCAS interface. It features a search bar with 'Go' and 'Reset' buttons, a 'Filters' section with a 'Folders' button and an 'Add...' button, and a filter row for 'Domicile contains DHB: 121'. To the right of this filter row are a red arrow icon and a red close/cross icon, both highlighted with red boxes. A blue box labeled 'User Tip' contains the following text: 'When saving a filter give it a very clear name and add a description. That way you will have confidence in reusing it later and other people in your user group can share it and know what it does.' Below this tip, another blue box contains the text: 'Saving a Filter is different from saving (or tagging) a cohort. It is recommended you do both as often as possible to reduce duplication.'

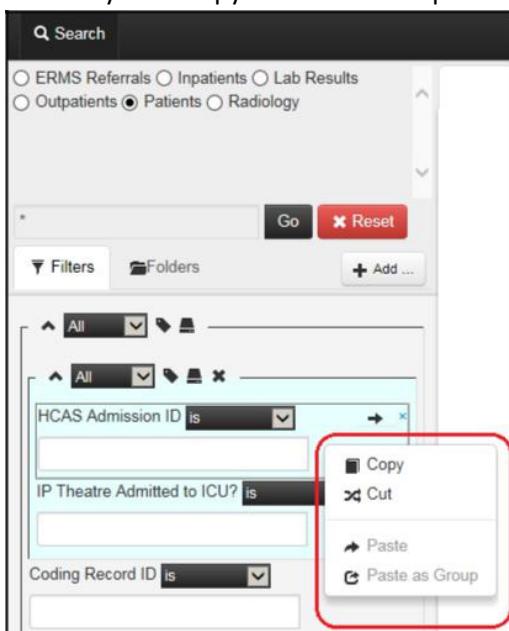
Group/Ungroup – When you click the arrow that is displayed to the right of a filter, a drop-down is displayed with options such as **Group** and **Ungroup**. You can click the **Group** option to create subgroups.

Grouping is a good way to move around and re-use a complex query containing a large number of filters, using the copy and paste functionality. Grouping is also necessary to apply Boolean operators at all levels.

When you click within the grey area next to a filter, the filter will highlight yellow; you can then click on or off as many filters as you want to add to the Group. Click the arrow to display the Group/Ungroup menu.



Once you have a Group it will highlight blue; you can right-click to bring up the context menu which enables you to copy or cut the Group and then paste as a separate filter, or paste as a Group.



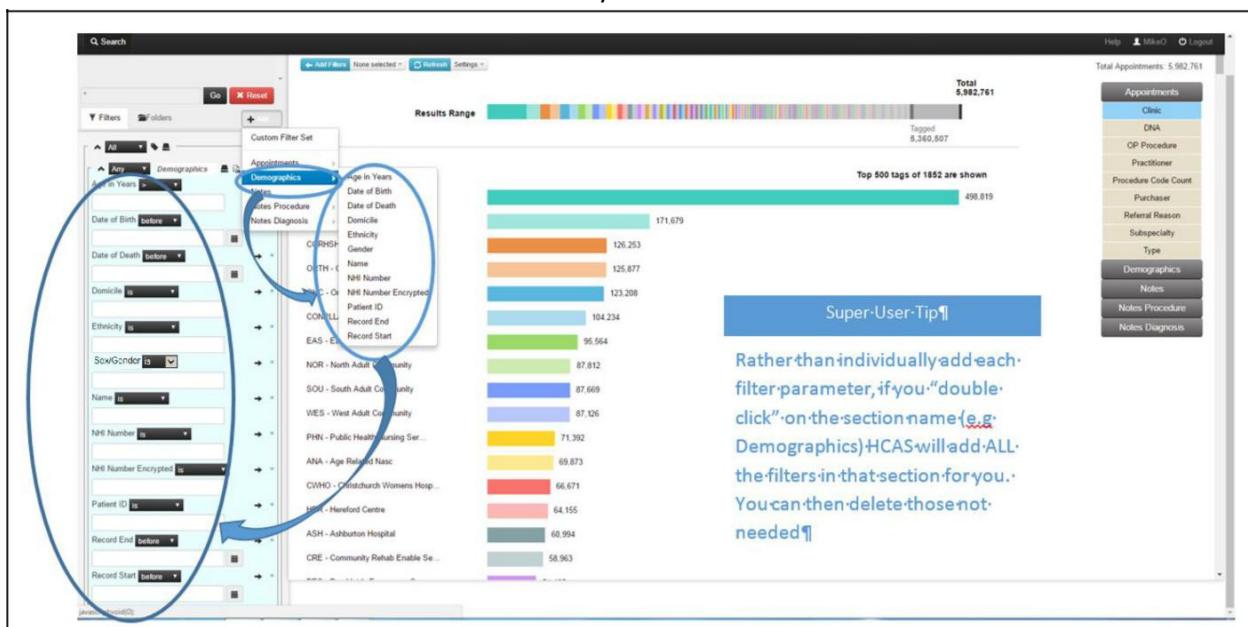
Health Care Analytics Solution User Guide

Each subgroup will have a separate common operator drop-down list and the icons such as Add tag, Save filter, and Remove or deactivate filter group, which are displayed to the right of the common operator drop-down list.

The screenshot shows the 'Filters' section of the HCAS interface. At the top are 'Go' and 'Reset' buttons. Below them is a 'Filters' dropdown and a 'Folders' icon. A large 'All' filter group is expanded, containing three sub-groups: 'Ethnicity is Maori', 'Age in Years > 35', and 'Sex/Gender is Male'. To the right of each sub-group are 'Add', 'Save', and 'Delete' icons. A red box highlights the 'Add ...' button at the top right of the first sub-group.

Add all filters from a Group:

To save time and if you want to include all filter fields from a group, click on the group header and all the filter field will be made available for data entry.

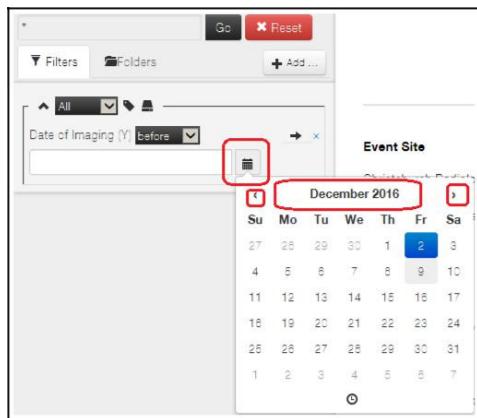


Date/time filter fields

Date/time filter fields have been set up in HCAS to provide different levels of granularity in the search. Most date/time fields will have 3 options from which to select; by year (Y), by year and month (YM), and by year, month and day (YMD).

To select dates from the wizard:

1. Click on the Calendar icon.
2. Click on the left / right arrows < > to scroll through months, and/or click on a day to select the date of that month.



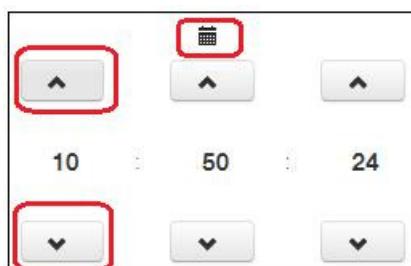
3. To select a different Year, click on the Month Year to display other years and then select the year/month/day required.

One click displays the entire current year from which to select month/day

Two clicks displays multiple years from which you can select a year, and then select a month from that year, then a day from that month.



Further granularity is available if the field data is also time based, not just a date. Click on the clock icon highlighted in the screenshot above to display a time section dialog box.

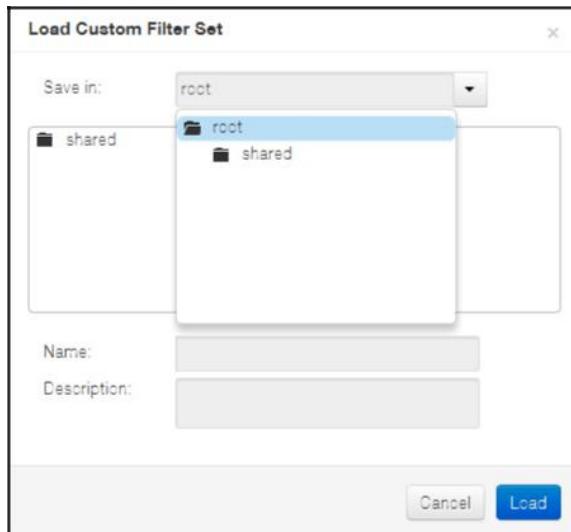


4. Scroll through using up and down arrows to select hours, minutes and seconds as required.
5. Click the Calendar icon to return to date selection.

<p>User Tip</p> <p>You can also add a date filter in a couple of other ways</p> <p>1/ if the field has autocomplete, you can choose from the autocomplete list</p> <p>2/ you can type in the date using the format; "YYYY -MM-DD"</p>	<p>User Tip</p> <p>When adding in a date range using the BETWEEN Boolean function, the results will display results up to but NOT including the second date.</p> <p>(i.e. BETWEEN 1/1/16 AND 1/4/16 will display results from 1/1/16 to 31/3/16 inclusive)</p>
--	---

Adding a Custom Filter set: see also Document Folders

Click the **+Add** button, then click **Name** and **Description** and click **Custom Filter Set**. Locate the file location, give the file a **Load**. The file will be loaded and used a filter set.



<p>User Tip</p> <p>When you are adding a custom filter you are NOT adding a cohort or the previous results of this filter. You are reapplying the filter as a new filter</p> <p>You can also add a custom filter which has been shared by your user group.</p>

Conceptual Search

Conceptual search is the ability of a system to process information based on semantic meaning. This is done using a combination of curated lexicons/taxonomies/ontologies, and algorithmic and machine learning information. Conceptual search processing includes various classifiers such as negation and context. This processing is applied to all data, including structured, semi structured, and unstructured data. The unique conceptual search capability allows users to perform advanced processing on otherwise inaccessible data. For example, clinical free text narratives may be compared with accompanying structured information to confirm diagnosis codes, clinical procedures, or other aspects of clinical documentation. In other cases, conceptual search may identify clinical concepts which are simply not available in accompanying structured information. HP Healthcare Analytics can facilitate the chart review process, enabling rapid identification, and review of clinical information.

From a user perspective, conceptual processing can be thought of as a way to map unstructured content into a finite (albeit very large) parametric space of concepts. Browsing the concepts visually in the topic map allows the user to identify closely related concepts and correlations. Users can validate the accuracy of conceptual processing by examining the relationship between raw data and machine identified concepts in the document view. It is always important to make sure that system accuracy is appropriate for the intended use case.

When you select a Concept as a filter, it uses that particular level from within the taxonomy as a search filter.

Concept+ search includes a concept node, its synonyms, and all of the child nodes including their synonyms. The hierarchical organization of an ontology can allow a single high level concept to cover thousands of terms, any of which might be present in the records being searched. For example, using a concept+ filter of “cardiovascular finding (finding)” would many relevant terms such as “cardiac thrill”, “chronic heart failure”, and “rheumatic pericarditis”.

HCAS uses the SNOMED CT ontology as a knowledge source for processing medical data. SNOMED CT is a comprehensive hierarchical healthcare terminology used worldwide. Although HCAS can be used effectively without any knowledge of SNOMED CT, there are times where it may be beneficial to have an understanding of HCAS knowledge sources. Further information can be found at <http://www.snomed.org/>.

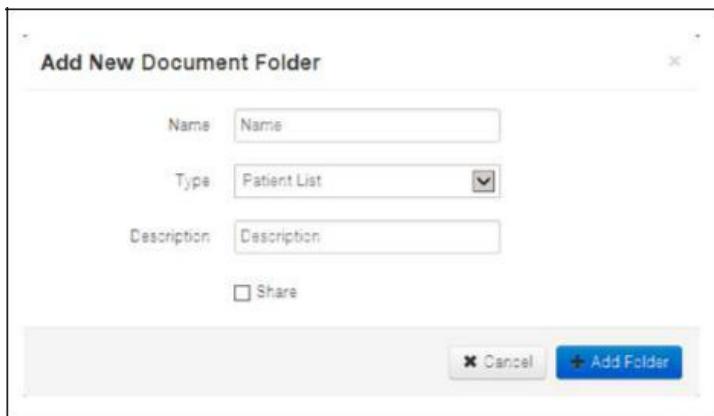
HCAS also has the New Zealand Drug Registry (NZULM) and the ICD-10 ontologies in its knowledge sources.

Document Folders

The **Document Folders** tab allows you to store and recall particular records of interest, such as a Patient Cohort. A Document folder can be created from the native Scope or as a Patient list, by selected the **Type** when creating a folder.

To create a Document Folder:

1. Click on the Document Folder tab
2. Click on the **+Add** button.
3. The **Add New Document Folder** dialog box is displayed.

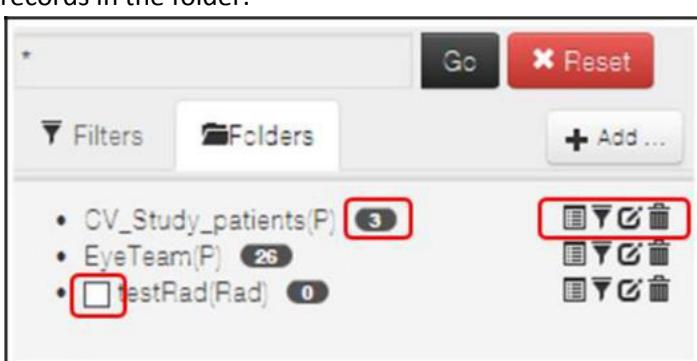


4. Enter a name and description for the folder that you are creating in the Name and Description text fields.
5. Select the folder Type; this will either be the Scope from within which the folder is created, or you can select Patient.



6. Select the Share checkbox, if you want to share the folder with other users.
 7. The document folder that is created is now listed on this tab.
- The checkbox that is displayed to the left of the folder name indicates whether the folder will be available for use while reviewing records in the document view (see the Results section later in this guide).

The number in the black circle/oblong after the folder name indicates the number of records in the folder.



The icons that are displayed to the right of the folder name are:

Import/Export – Using this icon, you can load/save documents folder to an associated file. For example, you can export and save a list of records that can be later imported to be used as a Custom Filter Set; see also **Query Filters** section

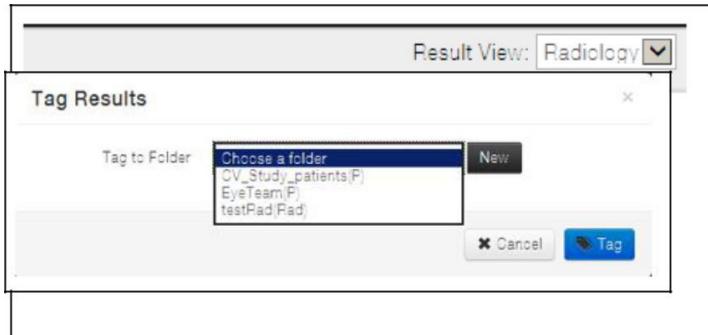
Add Filter – Using this icon, you can create a filter list that contains the records in the document folder. If the folder is a patient list, then the filter contains all records tied to that patient. For example, in Radiology Scope, a filter may contain a list of radiology studies if the folder was of type “Rad”. Or the filter may contain all radiology studies that are associated with the patients in the document folder if the folder was of type “P”.

Edit – Using this icon, you can edit the folder name or description.

Delete – Using this icon, you can delete the document folder.

Records can be populated into a folder in three ways:

1. Using the Import icon as described above,
2. Tagging records individually from the Doc Viewer, see Doc View section later in this guide,
3. From the Results View, you can tag all the results into the folder; Click Action then select Tag.



You can then select a folder to enter the tagged results and click the **Tag** button. For this guide, **testRad(Rad)** folder is used.

The Tagged results will populate into the folder, and this is displayed as the number of records within the folder. The total number of Radiologies from screenshot above was 47, now the folder displays 47 records.



Exporting a Cohort to another Data View

Records associated with a Patient or a list of Patients can be viewed in multiple Scopes using the Patient Type document folder. See Document Folder section above to create and populate a Document Folder.

1. Create a document folder.
2. Populate the folder with the list of Patients you require.
3. Go to another Scope and click on the **Add Filter** icon beside the folder name.

The screenshot shows a user interface for managing document folders. On the left, there's a list of folders with some items highlighted. One item, 'CV_Study_patients(P)', has a red box around it. To the right of the list are several small icons used for filtering or deleting items. On the far right, there's a blue-bordered box labeled 'User Tip' containing text about exporting patient folders.

User Tip

Only PATIENT (P) folders can be exported to another View. Native record unit folders can be reloaded into their scope for further analysis.

4. The folder will be added to the filter tab

The screenshot shows a filter configuration screen. At the top, there's a search bar, a 'Go' button, and a 'Reset' button. Below that is a 'Filters' tab and a 'Folders' tab. A 'User Tip' box is overlaid on the right side of the interface.

User Tip

When you add a patient folder you are adding a patient LIST. You are not adding the filter set that created this list. Saving a patient list or cohort is different from saving a filter. It is recommended you do both as often as possible to reduce having to remake a filter multiple times

Data Visualisation

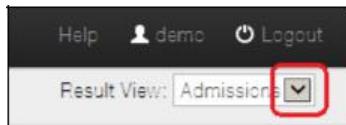
The right pane of the HCAS application can be defined as the ‘Data Visualisation pane’. This pane summarizes data in a visual manner, which enables knowledge discovery and interactive data exploration. It contains tabs such as **Bar Charts**, **Topic Map**, **Table Viewer**, and **Results**.



On all the Views, the total number of results which match the current query filter criteria is displayed at the upper-right corner of this pane in Result View field. The default (or native) unit is the one first displayed; this is based on the native Scope, such as Admissions, or Visits. If you want to see the number of Patients within the Scope, change the Results View.

To change the Results View: click on the drop down arrow on the right of the box and select the required value.

1. Click on the drop down arrow on the right of the Results View box



2. Select the required value from the list displayed



Note: you will see the ‘number’ change as it changes from, e.g. total number of Admissions to Number of Patients who have Admissions.

Always remember to change back to the native unit after reviewing number of Patients.



Bar Chart View

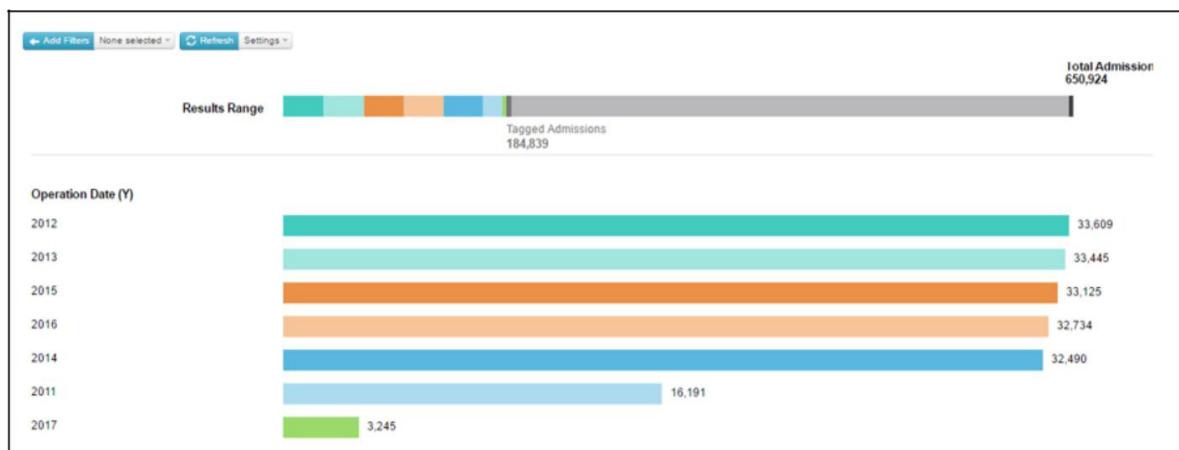
This tab displays value for a single data dimension. The selected parameter is highlighted in the list of parameters that is displayed in the right pane.

Bar chart - The bar graphs displayed in the center of the tab indicates the tag names for that parameter and the number of records, which are tagged in each category. You can click one of the bars of the graph to add that category to the active query filters in the left pane.

The top-most bar of the graph is a stacked bar chart, which indicates the number of tag occurrences within the result set. This bar simultaneously indicates the sum of all tags (up to the number of tags shown) and the total number of results. This instantly identifies whether untagged records exist, or whether the total number of tag occurrences is greater than the number of records in the result set. This can be insightful about the relationships between data elements, for example, an Admission may have no ICD codes, 1 ICD code, or even numerous ICD codes per Admission.

User Tip

You can click one of the bars of the graph to add that category to the active query filters in the left filter pane.



In the example above we see the total admissions of 650,924. However only 184,839 of these admissions have had an operation, and the colours in the stacked bar show the operation date (Y) tagged in the bar chart.

Note: when the number of tags is large, the system may not show all available tags and will indicate this by displaying a message such as “top 500 of 32034 tags are shown”. When this occurs, the stacked bar chart is only displaying the top 500 tags in the data and indicates there are 32034 total tags available. The remaining 31534 tags will be represented in the gray bar at the left of the stacked bar chart. The default number of tags shown on the display can be changed with the “Max Rows” setting listed below.

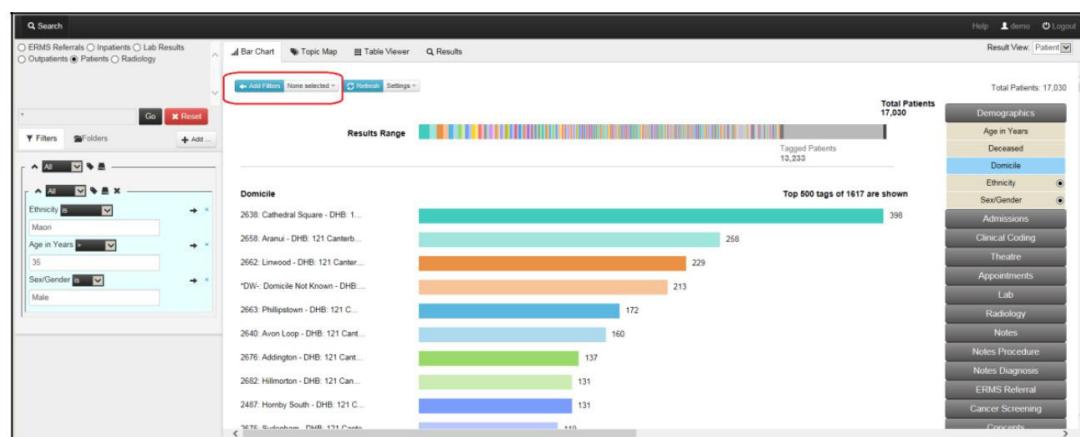
Thinking about the complex relationships within the source data within a Scope is also important to correctly interpreting HCAS results. Individual data elements may be absent or present, and can be present in one-to-one, many-to-one, or one-to-many relationships.

Example: zero-to-many ICD10 codes may be associated with an admission. This means that the number of tagged values may be less than, equal to, or greater than the number of admissions, which is most easily examined in the Admissions Scope. You are searching for records with ICD10 codes for both asthma and diabetes

- **Admissions Scope** – 67 results – Both asthma and diabetes were coded simultaneously for these 67 admissions
- **Patient Scope** – 132 results – These 132 patients have codes in the records for both asthma and diabetes, but these codes may appear independently in separate admissions, and perhaps never simultaneously within one admission. Codes may also appear several times within a single patient record if the patient has multiple hospital admissions.

Also keep in mind that data changes over time. For example, a patient’s domicile address may change over time in their records. So a single patient may be represented in multiple domiciles in certain Scopes.

Add Filters - After selecting categories, click the **Add Filters** button to add the selected categories to the active query filter.



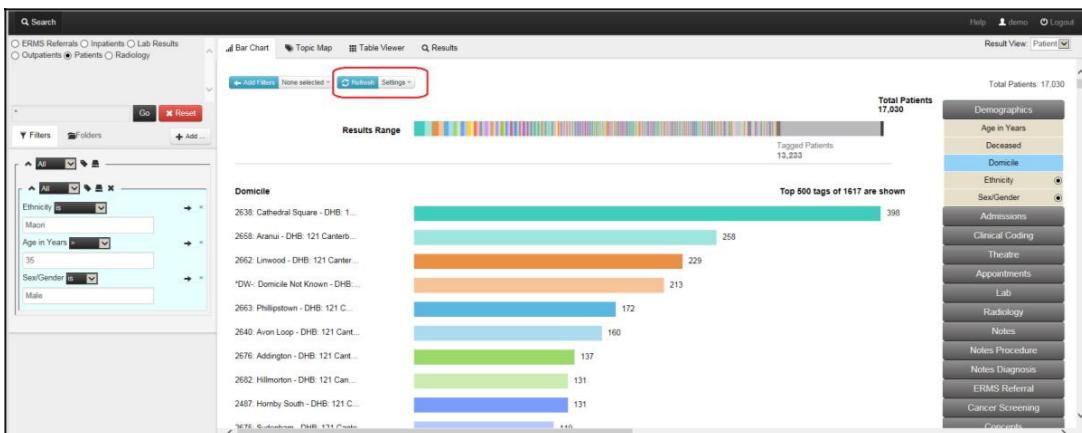
None selected – This drop-down button is displayed at the top of the tab. Click this button to display a list of categories for the selected parameter, or you can use the search function to find a match. You can select multiple categories and add those under one single filter. This drop-down button also enables options such as **Clear All Selected**, **Sort by Count** and **Search**.

Category	Count
CDHB - Christchurch Hospital - Facility: Christchurch...	496,326
EMER - Emergency Department - Facility: Christchurch...	171,168
ORTH - Orthopaedic Department - Facility: Christchurch...	125,482
OHC - Oral Health Centre - Facility: Christchurch...	122,696
CWHO - Christchurch Womens Hospital - Facility: Christo...	66,389
CCNPLLA - Radiation Therapist - Facility: Christchurch...	41,836
COPHSH1 - House Surgeon Clinic - Facility: Christchurch...	30,754
NUC - Nuclear Medicine Department - Facility: Christchur...	19,269
CMP - Christchurch Opioid Recovery - Facility: Princess ...	18,901
CONRCRO - Radiation Oncology Smo Outpatient C - Fac...	17,516
COBDUDU - Nursing-Oncology, Haematology, MDU - Fa...	16,663
CONMOMO - Medical Oncology Smo Outpatient Onco - F...	15,350
MAXFAC - Maxillofacial Surgery - Facility: Christchurch...	13,160
CRPSUDA - Sleep Unit Day Clinic - Facility: Christchurch...	12,384

Using these options, you can:

- View more detail than the graphic representation display, such as a larger number of categories.
- Sort data numerically or alphabetically.
- Select multiple categories simultaneously using the checkboxes that are displayed to the left of the category name.

Refresh – This button is displayed at the top of the tab. After choosing the selection criteria, click this button to refresh the tab and display the bar charts accordingly.



Settings – This is a drop-down button, which is displayed at the top of the pane. If you click this button, the following fields are displayed:

- **Max Rows** – This is a text field using which you can specify the number of visible tags or bars per page. (*Note: max rows = 5000*). Changing this setting may affect how long it takes for queries to execute.
- **Sort** – This is a drop-down list, which contains options such as **Count** and **Alphabetic**. Using these **Sort** options, you can alter the sort order.
- **Show Count values as % of records** – This is a checkbox, which can be selected to display percentages instead of absolute tag counts.

The screenshot shows a 'Settings' pane with a red box highlighting the 'Settings ▾' button. Below it are three configuration items: 'Max Rows' set to 500, 'Sort' set to 'Count' (with a dropdown arrow), and a checkbox for 'Show Count values as % of records' which is unchecked.

Super User Tip

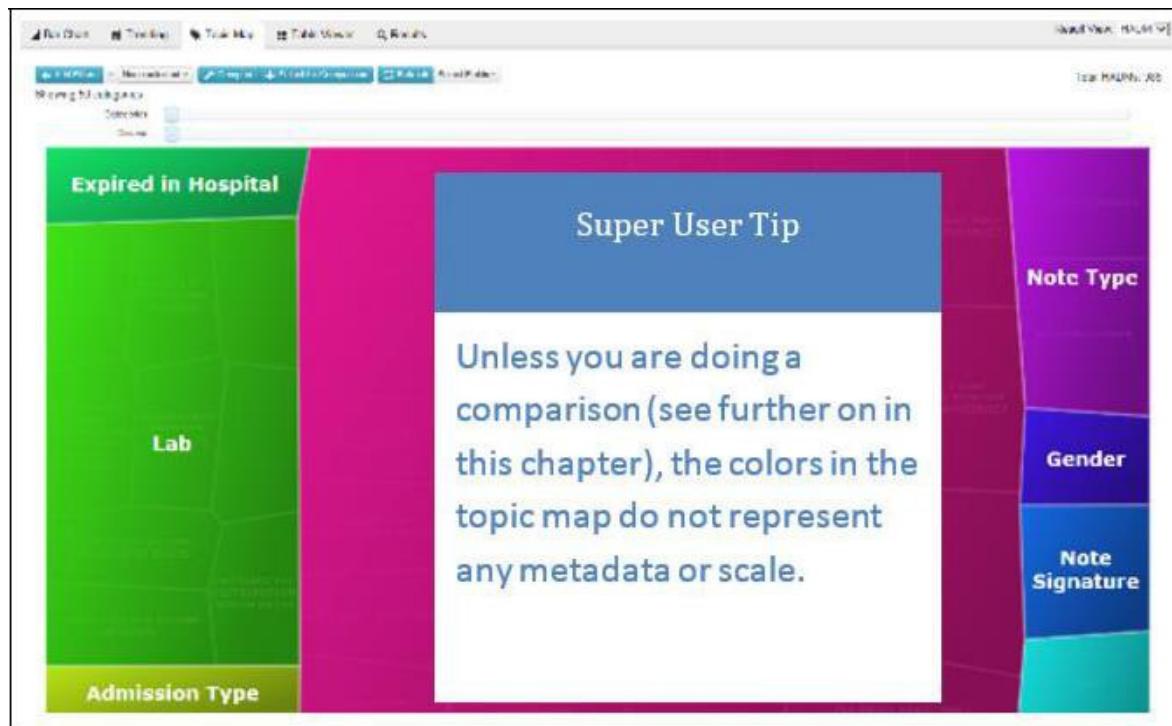
At present you can't sort by numeric order. You will need to export the data out of HCAS to achieve this graphically

User Tip

You can arrange dates in chronologic order in bar chart by sorting using ALPHABETIC

Topic Map View

This tab displays data in a multidimensional format. Parametric categories are indicated by a veil, which you can click to uncover specific data elements corresponding to that category. Data elements are organised by frequency of occurrence with the most prevalent values at the upper-left corner of the tab, and the least prevalent values at the lower-right corner of the tab.



Frequency of occurrence is also indicated by the size of each polygon. Each node is labeled with a dated description as space permits. You can view the dated description labels and record counts by hovering the mouse cursor over a particular polygon. Also, you can click a particular polygon to add it to the currently selected query filter.

The elements of this tab are as shown and described below:



Add Filters - After selecting categories, you can add those to the active query filter by clicking this button.

None selected – This drop-down button is displayed at the top of the tab. Click this button to display a list of categories for the selected parameter, or you can use the search function to find a match. You can select multiple categories and add those under one single filter. This drop-down button also enables options such as **Clear All Selected, Sort by Count and Search**.

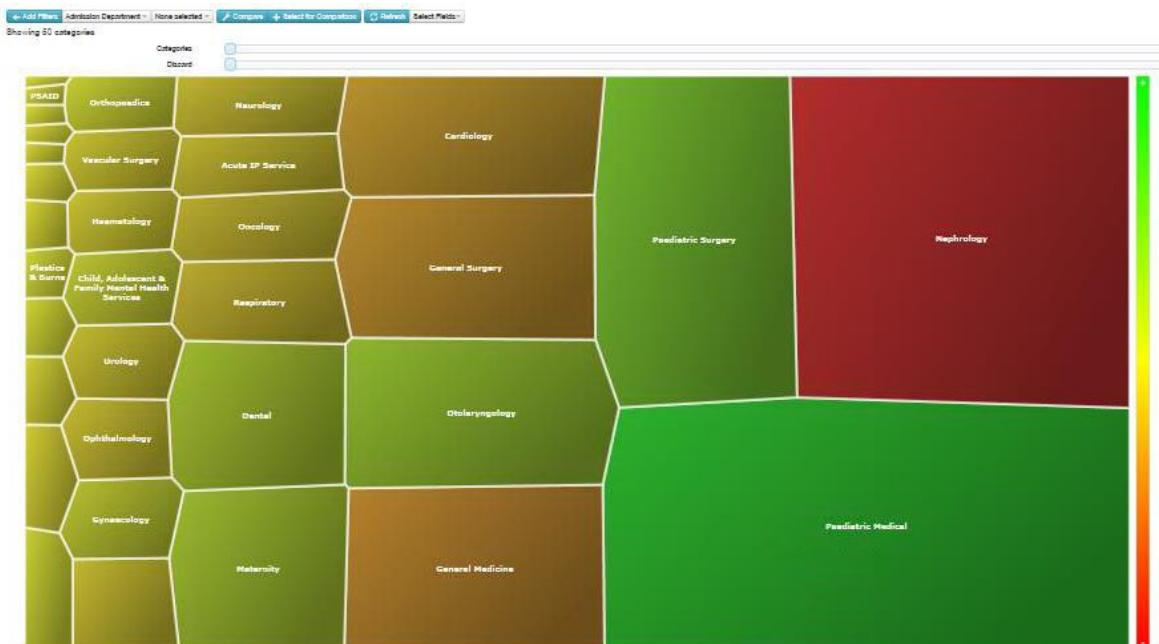
Using these options, you can:

- View more detail than the graphic representation display, such as a larger number of categories.
- Sort data numerically or alphabetically.
- Select multiple categories simultaneously using the checkboxes that are displayed to the left of the category name.

Compare - When a new cohort is displayed, click this button to view the comparison.

Select for Comparison – Using this button, you can compare two query cohorts. When the first query is displayed, click this button. At this point, a new query is performed by modifying the query filters in the left pane as desired.

Each polygon now represents the correlation with either the first query, or the second query. The strength of correlation is indicated both by polygon size (from largest in the upper-left corner to smallest in the lower-right corner) and also by color brightness. The direction of correlation is indicated by the color, where correlations with the first query are denoted in red, and those correlating with the second query are denoted in green.



Refresh – After choosing the selection category, click this button to update the data displayed.

As this tab conveys multiple dimensions, best results can be obtained by selecting a limited number of categories for display at one time to ensure adequate screen space for visual display.

Select Fields – This is a drop-down button, which further contains all of the possible parametric values that can be displayed. Each parametric value is associated with a checkbox, which is displayed to the right of each specific category. Using these checkboxes, you can select or deselect an item. The checkbox that is displayed to the right of the heading for this list can be used to select or deselect entire group of categories.

Categories – Using this slider, you can select the total number of categories, and may vary between 50 and 300. This slider can be used to increase or decrease the number of elements to be displayed as desired.

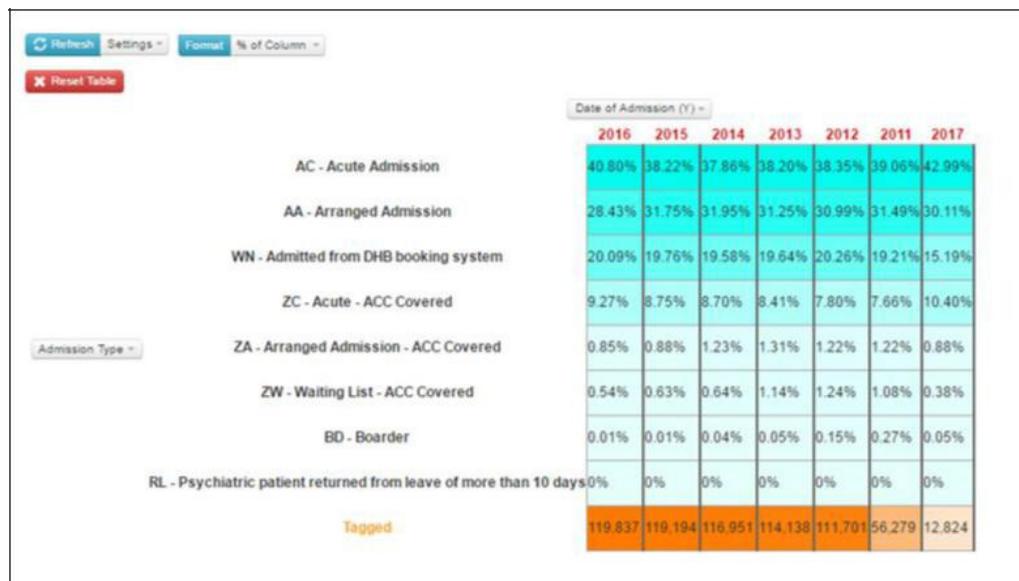
Discard – Using this slider, you can define how many high-level categories can be discarded, before categories are used for the visualisation. The default is zero, however, this control can be used when a few categories are dominating the visual field of the display.

Table Viewer

This functionality allows a quantitative display of two parameters simultaneously, similar to a conventional pivot-table.

For example, admission data may allow you to select “Admission type” on the X axis, and choose “date of admission” on the y-axis. This would produce a two-dimensional table displaying the admission type along with a display of the date of admission. This table is an interactive component, so selecting a column or row heading such as “2016” or “ZC- Acute ACC” would add that item to the query filters.

Similarly, selecting the cell where these column and row headings meet would add both categories to the current query filter. The table will recalculate automatically when the query filters are modified, or the row or column selections are changed.



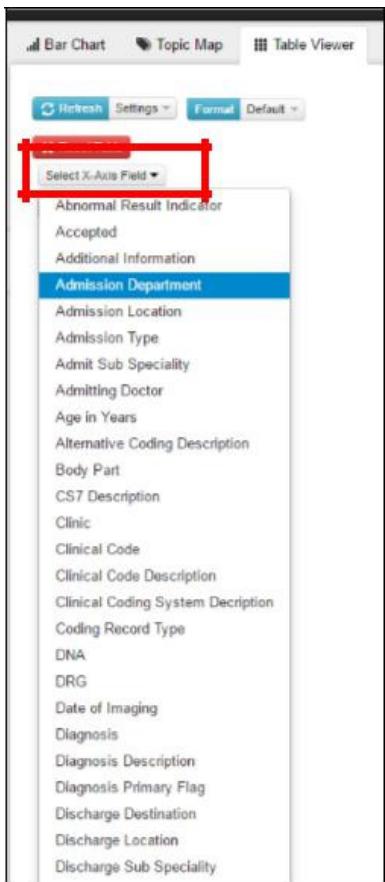
The screenshot shows a user interface for a Table Viewer. At the top, there are buttons for Refresh, Settings, Format, % of Column, and a Reset Table button. Below these is a dropdown menu labeled "Date of Admission (Y) =". The main area is a heatmap table with columns for years from 2016 to 2017 and rows for admission types. The cells contain percentages. A tooltip "Tagged" appears over the last cell of the first row. The admission types listed are AC - Acute Admission, AA - Arranged Admission, WN - Admitted from DHB booking system, ZC - Acute - ACC Covered, ZA - Arranged Admission - ACC Covered, ZW - Waiting List - ACC Covered, BD - Boarder, and RL - Psychiatric patient returned from leave of more than 10 days.

	2016	2015	2014	2013	2012	2011	2017
AC - Acute Admission	40.80%	38.22%	37.86%	38.20%	38.35%	39.06%	42.99%
AA - Arranged Admission	28.43%	31.75%	31.95%	31.25%	30.99%	31.49%	30.11%
WN - Admitted from DHB booking system	20.09%	19.76%	19.58%	19.64%	20.26%	19.21%	15.19%
ZC - Acute - ACC Covered	9.27%	8.75%	8.70%	8.41%	7.80%	7.66%	10.40%
ZA - Arranged Admission - ACC Covered	0.85%	0.88%	1.23%	1.31%	1.22%	1.22%	0.88%
ZW - Waiting List - ACC Covered	0.54%	0.63%	0.64%	1.14%	1.24%	1.08%	0.38%
BD - Boarder	0.01%	0.01%	0.04%	0.05%	0.15%	0.27%	0.05%
RL - Psychiatric patient returned from leave of more than 10 days	0%	0%	0%	0%	0%	0%	0%
Tagged	119.837	119.194	116.951	114.138	111.701	56.279	12.824

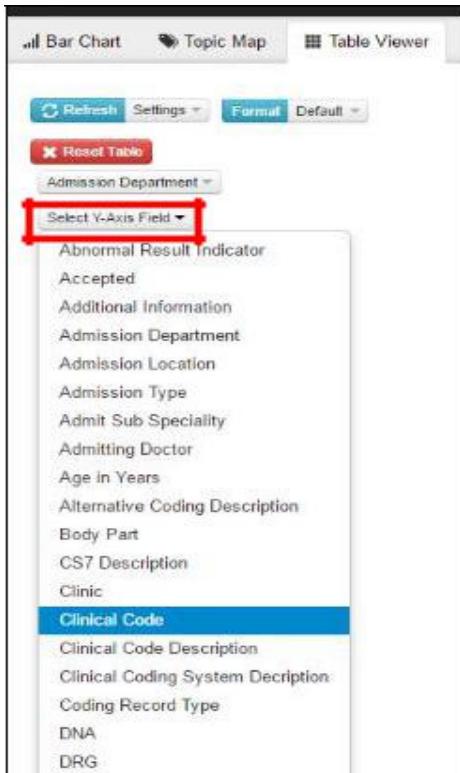
Health Care Analytics Solution User Guide

To display data in a tabular format:

1. On the **Table Viewer** tab, from the **Select X-Axis Field** drop-down list, choose an option.



2. Then from the Select Y-Axis Field drop-down list, choose an option.



The table is now displayed based on the selected values.

- Click the Reset Table button to reset the X axis and Y axis values of the table.

The screenshot shows a Table Viewer interface with a red box highlighting the 'Reset Table' button. A blue circle highlights the 'Assessment & Rehabilitation' column header. A blue box labeled 'Super-User Tip' contains the following text:

You can click on a Column heading or on a row heading to add a filter. If you click in a result cell, it will add both row and column headers as filter at the same time

	Maternity	General Medicine	General Surgery	Orthopaedics	Emergency	Gynaecology	Cardiology	Plastic & Burns	Pediatric Medical	Otolaryngology	Ophthalmology	Assessment & Rehabilitation	Unicity	Pediatric Surgery	Oncology	Total	
9955003	13,535	213,987	47,698	76,000	42,043	10,749	34,427	22,011	11,957	5,937	17,326	10,199	12,925	1,967	15,370	61,211	
Z9443	33,719	232,034	70,124	51,192	40,466	27,839	72,0									20,910	55,732
9955009	15,177	182,828	60,343	42,415	41,745	14,845	53,2									18,537	52,811
9955015	1,351	164,779	26,993	16,620	28,082	4,037	27,0									11,617	41,440
7603003	11,423	103,933	34,617	30,749	40,165	9,528	27,7									15,241	42,527
Z729	45,554	104,317	66,071	44,300	79,668	19,935	22,4									12,481	36,775
Y9222	5,345	129,224	50,461	36,705	25,262	13,474	36,7									10,656	30,725
Z716	41,446	98,000	62,627	26,008	36,258	15,172	21,0									8,785	35,295
5091516	5,939	40,640	32,406	10,510	13,096	10,203	35,8									7,217	32,812
5251429	5,236	11,769	26,885	20,833	9,538	18,204	3,97									4,367	30,977
Z309	33,385	136	48	388	47	37	7									1,316	21,715
5251416	5,944	1,430	10,253	13,329	2,646	11,646	415									1,090	27,524
U08	5,120	55,617	11,852	33,560	33,311	4,235	5,35									1,535	25,355
Z379	77,760	1,943	3,493	568	2,016	15,111	181									143	23,450
5251436	4,780	10,370	10,467	12,140	3,120	10,001	6,31									7,379	21,649
Total	\$1,090	42,907	33,493	29,046	26,999	24,714	21,5									4,074	

The elements of this View are as follows:

Refresh – After choosing the selection category, click this button to update the data displayed.

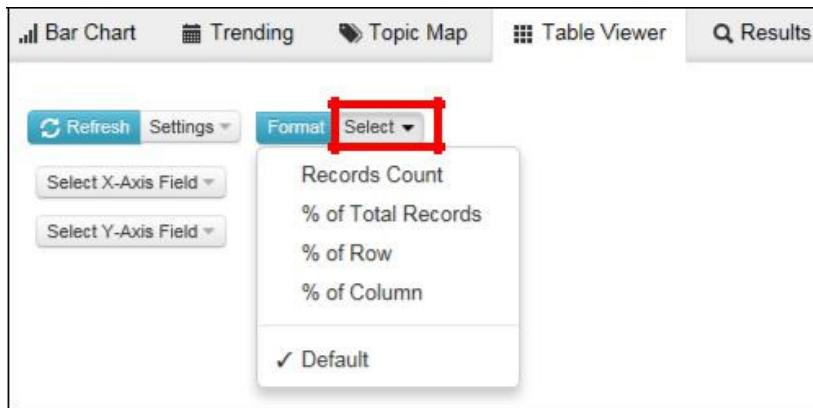
The screenshot shows the Table Viewer toolbar with a blue circle highlighting the 'Settings' dropdown button. Other buttons include 'Refresh', 'Format', and 'Select'.

Settings – This is a drop-down button, which contains the fields such as **Max Columns**, **Max Rows**, **Sort**, and **Show Concept parent when filtering Concept categories**. Using these options, you can change the number of cells displayed and sort criteria.

The screenshot shows the 'Settings' dropdown menu with the following options:

- Max Columns: 20
- Max Rows: 20
- Sort: Count (dropdown menu)
- Show Concept parent when filtering Concept categories: checked

Select – This is a drop-down button, which contains options such as Records Count, % of Total Records, % of Row, % of Column, and Default.



Results View

Important Message on Privacy and Security

Patient identifiable information is viewable in data export from HCAS in the results View. You may only access a patients' clinical records if you are actively involved in their clinical care or as part of a quality improvement process which requires identified

This tab displays a summary of the records that are in the current result cohort. The primary fields displayed are related to the Scope used for the search. For example, in the Inpatient results view, Admission IDs and Department are displayed, while in Outpatient results view are some of the fields shown are Patient ID, NHI, Name and Outpatient Event ID.

1443923	5708873
<input type="checkbox"/> Admission ID 1443923 <input type="checkbox"/> Admission Department General Medicine <input type="checkbox"/> Date of Admission 2011-10-06 19:03:00.0 <input type="checkbox"/> Date of Discharge 2011-10-07 15:40:00.0	<input type="checkbox"/> Patient Id <input type="checkbox"/> NHI <input type="checkbox"/> Name <input type="checkbox"/> Outpatient Event Id <input type="checkbox"/> Subspecialty <input type="checkbox"/> Appointment Date
1443927	
<input type="checkbox"/> Admission ID 1443927 <input type="checkbox"/> Admission Department Orthopedics <input type="checkbox"/> Date of Admission 2011-10-12 21:11:00.0 <input type="checkbox"/> Date of Discharge 2011-10-16 12:10:00.0	

Additional information about each record is also displayed. Only a few records are summarized on this tab, however additional records may be retrieved by scrolling to the bottom of the page. You can click a primary field to open the "document view" of that record. See also the Document View section.

The elements of this View are as follows:



Action – When you click this icon, the following options are displayed:

Export – If you select the **Export** option, the **Results Export** dialog box will be displayed. This dialog box contains the fields such as **Name**, **Format**, **Export Fields**, **Cancel**, and **Export**. In the **Name** field, you can provide a name for your export file, the **Format** drop-down field includes the **CSV** option, which you can use to export data as **CSV** file, and the **Export Fields** drop-down field lists all the data options, which you can select to export. After providing all the mandatory information, click the **Export** icon. The selected data will now be exported in the desired format and will be saved in your local system.

Tag – If you select the **Tag** option, the **Tag Results** dialog box will be displayed. This dialog box contains the fields such as **Tag to Folder**, **New**, **Cancel**, and **Tag**. You can choose the folder that you wish to be tagged from the **Tag to Folder** drop-down field, and then click the **Tag** icon. The selected folder will now be tagged. If you click the **New** button, the **Add New Document Folder** dialog box will be displayed. You can use the options of this dialog box to create a new folder. See also the section “Exporting a Cohort to Another Data View” which details how to use the cohort you have tagged.

User Tip

Not all fields available within HCAS can be exported. Fields needed for further analysis, linking to CDHB source systems or to do visualisations like histograms can be exported

Document View, or DocView

Important Message on Privacy and Security

Patient identifiable information is viewable at the document View level within HCAS.

You may only access a patient clinical record if you are actively involved in their clinical care or as part of a quality improvement process which requires identified patient information.

Access for any other reason is unethical and may be considered professional misconduct.

All users of HCAS must adhere to their organizations privacy and security procedures.

All access to patient data is audited.

This view displays the complete data or information of a particular record in the result cohort. The left pane displays the record data, which are a combination of structured, semi structured, and unstructured elements. The tabs, and the information that is displayed vary based the overall view you are looking at (e.g. Inpatient vs Outpatient) These view includes tabs such as Admissions Info, Patient Info, Coding Info, Radiology Events, Lab Results, and Notes. Using the options of these tabs, you can change the data display to their respective data elements. The right pane includes document folders at the top, turning query filters at the center, and relevant concepts at the bottom.

InPatient

Admission ID: AC - Acute Admission
Admission Location: 30PMH - Christchurch - Ward 30 @ Tpmh
Admission Department: General Medicine
Discharging Department: General Medicine
Date of Admission:
Date of Discharge:
Purchaser: 35 DHB-Funded Purchase
Discharge Destination: DR - Ended routinely
DRG: F66B - Coronary Atherosclerosis W/O Catastrophic Or Severe CC - 6.0.1
ICU Hours: 0
Length of Stay: 1
Mechanical Ventilation Hours: no value
NIV (CPAP/BIPAP) hours:
PCCL Code: 0 - no complication and comorbidity (OC) effect
Admitting Doctor: 273VS - Gen Med 3
Discharging Doctor: 273VS - Gen Med 3
Admit Subspecialty:
Discharge Subspecialty: M00 - General Medicine

Document Tags

Search Tags:

- Folders
- Labels
- Features
 - Concepts
 - Related Concepts
 - Negation Terms
 - Contexts

Super User Tip

The total number of documents is shown in the top right.

Be aware, sometimes there will be no information to display on a particular tab within a record.

Appointments

InPatient Fact Key:
Event ID: (redacted)
Appointment Date:
Clinic: CCC - Care Co-Ordination Centre
Purchaser: 35 - DHB-funded purchase
Type: TL - Telephone/Av
DNA: 0
Subspecialty Code: A01 - Allied Health and other
Referral Reason: "DW-NIAV - Not Available
Practitioner: None / No health practitioner
OP Procedure: no value
Code Count: 0

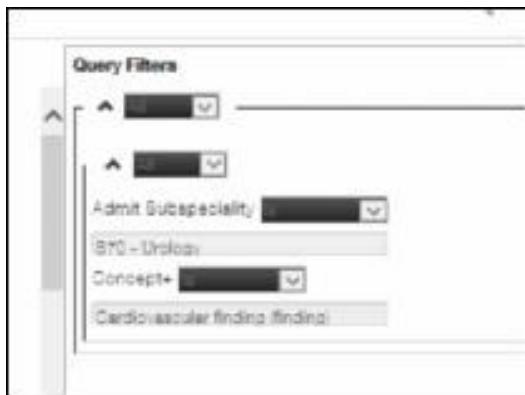
Document Tags

Search Tags:

- Folders
- Labels
- Features
 - Concepts
 - Related Concepts
 - Negation Terms
 - Contexts

Chart 1 out of 5982761

The total number of charts in the top right is displayed, also showing you which chart you are looking at within the number of charts.



The Query filter display is in the upper right Pane of the Document View. It is very similar to the query filter builder used to generate queries, except that the filter selections cannot be changed in this Pane.

A screenshot of the 'Query Filters' pane showing expanded filter groups. On the left, there are several filter groups: 'All', 'All', 'Clinical Code Description is not (E099) Intermediate hyperglycaemia w', 'All', 'DiabCode2014', 'Date of Admission (Y)', '2014', 'Clinical Code Description not contains diabetes', 'Concept+', 'Diabetes mellitus (disorder)', 'When in', 'Service and Test requested contains a1c', 'Any', 'Abnormal Result Indicator High', 'Abnormal Result Indicator Very High'. To the right of the pane is a blue 'User Tip' box containing the text: 'You can expand or collapse the filter group using the small arrows'.

The individual filters are clickable, and may be used to navigate the record which is currently being viewed. If a filter is present in the current record, the document view window (left) will tab/scroll and the filter selection will highlight in-line in the current record. If an ontology concept filter is clicked, then the concept tree (see below) will also be altered appropriately.

Using Document Folders in DocView

In the Document Folders section it described how to make and save document folders. The checkbox that is displayed to the left of the folder name in the folder Tab indicates whether the folder will be available for use while reviewing records in the DocView.

The screenshot shows the DocView application interface. On the left, there is a detailed view of a radiology event. The event details include:

- RADILOGY EVENT:** HCA Radiology ID: 5060366
- EXAM:** Exam ID: 5060366, Exam Name of Imaging: 2011-10-16 18:31:00, Exam End Date: 2011-10-16 18:47:00, Exam Referrer: ED EMERGENCY DEPT ALL CODES, Exam Status: Distributed, Exam Site: Emergency Department, Exam Type: Radiology X-Ray, Exam Description: CHEST, Body Part Description: Unknown, Exam Admission ID: 0, Exam Appointment ID: 0.
- STUDY:** Study Exam: D06: Chest (single projection), Study Exam Type: XR: Radiology X-Ray, Study Quantity: 1.
- EXAM REPORT:** Report Dictation Date: 2011-10-17 11:21:00, Report Text: CLINICAL DETAILS: Unwell with shortness of breath and fever (39°).? Lower respiratory tract infection. FINDINGS: The heart is not enlarged. Hilus and mediastinal contours are normal. The lungs and pleural spaces are clear. The nature of surgical clips in the region of the gastro-oesophageal junction is uncertain, but their presence was commented on in a report from 1997. No bony abnormality. COMMENT: No acute abnormality detected. DICTATED BY: Damon Lane (Radiology Registrar year 4).
- SUPERVISING CONSULTANT:** Dr Ian COWAN Radiologist

On the right side of the interface, there is a panel titled "Query Filters" which contains several filter criteria. The filters include:

- All DM2012014 Clinical Code Description is not (E999) Intermediate hyperglycemia
- All DiaCode2014 Date of Admission (Y) 2014 Clinical Code Description not contains diabetes Concept Diabetes mellitus (disorder)
- When in Service and Test requested contains a1c Any Abnormal Result Indicator High Abnormal Result Indicator Very High

At the bottom right, there is a "Document Tags" section with a search bar and a list of tags. One tag, "DM2014_coding OK", is highlighted with a blue background.

Folders in DocView are useful for workflow and manual chart abstraction

You can set up a series of folders based around your workflow and then add a record to the folder by simply ticking the box of the name of the folder. This record is then copied to that folder. You can use this folder later in other scopes or as a filter.

The Concept Tree

The Concept Tree lists the ontology concepts annotated in the record. The hierarchical tree organization may vary as it is a function of the ontologies employed and the annotation tags found in the particular record being viewed. The SNOMED CT ontology employed in HCAS typically has concept nodes organized under main structural branches such as *Body Structure*, *Morphologic Abnormality*, and *Disorder*. Specific concepts (leaf nodes) may be present in each of these categories if these notes are found within the current record. See SNOMED CT (<http://www.snomed.org/snomed-ct>) for organizational details of this ontology. The tree may also display other pipeline processing tags such a *Negation* or *Context*.

A variety of functions are available for the ontology tree:

Collapse/Expand – Branch point nodes may be collapsed/expanded in order to help tree navigation

Check/Uncheck – Only ontology nodes which are checked will be highlighted in the record being viewed. The user may select specific nodes, or whole branches. The highlighting immediately reflects the ontology tree selection changes and the highlighted tag navigation control will update appropriately.

Search – There is a Search Tags field which will boldface tags with the selected text. This is useful when ontology tree contains a large number of nodes which cannot easily be navigated through direct tree visualization.

Highlighted Tag Navigation Control (next to the chart navigation label) – The tag navigation control in the upper right corner assists navigation of the ontology tags being viewed in the current record. It shows how many total tags are currently highlighted in yellow, and which of these tags is currently highlighted in purple. You can step through the selected tags by using the forward and backward arrows.

The screenshot shows the 'Document Tags' section of the application. At the top, there are navigation controls: '1 of 30' and 'Chart 2 out of 608776'. Below this is a 'Search Tags' input field, which is highlighted with a red box. To the right is a blue 'User Tip' box containing three pieces of advice:

- You can untick any of the concepts you do not want to see at any time.
- Changing the concept or concept parent filters (tick/untick) changes the total concepts identified in the Highlighted Tag Navigation Control
- You can expand or collapse the concept tree using the small arrows (branch point nodes)

The main area displays a hierarchical tree structure of ontology concepts. Nodes are represented by icons and labels. Some nodes have checkboxes next to them, and several nodes are highlighted with red boxes, indicating they are selected or checked. The tree includes categories like Folders, Labels, Features, Concepts, PROCEDURE, FINDING, DISORDER, PRODUCT, EVENT, and Related Concepts, among others.

Health Care Analytics Solution User Guide

The screenshot shows a patient chart for a patient with Event ID 1073838. The chart includes sections for InPatient, Notes, Clinical Coding, Radiology, Theatre, and Lab. A 'Super-User-Tip' box is overlaid on the right side of the screen. The tip text reads:

The total number of concepts identified is for all tabs in a particular record not just the tab you are on.

You can use the arrows to scroll through the concepts.

To the right of the tip box is a 'Document Tags' sidebar with a tree view. The 'Concepts' node is expanded, showing a large list of medical terms under the 'DISORDERS' category, which is circled with a blue oval. At the top of the sidebar, there are navigation arrows and the text 'Chart 1 out of 688778'.

Docview Navigation

You can move through the docview records by clicking on the Right and Left arrows on the side of the display.

The screenshot shows a patient chart for a patient with Event ID 1073838. The chart includes sections for InPatient, Notes, Clinical Coding, Radiology, Theatre, and Lab. A 'Super-User-Tip' box is overlaid on the right side of the screen. The tip text reads:

Use the Arrows on the right and left to move forward or back between records.

Be aware you will move to the same tab you are on the adjacent record.

To the right of the tip box is a 'Document Tags' sidebar with a tree view. The 'Features' node is expanded, showing categories like Concepts, Related Concepts, Negation Terms, and Contexts. On the far right, there are large blue arrows pointing left and right, which are circled with blue ovals. At the top of the sidebar, there are navigation arrows and the text 'Chart 1 out of 688778'.