ANALYSIS TOOLS MANUAL

VOL 1

OVERVIEW & INSTALLATION

BIOGRAPHICAL ANALYSES

CLINIC VISIT ANALYSES

UNKNOWNS ANALYSES

UNINSTALLAING THE ANALYSIS TOOLS

VOL 2

ANNUAL REVIEW ANALYSES

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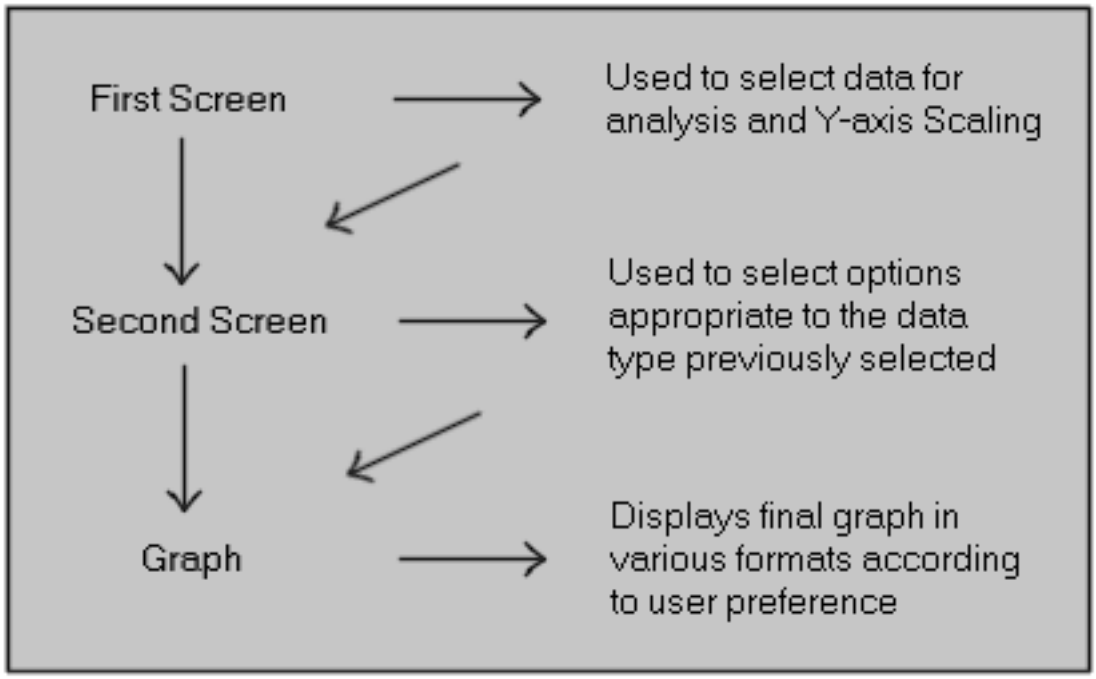
Overview

Welcome to the UKCF Database Analysis Tools. These can be used to analyse Clinic Visits, Annual Reviews, Unknowns and Patient Tracking.

These Analysis Tools are tailor-made for cystic fibrosis in general, and the UKCF database in particular, and allow the user to produce reports and graphical summaries about many aspects of cystic fibrosis data as entered into the system.

The basic idea of the audit analysis graphs for clinic visits and annual reviews is similar to the wizards found in standard Microsoft products such as Word and Excel. When the user initiates a new graph, they are led through two screens to select the options they require in the final graph



Main Program Flow

Other facilities the program provides is an ability to analyse the completeness of the data in the database. Eg. the user may check which of their patients have not visited the clinic sufficiently often during the year. Another option shows if the visit record is being filled in correctly – e.g if the patients height/weight is being recorded. This is done via the 'Unknowns' Analysis.

The Patient Tracking module displays data for a selected patient in a number of ways, as requested.

Installing the Analysis Tools

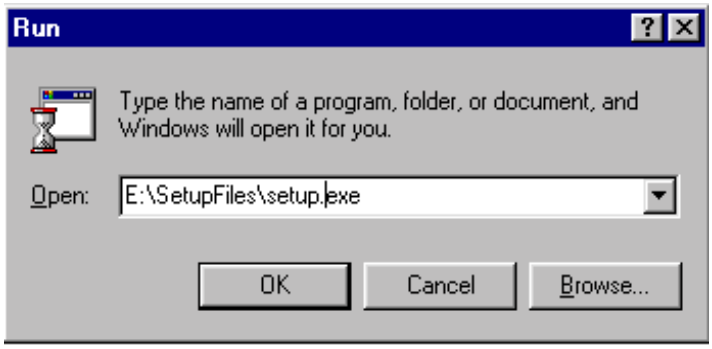
IMPORTANT: Before installing the Graph Analyzer Program you must close all applications.

To install the Graphical Analyzer Program, close all other applications and insert the CD-ROM you have received into the CD drive. Select the drive letter that corresponds to your CD-ROM. To find out which drive letter represents your CD drive go to the Windows desk top (you see the Windows desk top when you first switch on your computer). Next, double click on ‘My Computer’. You will see a picture of a CD ROM with the drive letter beneath it. This will probably be the 'D:' or 'E:' drive. Make a note of this letter.

Double click 'My Computer' showing CD ROM with drive letter beneath

Then click 'Start' in the bottom left corner of your screen. 

and from the menu, select 'Run'
.

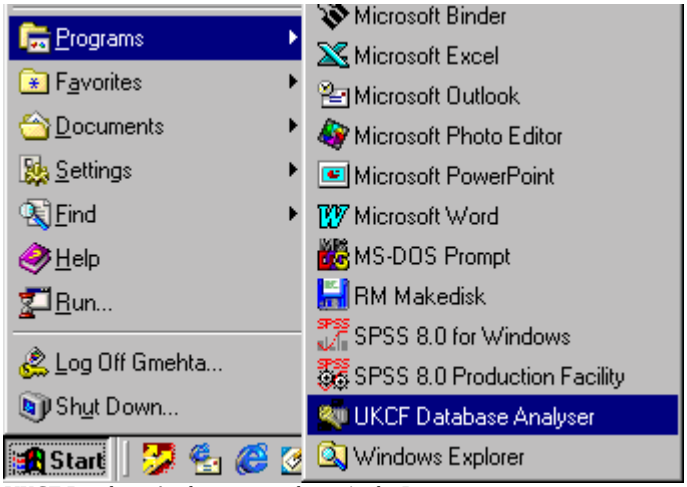


Starting the installation

If you are installing from a CD ROM 'E', in the 'Open' data entry box in the 'Run' window you should type 'E:\SetupFiles\setup.exe' without the quotation marks. If the CD ROM is not called 'E' you should replace the first letter of text in the quotation marks with the letter used to refer to your CD ROM then click 'OK'.

The installation of the Analysis Tools will now start. You should follow the instructions on screen and accept all of the defaults shown. Once the installation is complete the message below will appear.

The icon to run the analysis tools will be found in your program menu. It will be called 'UKCF Database Analyser'. You can get to it by clicking 'Start', 'Programs', 'UKCF Database Analyser' from your desktop as shown.



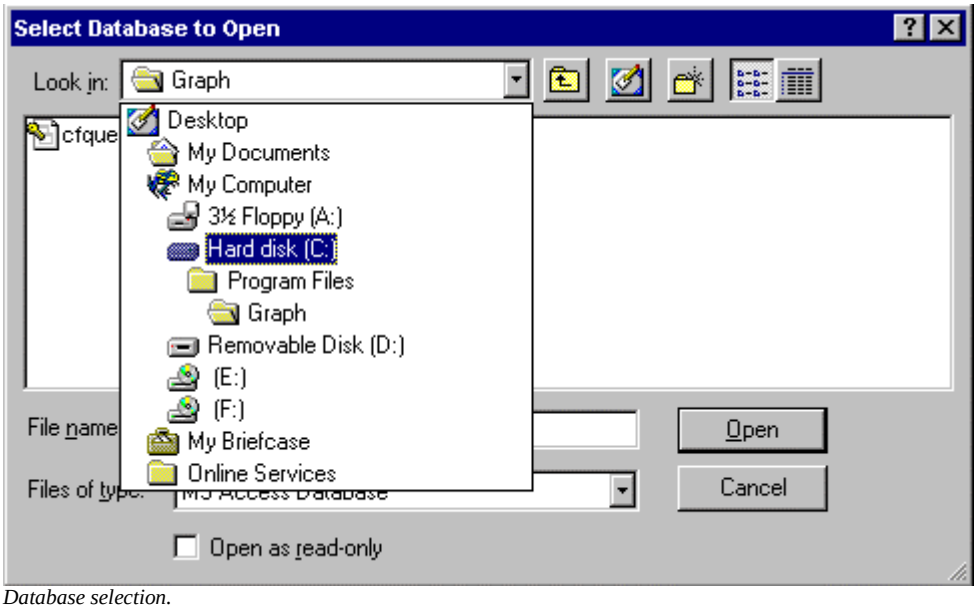
UKCF Database Analyser - now shown in the Program menu

Locating the Database to Analyse

The first time this program is run you need to tell it where the UK Cystic Fibrosis Database is held on your PC. The 'Select Database to Open' screen (shown below) allows you to do this. The databases you may wish to analyse could be one of the following, depending on what is on your machine:

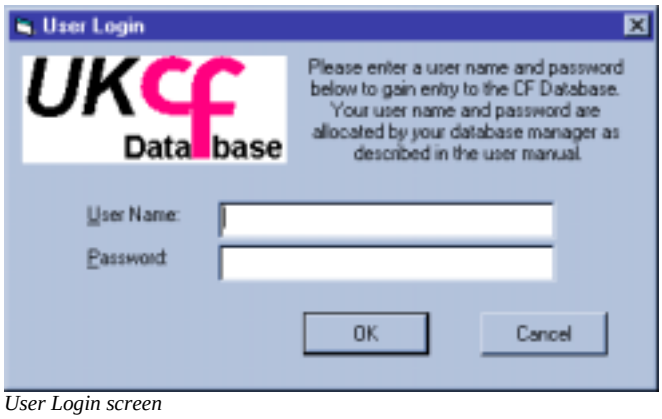
- 'C:\UKCF Databases for Analysis\NationalData_1997.mdb' for the national 1997 dataset
- 'C:\UKCF Databases for Analysis\ClinicData_1997.mde' for your own clinic's 1997 data.
- 'C:\Program Files\UKCF Database 97\ukcfdb97.mdb for your current database

So, for example, to select the National Data, click on the down arrow next to "Look in: Graph". Then click on 'Hard disk [C]: Then, when the next list appears, double click on 'UKCF Databases for Analysis', followed by a double click on NationalData_1997.mdb.



Database selection.

When prompted for a Username and Password, you will be required to supply a valid combination, available from the National Database team. When you have supplied these, click Ok.

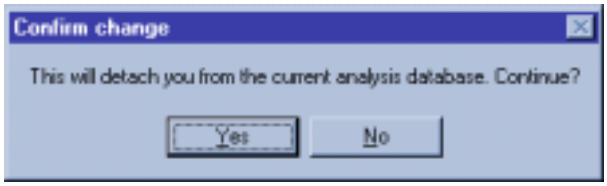


User Login screen

The program will now connect you to the database you have chosen and present you with the 'wizard' screen which will allow you to request a graph of your choice.

Prior to running the Analysis Tools, please click the "De-duplicate" button from the 'FIX TABLES' option on the Main Menu of the UKCF Database.

Once in the program, you may switch between databases to analyse by using the 'Options' menu in the program, and clicking 'Change database'. This will detach you from the current database and let you attach to another one.



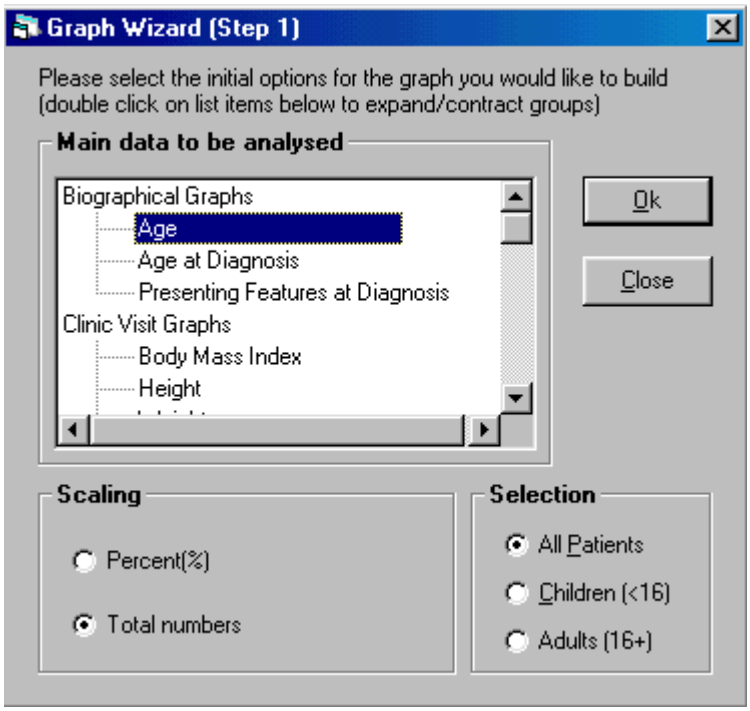
On clicking 'Yes' the 'Select Database to Open' screen reappears, as shown above, and allows you to select a different database to analyse. Follow the procedure outlined above. When you have supplied a valid Username / Password, you will be connected to the database you have selected.

NB: Each time you change the database to be analysed you will be presented with the 'User login' screen and will have to enter your User name and password again.

Using the Wizard screens to select a graph

The wizard screens allow you to select graphical analyses from the database. If is not already displayed, to start up the wizard, click 'File' in the top left corner of your screen, and select 'New Graph'. This will take you to the First Wizard Screen.

First Wizard Screen



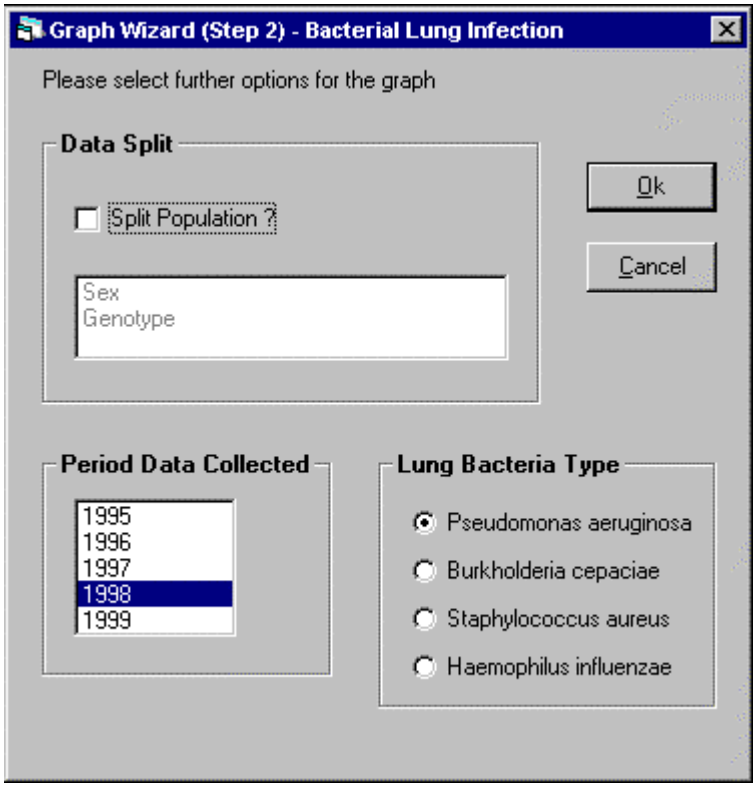
First Wizard Screen

This screen shows the initial options for building the graph.

- Select the 'Main data to be analysed' by clicking on the appropriate name in the box (you can scroll the box to see further categories).
- The 'Selection' box allows you to select either all patients or only children (under 16 years old) or only adults (16 years or more).
- The 'Scaling' shows either total numbers of patients, or percentages. The percentages are calculated out of the total numbers of patients as specified in the 'Selection' box. The Y-axis of the final graph will show total patient numbers or scale in percentages as required.

Press Ok to continue to the Second Wizard Screen.

Second Wizard Screen

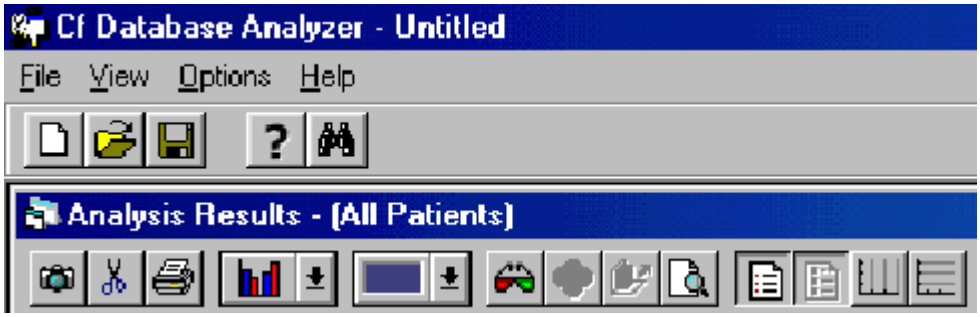


Second Wizard Screen.

The various parts of this screen depend on the option chosen in the previous screen. Here Bacterial Lung Infection was chosen as the main data to be analysed. The data may be split in various ways by clicking in the check box and selecting one of the options from the list below. The date from which data will be taken to be analysed defaults to the current year, but others may be selected as historic data is built up over the years.(the box in the right top corner of the main screen displays the year selected for analysis. This may be changed from the main screen by double-clicking the box displaying the year). The final box in the bottom right corner varies. For bacterial infection it allows further selection of the type of infection. For Height/Weight/BMI graphs it allows the results to be displayed as Standard Deviation Scores or in Centiles. For Hospital Admissions it allows you to select a quarter of the year for analysis or the entire year.
Selecting Ok will display the Final Graph, Cancel will take you back to the First Wizard Screen and allow some of the previous options selected to be changed.

Some Features of the Analysis Tools

There are many functions on the toolbar, only some of which are detailed below: (Pressing the right hand mouse button over any of the toolbar buttons gives a balloon with the name of the button). Feel free to experiment with the features, as this short summary cannot do full justification to the full capabilities of the tools.



Analysis Tools Menu and Toolbar Functions


New Graph Button

If the wizard screen is not displayed, and you wish to build and display a new graph, click this button. You can also arrive at the same wizard screen by clicking 'New Graph' from the 'File', menu.


Save Button

Once you have produced a graph it is possible to save the graph so that it may be opened at a later stage. To save a graph select the save button from the toolbar or one of the save options in the file menu. The graph may be saved complete with all its data or it may be saved as a template whereby only the graph options are saved, so that when the template is opened the database is requeried to obtain the most up to date data. If a complete graph is saved, the data at that point in time is saved as well. Graph files are automatically saved with the extension .gra. Template files are saved with the extension .tpl. The Save Screen is a standard windows save box allowing you to select the directory and filename to save the file under. Once a graph has been saved, its name will appear in the main title bar of the program and subsequent saves will happen automatically. To save the graph under a different name select Save As from the file menu.


Open Button

To open a graph or template that has been previously saved, select the open button from the toolbar or Open Graph from the file menu. A standard ‘open file’ screen appears allowing you to select the directory and the file required. If a graph file is being opened the Main Graph Screen will open immediately. If a template file is being opened the Graph Properties Screen will open so you can check the options. Selecting OK will display the graph with the current data from the database.


Unknowns Button

This button shows the screen that allows the options for analysing the completeness of the data in the UK CF database. It can be selected by selecting the Icon with a '?' on the toolbar, or clicking 'File', 'Unknowns'.

Patient Tracking Button

This button starts the Patient Tracking module. For the database selected, individual patients may be selected either by name or number, and data for that patient viewed in a variety of ways.

Copy and Print Buttons.

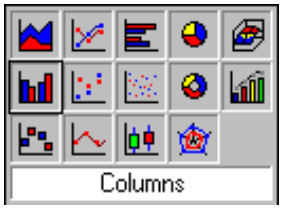
The copy button (camera top left) copies the graph to the windows clipboard allowing you to paste the picture into any graphics package such as ‘Paint’ or into word documents etc. The Print command next to camera on right prints out the graph on your current default printer.

Copy textual data to Clipboard

This button copies the numeric values of graphical data to the clipboard if it is clicked while a graph is displayed.

Graph type selection button

Click this to select from the graph types shown below. Selecting a type shows its description in the white box below (currently showing 'Columns' in the example).



Graph Type Selection Buttons.

Changing the colour of a bar via the button

The colours and/or pattern of each part of the graph may be changed by selecting a colour / pattern from either the button above, or the appropriate box from the colour strip below, and dragging it to the part of the graph you wish to colour. The cursor changes to a paint-pot icon as you do this. Whenever a new graph is opened the most recently used options and colours will be used to display the graph.

3D, View Rotation, and Z-cluster Buttons.

The 3d view on the graph may be switched on and off with the button shown above. Further, the view may be rotated and Z-clustered series may be switched on.

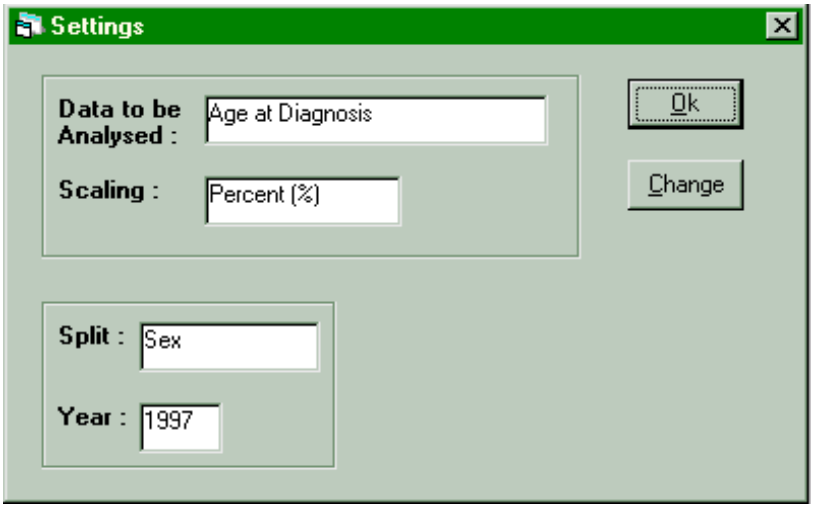
Legend, Vertical and Horizontal Grid Buttons.

The legend at the side of the graph may be hidden and horizontal and/or vertical grid lines shown on the graph depending on the graph type.

Edit Titles, Text Font, Tool, and Chart Options Buttons

Selecting the Edit Titles Buttons may alter the various titles of the graph. Selecting the Text Font Button may change the font for any of the titles. The Tool button allows you to hide or display the palette bar, pattern bar and legend. It also opens the data editor to allow you to see the actual numbers behind the graph display. The chart option button gives a screen with further display options for the graph.

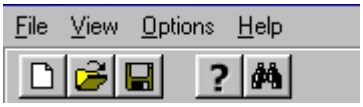
The graph may be saved as a windows bitmap file for use or editing at a later stage in other software packages such as MS-Word or Paintshop Pro etc. Selecting the Save .bmp button will open a standard save screen allowing you to specify the directory and name to save the picture under. Simarly the Save .txt button allows you to save the data into a text file. Selecting the Properties button will open the Graph Properties Screen shown below. It displays all the options currently selected for the graph.



Graph Properties Screen

Selecting Ok from this screen returns you to the previous Main Graph Screen

Selecting Change returns you to the First Wizard Screen to allow you to change the options for the graph.



The Options Menu

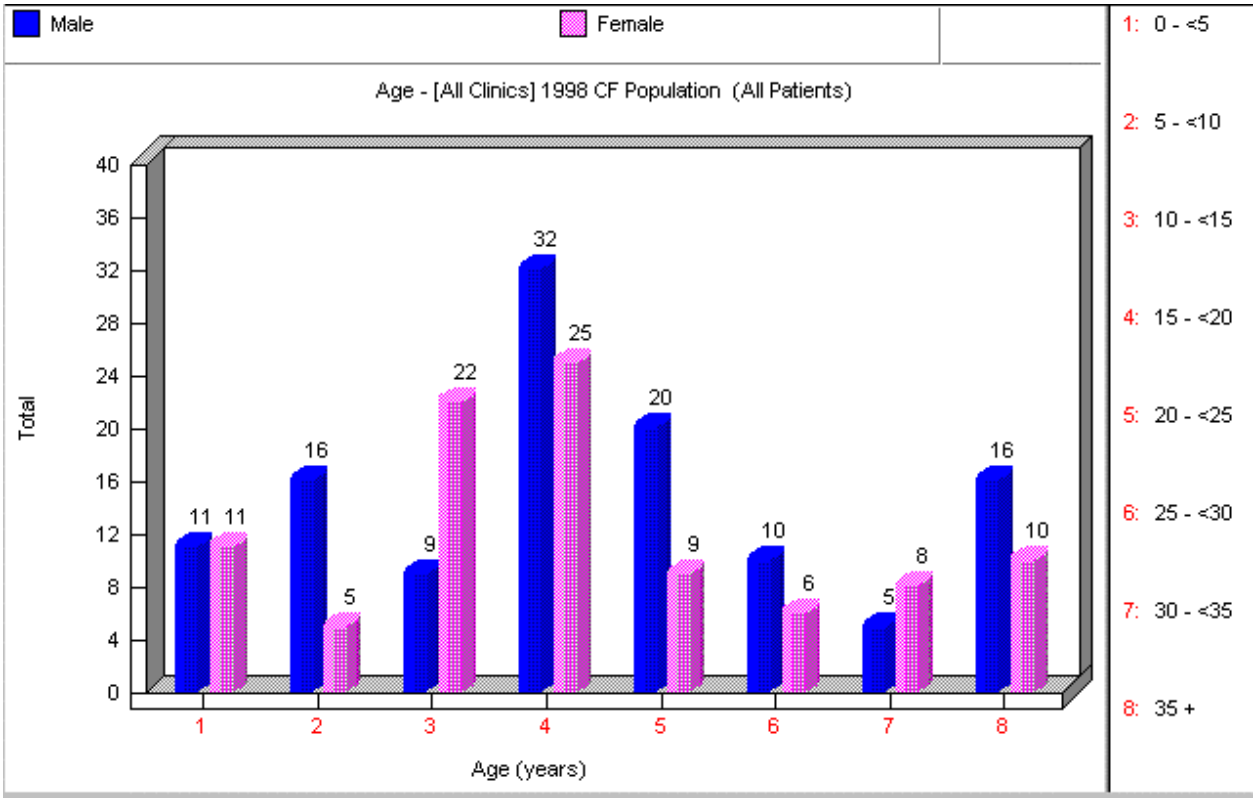
This allows the user to select a different year to analyse, or detach from the current database being analysed and attach to another one. The year being analysed is displayed in the top right hand corner.

Year being analysed

The path to the database that the program is pointing to is shown at the bottom of the screen.

Location of database being analysed

Age



Age Graph

This graph shows the age profile of all patients registered. If a patient has been recorded as deceased, transferred or reverse-diagnosed, he is not included. The age of a patient is calculated as at 31st December in the year of analysis.

The splits available on this graph are :

- Sex
- Pseudomonas Infection – If Pseudomonas has ever been detected in any clinic visit during the year being analysed, the program accumulates the figures into the Pseudomonas total.
  (Note: if no Pseudomonas split is requested, the program does not join to the table Public Clinic Visit, and therefore gets all the Biography records. However, if a Pseudomonas split is requested, then the Biography and Clinic Visit tables are joined and so only those patients are selected by the query who have had clinic visits in the year in question)

If a patient has been recorded as deceased, transferred or reverse-diagnosed, he is not selected. Patients are selected as follows: If year of death is either null, x or - (i.e. not a number or ?), **and** treatment status is not deceased, transferred or reverse-diagnosed.

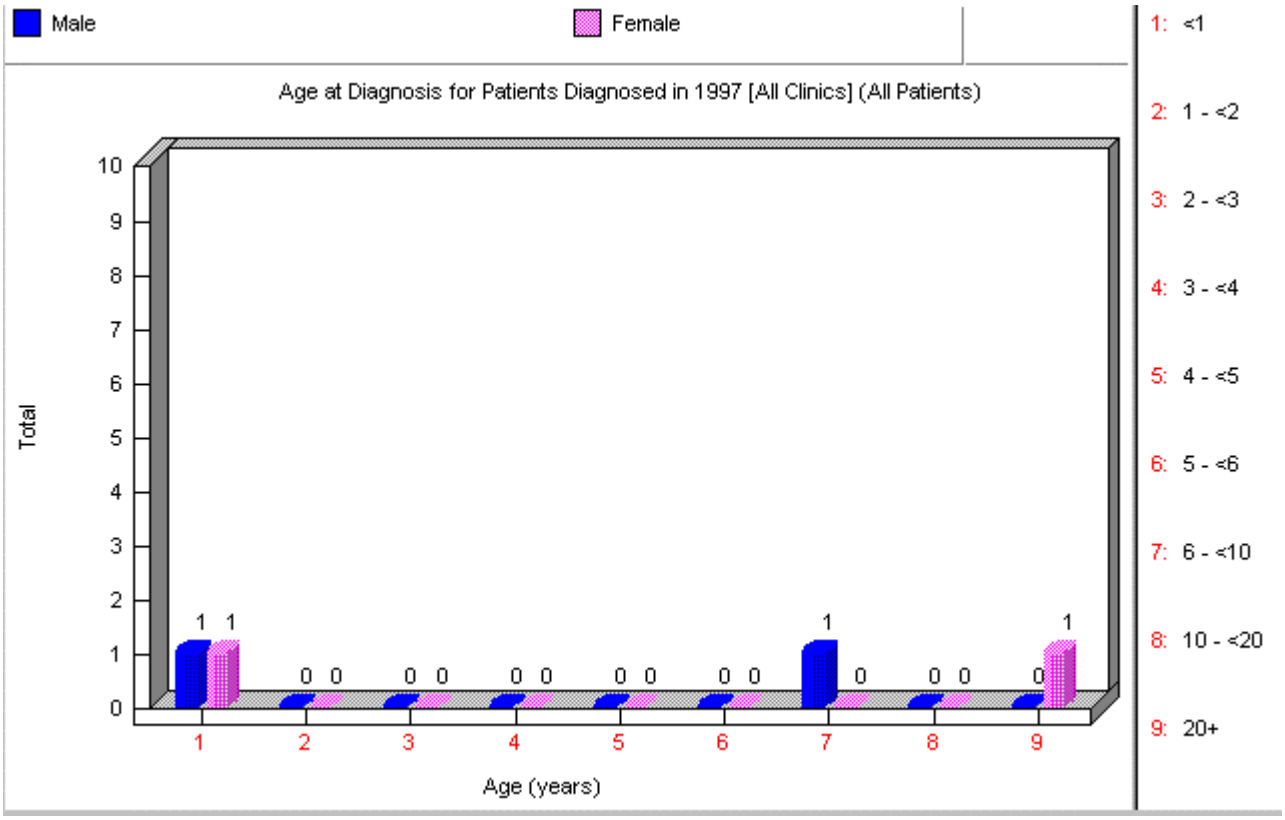
The age of a patient is calculated as at 31st December in the year of analysis. The date of birth is calculated from the patient's year and month of birth as entered on the Biography form, and using the first day of the month.

If the age of the patient (as calculated above) is greater than or equal to zero, ie. If {DateSerial[YearOfAnalysis,12,31]-DateSerial[YearOfBirth,MonthOfBirth,1]}/365>=0 then the record is included in the analysis for that year.

Data Specification : Data Fields Used

FieldName	Table	Field ID	Criteria
YearOfBirth	PublicPatientBiography	[7]	Numeric
MonthOfBirth	PublicPatientBiography	[8]	Numeric
For Sex Split			
SexAtBirth	PublicPatientBiography	[9/10/11]	
For Pseudomonas Infection Split			
MostRecentBacteriologyCultureHad PseudomonasAeruginosa	PublicClinicVisit	[67]	

Age at Diagnosis



Age At Diagnosis

This graph shows the newly diagnosed patients divided into age categories at which diagnosis was made. The data shown is only for those patients who were diagnosed in the current analysis year.
The options available on this graph are :
Splits by

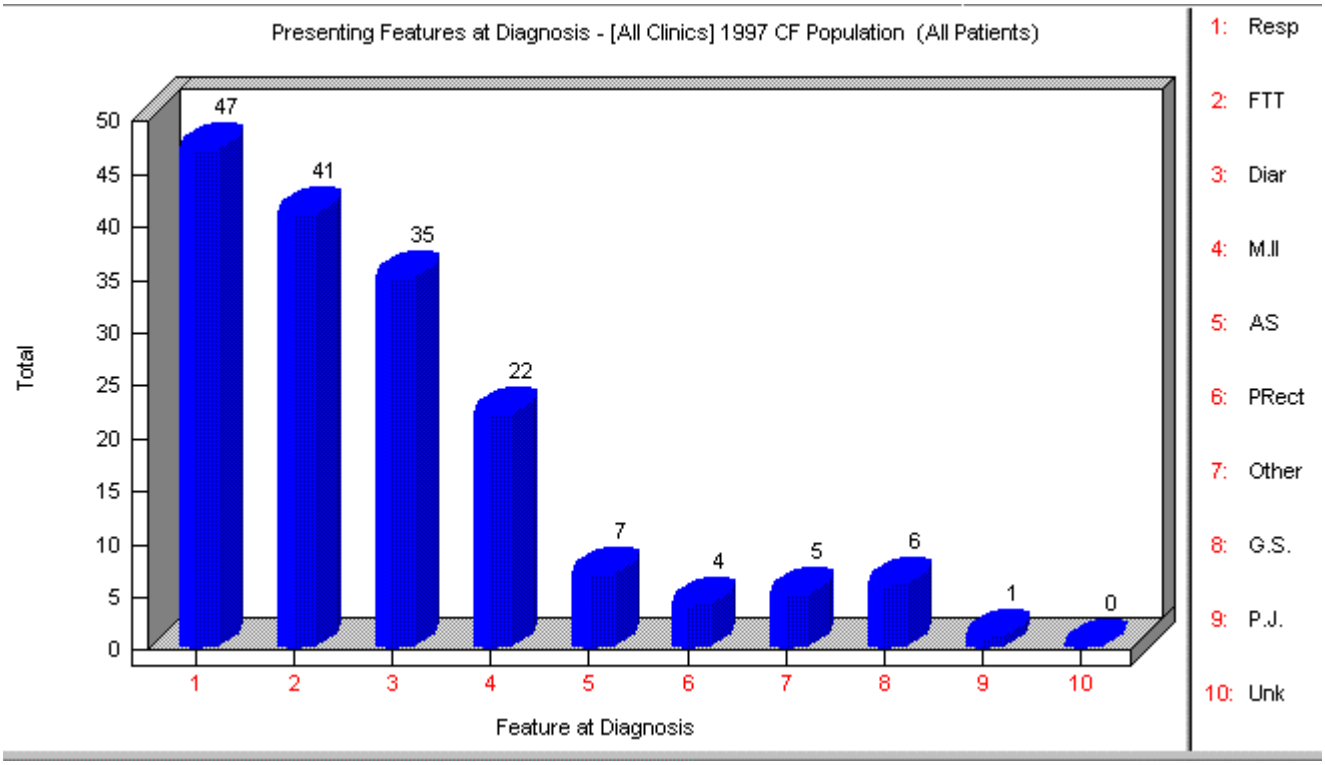
- Sex
- Genotype – as recorded in the Biography form
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

The program looks at Year and Month of CF Diagnosis (on the Biography form), ie. their age at diagnosis, and compares this with the Date of Birth (as calculated from the data entered on the Biography form). It then works out in what year the patient was that age, and compares this year to the year being analysed. If they are the same, it selects that patient for including in the graph. Nb. This query does not join with the Clinic Visit or Annual Review tables.

Data Specification : Data Fields Used

FieldName	Table	Field ID	Criteria
MonthOfCysticFibrosisDiagnosis	PublicPatientBiography	[41]	Numeric
YearOfCysticFibrosisDiagnosis	PublicPatientBiography	[40]	Numeric
YearOfBirth	PublicPatientBiography	[8]	Numeric
MonthOfBirth	PublicPatientBiography	[7]	Numeric
For Sex Split			
SexAtBirth	PublicPatientBiography	[9/10/11]	
For Genotype Split			
CysticFibrosisTransmembraneconductanceRegulatorAllele1	PublicPatientBiography	[38]	
CysticFibrosisTransmembraneconductanceRegulatorAllele2	PublicPatientBiography	[39]	

Presenting Features at Diagnosis



Presenting Features at Diagnosis

This graph shows the presenting features at diagnosis as completed on the Biography form. A patient may present with more than one feature.
The options available on this graph are :
Splits by

- Sex
- Genotype
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

The program determines which patients to select for the year being analysed by selecting only those patients whose Biography details were entered on or before the year being analysed ie.
YearFormCompleted on Biography table <= Analysis Year

Data Specification

Data Fields Used

FieldName	Table	Field ID	Criteria
YearFormCompleted	PublicPatientBio		=<Param
YearFormCompleted	PublicClinicVisit	[8]	Numeric
MonthFormCompleted	PublicClinicVisit	[7]	Numeric
DayFormCompleted	PublicClinicVisit	[6]	Numeric
CysticFibrosisReferralBecauseOfLowerRespiratoryInfection	PublicPatientBio		Cat 1
CysticFibrosisDiagnosedBecauseOfLowerRespiratoryInfection	PublicPatientBio	[50]	
CysticFibrosisDiagnosedByFailureToThriveAndOrMalnutrition	PublicPatientBio	[46]	
CysticFibrosisReferralBecauseOfFailureToThriveAndOrMalnutrition	PublicPatientBio		Cat 2
CFRBOSAO	PublicPatientBio		Cat 3
CFDBSAOA	PublicPatientBio	[47]	
CysticFibrosisReferralBecauseOfMuconiumlleusAndOrDIOS	PublicPatientBio		Cat 4

CysticFibrosisDiagnosedByMuconiumlleusAndOrDIOS	PublicPatientBio	[43]	
CysticFibrosisMuconiumlleusManagedMedically	PublicPatientBio	[44]	
CysticFibrosisReferralBecauseOfFamilyHistory	PublicPatientBio		Cat 5
CysticFibrosisDiagnosisBecauseOfFamilyHistory	PublicPatientBio	[51]	
CysticFibrosisReferralByRectalProlapse	PublicPatientBio		Cat 6
CysticFibrosisDiagnosedByRectalProlapse	PublicPatientBio	[48]	
CysticFibrosisReferralBecauseOfOtherReason, Nasal Polyps, Electrolyte Imbalance & Infertility	PublicPatientBio		Cat 7
CysticFibrosisDiagnosisBecauseOfOtherReason, Nasal Polyps, Electrolyte Imbalance & Infertility	PublicPatientBio	[55]	
CysticFibrosisReferralBecauseOfScreening	PublicPatientBio		Cat 8
CysticFibrosisDiagnosedBecauseOfScreening	PublicPatientBio	[52]	
CysticFibrosisReferralBecauseOfProlongedJaundice	PublicPatientBio		Cat 9
CysticFibrosisDiagnosedByProlongedJaundice	PublicPatientBio	[45]	
CysticFibrosisReferralBecauseOfUnkownReason	PublicPatientBio		Unknown
CysticFibrosisDiagnosedByUnkownMeans	PublicPatientBio	[42]	

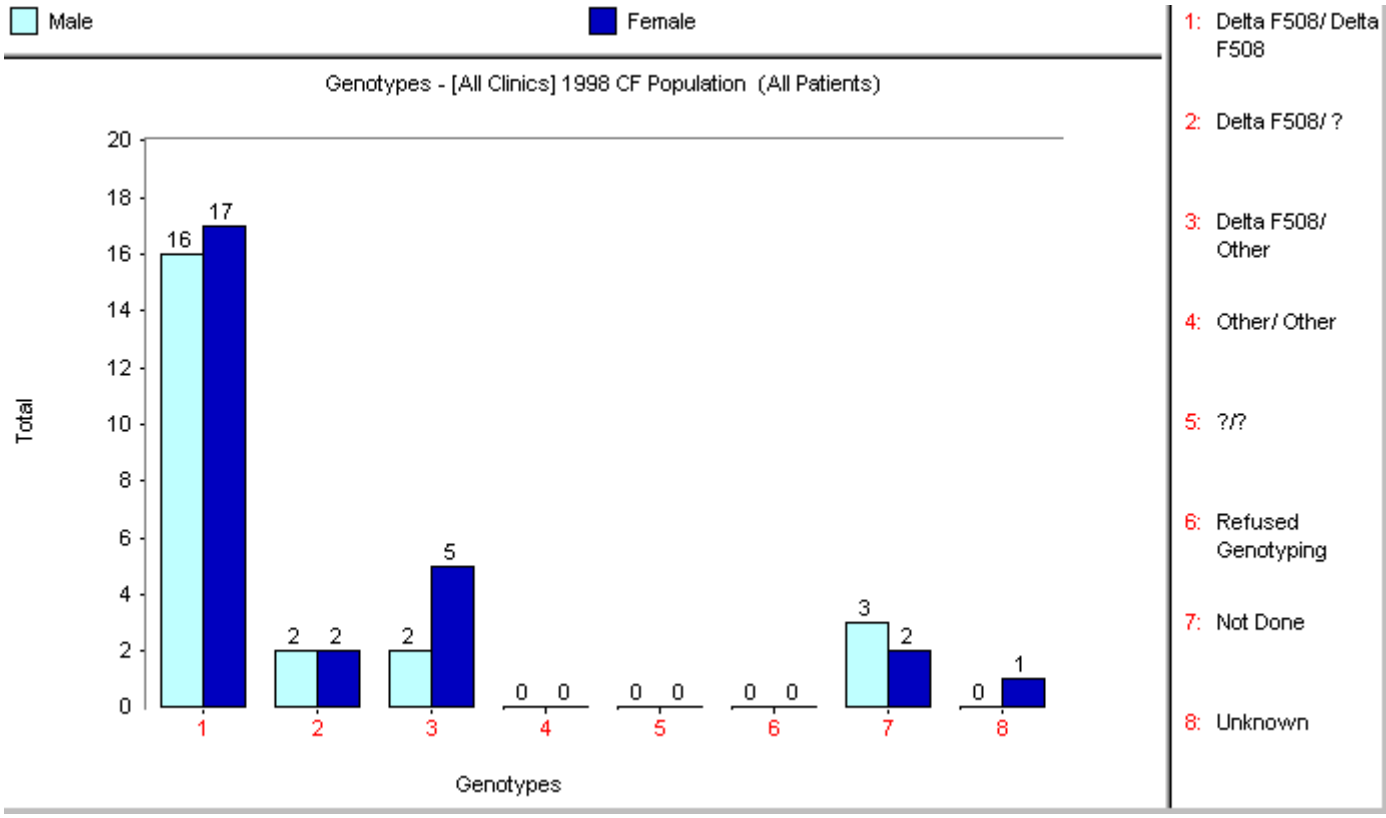
For Sex Split

SexAtBirth	PublicPatientBiography	[9/10/11]

For Genotype Split

CysticFibrosisTransmembraneconductanceRegulatorAllele1	PublicPatientBiography	[38]
CysticFibrosisTransmembraneconductanceRegulatorAllele2	PublicPatientBiography	[39]

Genotypes



Genotypes

This graph shows the genotype profile for all patients registered by the end of the year being analysed whether or not they have been transferred etc. The genotypes are taken from what has been recorded on the Biography Form. All patients are included if 'YearFormCompleted' is less than or equal to the year being analysed.

Any allele that is not "DeltaF508" or "?" is aggregated into "Other". (NB: "Other" will include any genotypes entered as "NOT IDENTIFIED" or "UNKNOWN". These should more correctly be entered as "?").To view a list of items entered in 'Other', right click the mouse on the 'Other' bar. The list displayed may be copied to the clipboard if required.

Splits are available for:

- Sex
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

Data Specification

Data Fields Used

FieldName	Table	Field ID	Criteria
PatientIdentifier	PublicCysticFibrosisAnnualReview	[1]	-
ClinicCode	PublicCysticFibrosisAnnualReview	[2]	Parameter
YearOfVisit	PublicCysticFibrosisAnnualReview	[6]	Parameter
MonthOfVisit	PublicCysticFibrosisAnnualReview	[5]	Numeric
DayOfVisit	PublicCysticFibrosisAnnualReview	[4]	Numeric
CysticFibrosisTransmembranecond	PublicPatientBiography	[164]	-

uctanceRegulatorAllele1			
CysticFibrosisTransmembranecond uctanceRegulatorAllele2	PublicPatientBiography	[165]	-

For Sex Split

SexAtBirth	PublicPatientBiography	[9/10/11]

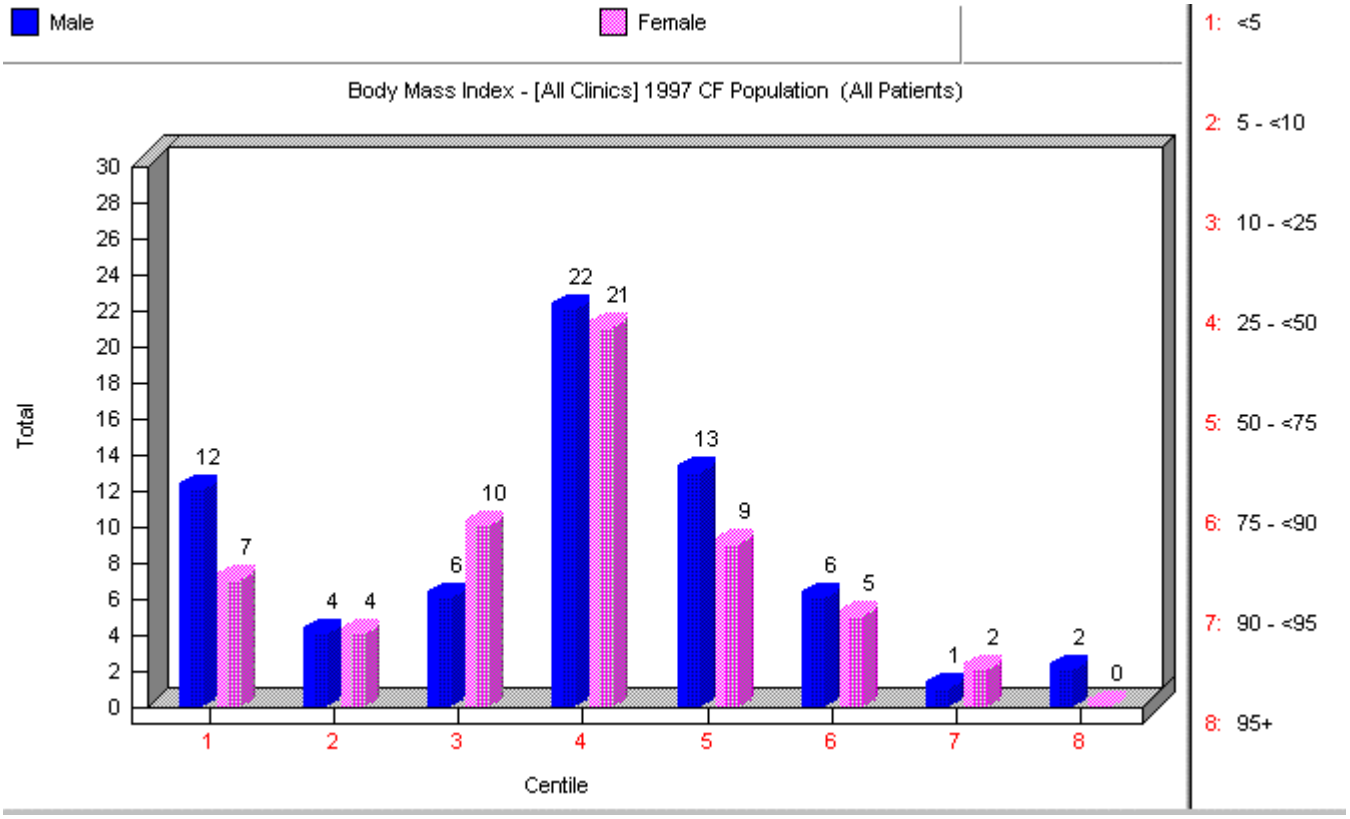
For Chronic Pseudomonas infection/ Chronic Staphylococcus infection/ Cepacia infection Splits

ComplicationInTheLastPeriodofChronic PseudomonasInfection	PublicCysticFibrosisAnnualReview	[13]	=True
ComplicationInTheLastPeriodofChronic StaphAureusInfection	PublicCysticFibrosisAnnualReview	[14]	=True
BacteriologyInLastPeriodFoundBurkhold eriaInSputumCulture	PublicCysticFibrosisAnnualReview	[75]	=True
BacteriologyInLastPeriodFoundBurkhold eriaInCoughSwab	PublicCysticFibrosisAnnualReview	[76]	=True

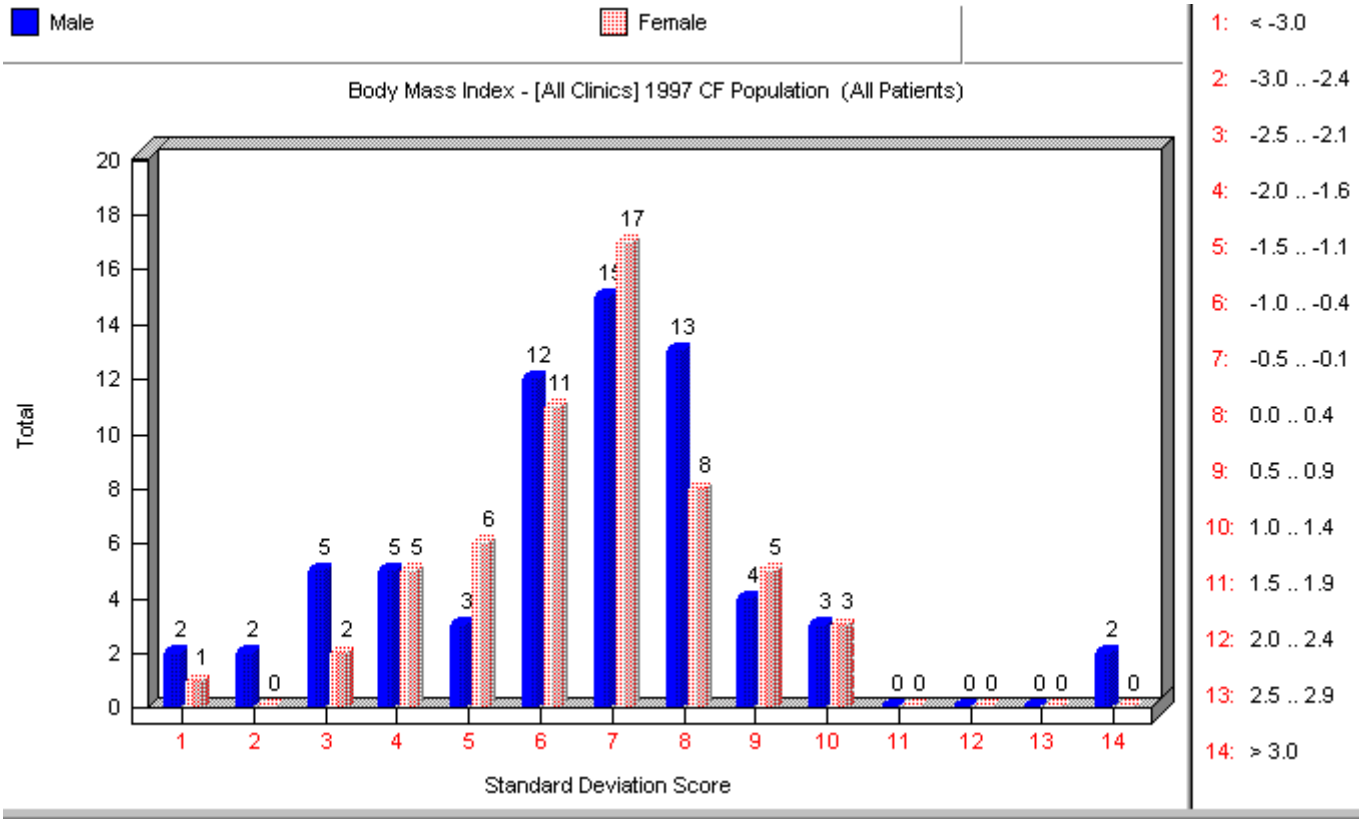
For Age Groups / Child *vs* Adult Splits

YearOfBirth	PublicPatientBiography	[8]
MonthOfBirth	PublicPatientBiography	[7]

Body Mass Index



Centile BMI Graph



Standard Deviation BMI Graph

This graph shows the BMI values for the CF population. It is possible to view either Centile information or Standard Deviation Scores. The population is compared against standard UK growth tables.
The options available on this graph are :
Splits by

- Sex
- Genotype
- Pseudomonas Infection– If Pseudomonas has ever been detected in any clinic visit during the year being analysed, the program accumulates the figures into the Pseudomonas total.
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

The age of a patient is calculated as at the date of visit. For patients with more than one clinic visit per year, the last clinic visit for the year is selected for the graph..

BMI = Weight/(Height)*(Height) (Height in m)

The calculations for Standard Deviation and Centile scoring are done within the graph program using tables taken from the UK population which are stored in the GrowthLookup table in the database.

The graph uses the query 'growth' for BMI, height and weight graphs (including splits). The program works as follows:

Calculation of Centile and Standard Deviation values for BMI, Height and Weight

The calculations are the same for each of these. They all use the table GrowthLookup.

This example uses Height. For each patient, in the year being analysed,

- Get the height and age for each clinic visit in the year
- Calculate average height and average age for the year
- Calculate SDScore as shown by the example below
  - Take a female whose calculated average age is 5.2
  - Take the next age up in the GrowthLookup table, ie. 5.25, not 5.167

Age	FHeightL	FHeightM	FHeightS
5.167	1	109.83	0.0414
5.25	1	110.39	0.04149

  - Use the corresponding L, M and S values for the Height and sex of the patient
    L value = 1, M value = 110.39, S value = 0.04149 for the example above

  - Use these to calculate the SDScore using the equation:

    SDScore = (((SDSnumber / M) ^ L) - 1) / (L * S)

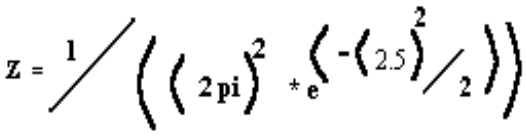
    where SDSnumber = Patient's average height

    ie: SDScore =

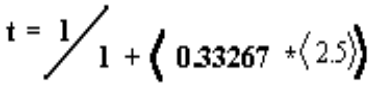
$$\left[\left(\frac{\text{Patient's Av. Ht. (SDSnumber)}}{\text{M value (eg 110.39)}} \right)^{L} - 1 \right] \div (L * S)$$

    And this calculation gives the number (ie the SDScore) to put into one of the 14 Standard Deviation categories displayed in the final graph.
- The Centile value is calculated from the Standard Deviation Score (SDScore) as follows:

- Suppose the SDScore was 2.5
- Work out the values of π, z-score, and t-score using the following formulae
  - z = 1 / (sqr (2 * pi)) * Exp (- (SDScore * SDScore) / 2)



  - t = 1 / (1 + (0.33267 * SDScore))



- there are three more constants a1 = 0.4361836, a2 = -0.1201676 and a3 = 0.937298
  - work out temp = a1 * t + a2 * (t ^ 2) + a3 * (t ^ 3)
  - Centile value is now = (1 – (z * temp)) * 100
  - For negative values, Centile = (z * temp) * 100

Data Specification

Data Fields Used

FieldName	**Table**	**Field ID**	**Criteria**
HeightAtVisit	PublicClinicVisit	[54]	Numeric
WeightAtVisit	PublicClinicVisit	[58]	Numeric
YearFormCompleted	PublicClinicVisit	[8]	Numeric
MonthFormCompleted	PublicClinicVisit	[7]	Numeric
DayFormCompleted	PublicClinicVisit	[6]	Numeric
YearOfBirth	PublicPatientBiography	[8]	Numeric
MonthOfBirth	PublicPatientBiography	[7]	Numeric

For Sex Split

SexAtBirth	PublicPatientBiography	[9/10/11]

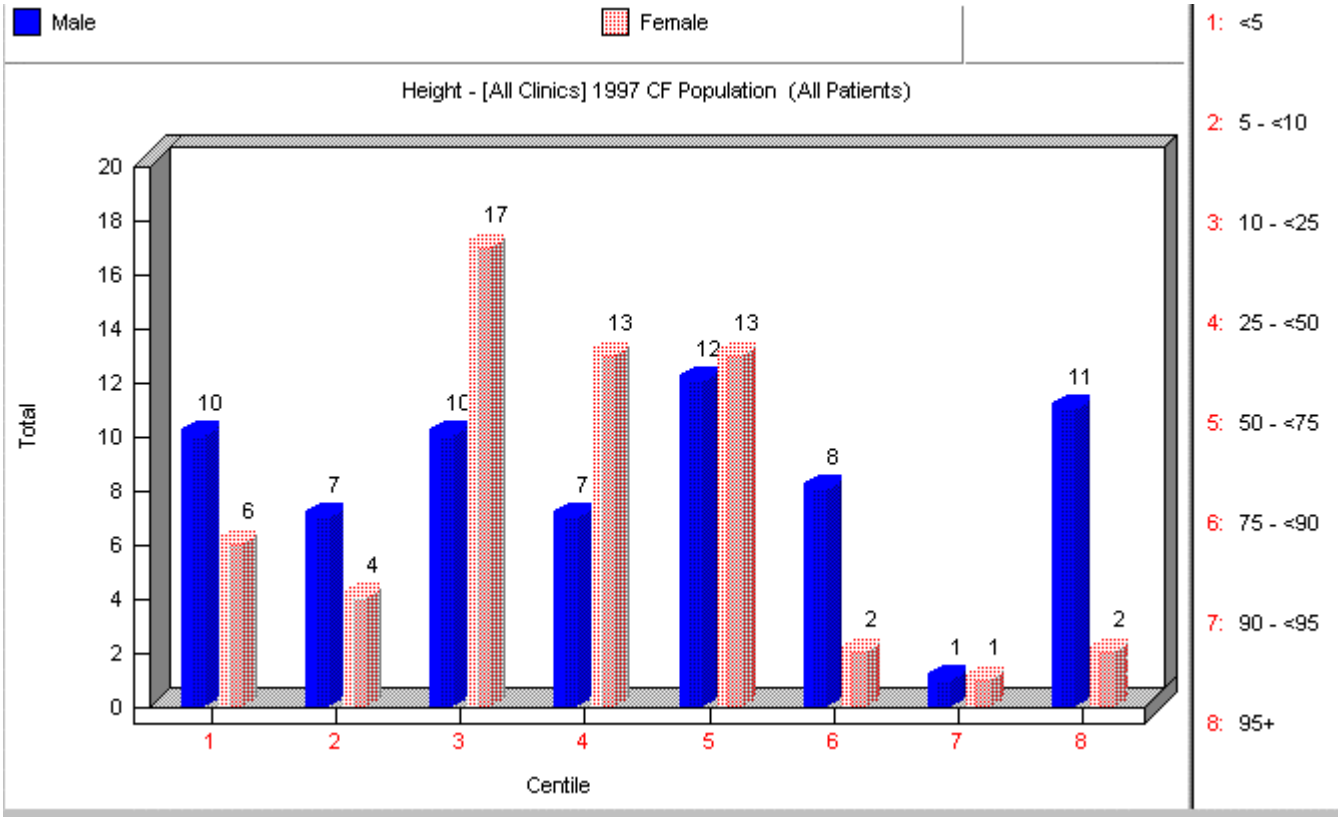
For Genotype Split

CysticFibrosisTransmembraneconductanceRegulatorAllele1	PublicPatientBiography	[38]
CysticFibrosisTransmembraneconductanceRegulatorAllele2	PublicPatientBiography	[39]

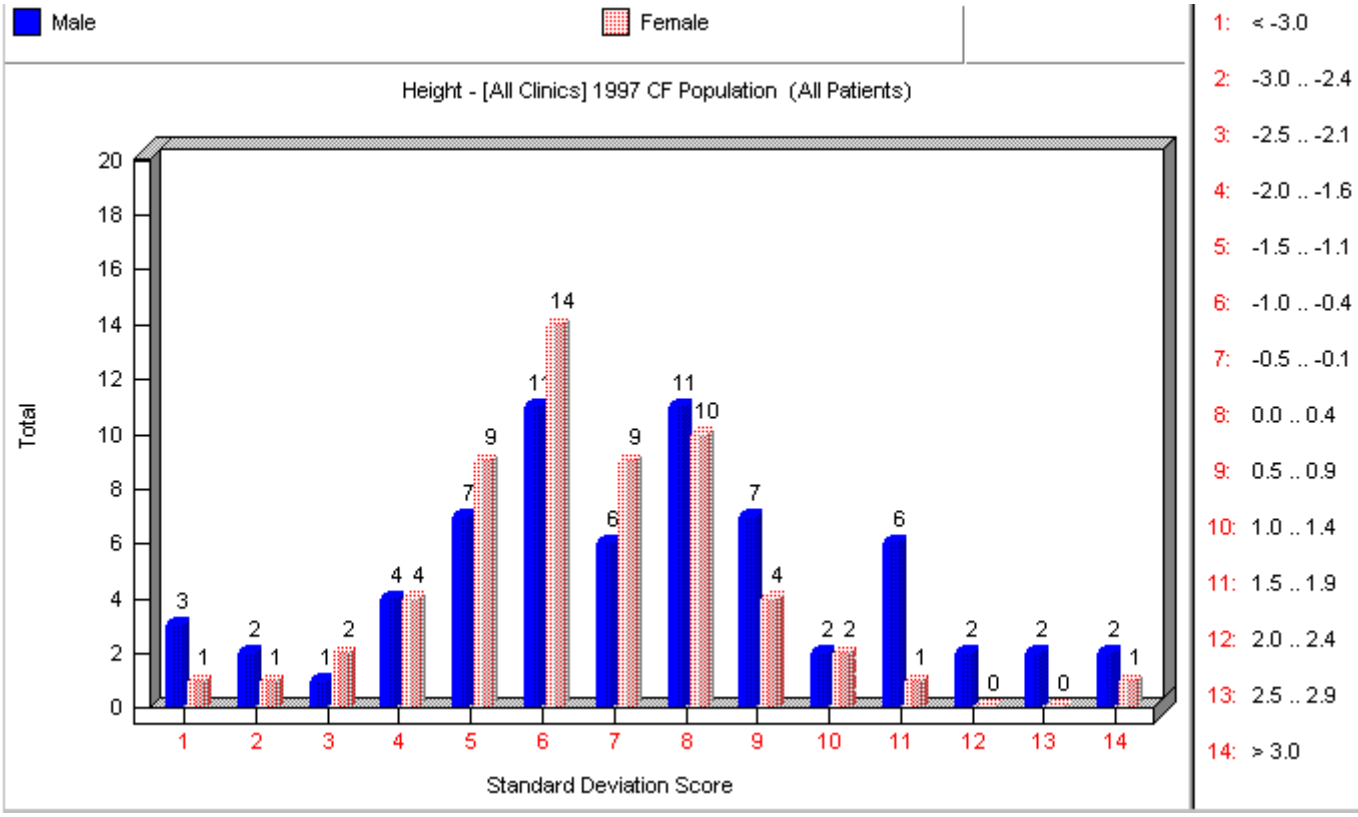
For Pseudomonas Infection Split

MostRecentBacteriologyCultureHadPseudomonasAeruginosa	PublicClinicVisit	[67]

Height



Height Centile Graph



Height Standard Deviation Graph

This graph shows the height of the CF population. It is possible to view either Centile information or Standard Deviation Scores. The population is compared against standard UK growth tables.
The options available on this graph are :
Splits by

- Sex
- Genotype
- Pseudomonas Infection– If Pseudomonas has ever been detected in any clinic visit during the year being analysed, the program accumulates the figures into the Pseudomonas total.
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

The age of a patient is calculated as at the date of visit. For patients with more than one clinic visit per year, the last clinic visit for the year is selected for the graph.

The calculations for Standard Deviation and Centile scoring are done within the graph program using tables taken from the UK population which are stored in the GrowthLookup table in the database.

The graph uses the query 'growth' for BMI, height and weight graphs (including splits). The program works as follows:

Calculation of Centile and Standard Deviation values for BMI, Height and Weight

The calculations are the same for each of these. They all use the table GrowthLookup.

This example uses Height. For each patient, in the year being analysed,

- Get the height and age for each clinic visit in the year
- Calculate average height and average age for the year
- Calculate SDScore as shown by the example below
  - Take a female whose calculated average age is 5.2
  - Take the next age up in the GrowthLookup table, ie. 5.25, not 5.167

Age	FHeightL	FHeightM	FHeightS
5.167	1	109.83	0.0414
5.25	1	110.39	0.04149

  - Use the corresponding L, M and S values for the Height and sex of the patient
    L value = 1, M value = 110.39, S value = 0.04149 for the example above

  - Use these to calculate the SDScore using the equation:

    SDScore = (((SDSnumber / M) ^ L) - 1) / (L * S)

    where SDSnumber = Patient's average height

    ie: SDScore =

$$\left[\left(\frac{\text{Patient's Av. Ht. (SDSnumber)}}{\text{M value (eg 110.39)}} \right)^{L} - 1 \right] \div \left(L * S \right)$$

    And this calculation gives the number (ie the SDScore) to put into one of the 14 Standard Deviation categories displayed in the final graph.
- The Centile value is calculated from the Standard Deviation Score (SDScore) as follows:
- Suppose the SDScore was 2.5

- Work out the values of π, z-score, and t-score using the following formulae
- z = 1 / (sqr (2 * pi)) * Exp (- (SDScore * SDScore) / 2)

$$Z = \frac{1}{\left(\left(2pi \right)^{2} * e^{\left(-\frac{(2.5)^{2}}{2} \right)} \right)}$$

- t = 1 / (1 + (0.33267 * SDScore))

$$t = \frac{1}{1 + \left(0.33267 * (2.5) \right)}$$

- there are three more constants a1 = 0.4361836, a2 = -0.1201676 and a3 = 0.937298
- work out temp = a1 * t + a2 * (t ^ 2) + a3 * (t ^ 3)
- Centile value is now = (1 – (z * temp)) * 100
- For negative values, Centile = (z * temp) * 100

Data Specification

Data Fields Used

FieldName	**Table**	**Field ID**	**Criteria**
HeightAtVisit	PublicClinicVisit	[54]	Numeric
YearFormCompleted	PublicClinicVisit	[8]	Numeric
MonthFormCompleted	PublicClinicVisit	[7]	Numeric
DayFormCompleted	PublicClinicVisit	[6]	Numeric
YearOfBirth	PublicPatientBiography	[8]	Numeric
MonthOfBirth	PublicPatientBiography	[7]	Numeric

For Sex Split

SexAtBirth	PublicPatientBiography	[9/10/11]

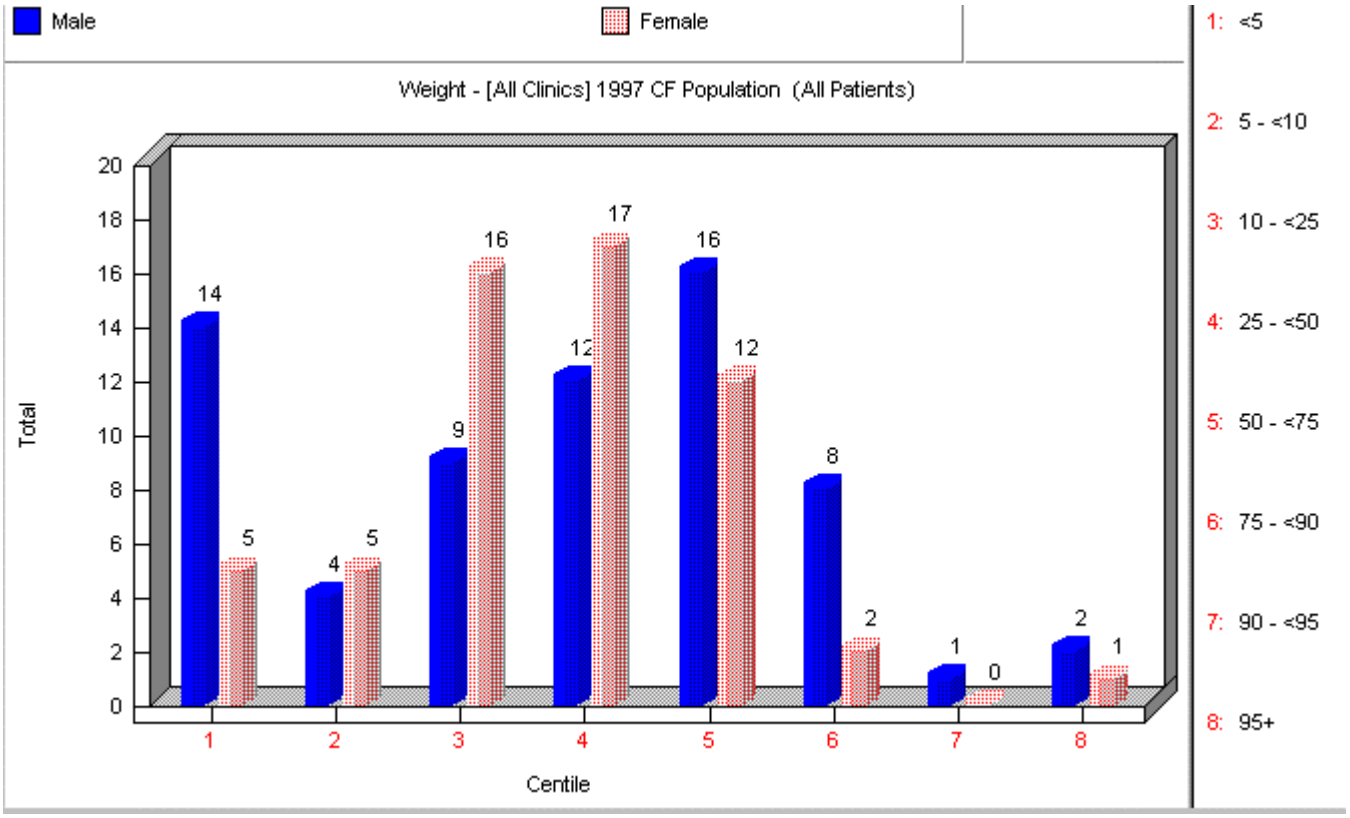
For Genotype Split

CysticFibrosisTransmembraneconductanceRegulatorAllele1	PublicPatientBiography	[38]
CysticFibrosisTransmembraneconductanceRegulatorAllele2	PublicPatientBiography	[39]

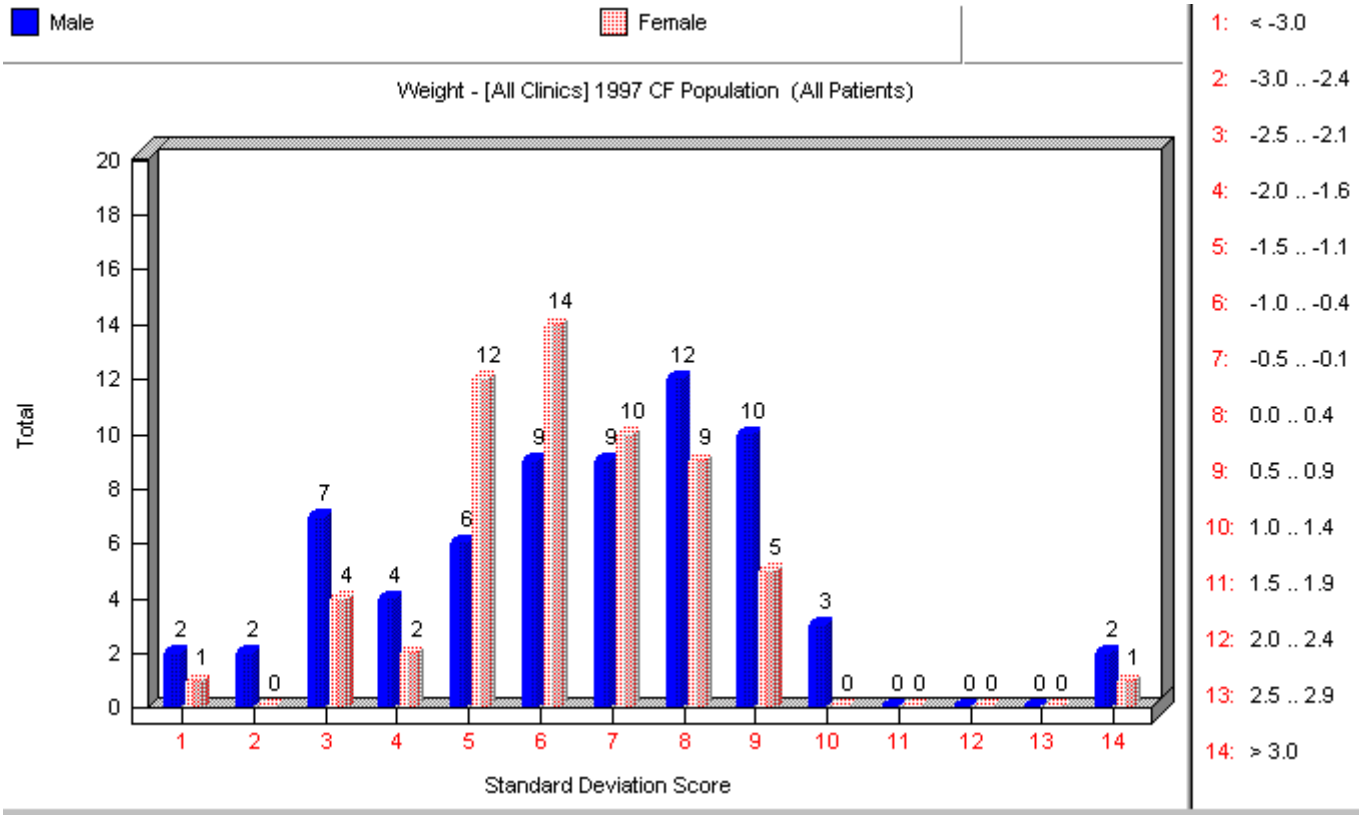
For Pseudomonas Infection Split

MostRecentBacteriologyCultureHadPseudomonasAeruginosa	PublicClinicVisit	[67]

Weight



Weight Centile Graph



Weight Standard Deviation Graph

This graph shows the weight of the CF population. It is possible to view either Centile information or Standard Deviation Scores. The population is compared against standard UK growth tables.
The options available on this graph are :
Splits by

- Sex
- Genotype
- Pseudomonas Infection– If Pseudomonas has ever been detected in any clinic visit during the year being analysed, the program accumulates the figures into the Pseudomonas total.
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

The age of a patient is calculated as at the date of visit. For patients with more than one clinic visit per year, the last clinic visit for the year is selected for the graph.

The calculations for Standard Deviation and Centile scoring are done within the graph program using tables taken from the UK population which are stored in the GrowthLookup table in the database.

The graph uses the query 'growth' for BMI, height and weight graphs (including splits). The program works as follows:

Calculation of Centile and Standard Deviation values for BMI, Height and Weight

The calculations are the same for each of these. They all use the table GrowthLookup.

This example uses Height. For each patient, in the year being analysed,

- Get the height and age for each clinic visit in the year
- Calculate average height and average age for the year
- Calculate SDScore as shown by the example below
  - Take a female whose calculated average age is 5.2
  - Take the next age up in the GrowthLookup table, ie. 5.25, not 5.167

Age	FHeightL	FHeightM	FHeightS
5.167	1	109.83	0.0414
5.25	1	110.39	0.04149

  - Use the corresponding L, M and S values for the Height and sex of the patient
    L value = 1, M value = 110.39, S value = 0.04149 for the example above

  - Use these to calculate the SDScore using the equation:

    SDScore = (((SDSnumber / M) ^ L) - 1) / (L * S)

    where SDSnumber = Patient's average height

    ie: SDScore =

$$\left[\left(\frac{\text{Patient's Av. Ht. (SDSnumber)}}{\text{M value (eg 110.39)}} \right)^{L} - 1 \right] \div \left(L * S \right)$$

    And this calculation gives the number (ie the SDScore) to put into one of the 14 Standard Deviation categories displayed in the final graph.
- The Centile value is calculated from the Standard Deviation Score (SDScore) as follows:
- Suppose the SDScore was 2.5

- Work out the values of π, z-score, and t-score using the following formulae
- z = 1 / (sqr (2 * pi)) * Exp (- (SDScore * SDScore) / 2)

$$Z = \frac{1}{\left(\left(2pi \right)^{2} * e^{\left(-\frac{(2.5)^{2}}{2} \right)} \right)}$$

- t = 1 / (1 + (0.33267 * SDScore))

$$t = \frac{1}{1 + \left(0.33267 * (2.5) \right)}$$

- there are three more constants a1 = 0.4361836, a2 = -0.1201676 and a3 = 0.937298
- work out temp = a1 * t + a2 * (t ^ 2) + a3 * (t ^ 3)
- Centile value is now = (1 – (z * temp)) * 100
- For negative values, Centile = (z * temp) * 100

Data Specification

Data Fields Used

FieldName	**Table**	**Field ID**	**Criteria**
WeightAtVisit	PublicClinicVisit	[58]	Numeric
YearFormCompleted	PublicClinicVisit	[8]	Numeric
MonthFormCompleted	PublicClinicVisit	[7]	Numeric
DayFormCompleted	PublicClinicVisit	[6]	Numeric
YearOfBirth	PublicPatientBiography	[8]	Numeric
MonthOfBirth	PublicPatientBiography	[7]	Numeric

For Sex Split

SexAtBirth	PublicPatientBiography	[9/10/11]

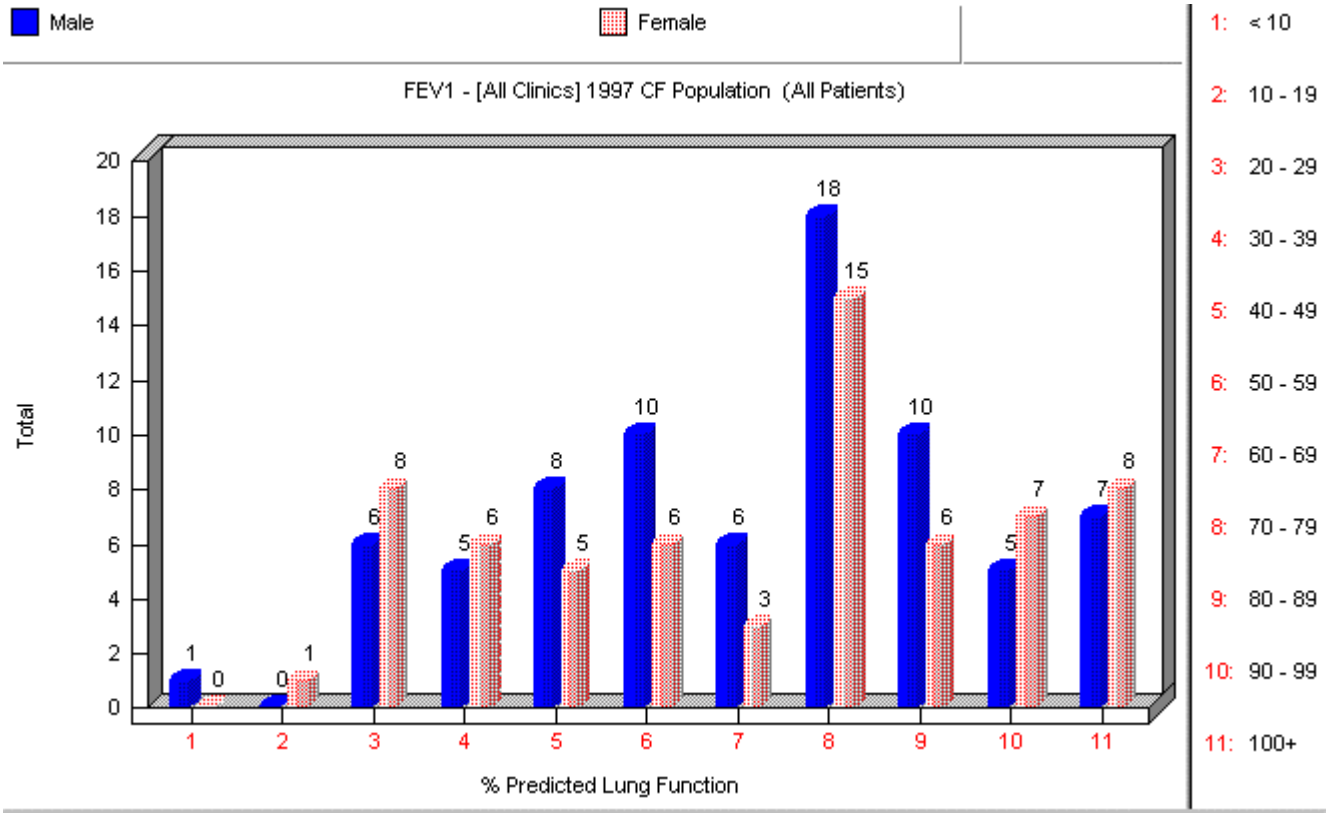
For Genotype Split

CysticFibrosisTransmembraneconductanceRegulatorAllele1	PublicPatientBiography	[38]
CysticFibrosisTransmembraneconductanceRegulatorAllele2	PublicPatientBiography	[39]

For Pseudomonas Infection Split

MostRecentBacteriologyCultureHadPseudomonasAeruginosa	PublicClinicVisit	[67]

FEV$_1$



FEV1 Graph

This graph shows the patients classified by percent predicted lung function. Categories 1 to 4 are those with severe lung disease.
The options available on this graph are :
Splits by

- Sex
- Genotype
- Pseudomonas Infection– If Pseudomonas has ever been detected in any clinic visit during the year being analysed, the program accumulates the figures into the Pseudomonas total.
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

The age of a patient is calculated as at the date of visit. If more than one visit over the analysis year occurs then the most recent readings are used for FEV1. If the most recent reading is an 'x' or '?', the next most recent reading is taken.

Two spirometry equations were used for patients aged to 18 years, and 18 and above. These gave values for Predicted FEV1. Percent predicted was then calculated as FEV1/Predicted FEV1 * 100

Below 18 : From Polgar, Pulmonary Function Testing in Children
Male : 0.812 * Height ^ 2.77 (Height in m)
Female : 0.788 * Height ^ 2.73

18 and Above : From Reuben M Cherniak, Pulmonary Function Testing
Male: 0.04525 * Height – 0.03509 * Age – 2.59946 (Height in cm)
Female : 0.04071 * Height – 0.02147 * Age – 2.56958

Data Specification

Data Fields Used

FieldName	Table	Field ID	Criteria
HeightAtVisit	PublicClinicVisit	[54]	Numeric
FEV1AtVisit	PublicClinicVisit	[55]	Numeric
YearFormCompleted	PublicClinicVisit	[8]	Numeric
MonthFormCompleted	PublicClinicVisit	[7]	Numeric
DayFormCompleted	PublicClinicVisit	[6]	Numeric
YearOfBirth	PublicPatientBiography	[8]	Numeric
MonthOfBirth	PublicPatientBiography	[7]	Numeric
SexAtBirth	PublicPatientBiography	[9/10/11]	-

For Sex Split

SexAtBirth	PublicPatientBiography	[9/10/11]

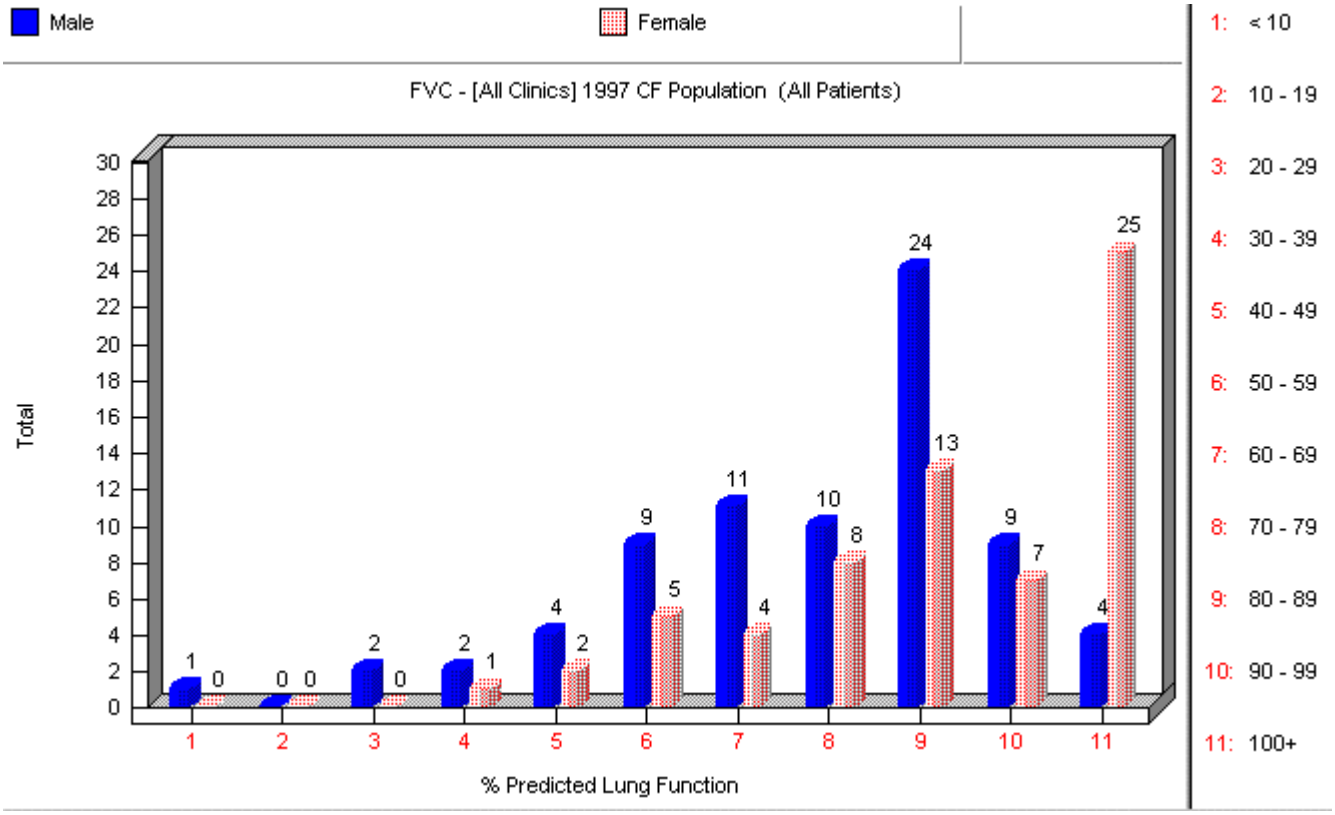
For Genotype Split

CysticFibrosisTransmembraneconductanceRegulatorAllele1	PublicPatientBiography	[38]
CysticFibrosisTransmembraneconductanceRegulatorAllele2	PublicPatientBiography	[39]

For Pseudomonas Infection Split

MostRecentBacteriologyCultureHadPseudomonasAeruginosa	PublicClinicVisit	[67]

FVC



FVC Graph

This graph shows the patients classified by percent predicted Forced Voluntary Capacity lung function. The options available on this graph are :
Splits by

- Sex
- Genotype
- Pseudomonas Infection– If Pseudomonas has ever been detected in any clinic visit during the year being analysed, the program accumulates the figures into the Pseudomonas total.
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

The age of a patient is calculated as at the date of visit. If more than one visit over the analysis year occurs then the most recent readings are used for FVC. If the most recent reading is an 'x' or '?', the next most recent reading is taken.

Two spirometry equations were used for patients to 18 years old, and 18 and above. These gave values for Predicted FVC. Percent predicted was then calculated as FVC /Predicted FVC * 100

Below 18 : From Polgar, Pulmonary Function Testing in Children
Male : 1.004 * Height ^ 2.72 (Height in m)
Female : 0.946 * Height ^ 2.61

18 and Above : From Reuben M Cherniak, Pulmonary Function Testing
Male: 0.06584 * Height – 0.02954 * Age –5.12451 (Height in cm)
Female : 0.05557 * Height – 0.00793 * Age – 4.89036

Data Specification

Data Fields Used

FieldName	Table	Field ID	Criteria
HeightAtVisit	PublicClinicVisit	[54]	Numeric
FVCAtVisit	PublicClinicVisit	[58]	Numeric
YearFormCompleted	PublicClinicVisit	[8]	Numeric
MonthFormCompleted	PublicClinicVisit	[7]	Numeric
DayFormCompleted	PublicClinicVisit	[6]	Numeric
YearOfBirth	PublicPatientBiography	[8]	Numeric
MonthOfBirth	PublicPatientBiography	[7]	Numeric
SexAtBirth	PublicPatientBiography	[9/10/11]	-

For Sex Split

SexAtBirth	PublicPatientBiography	[9/10/11]

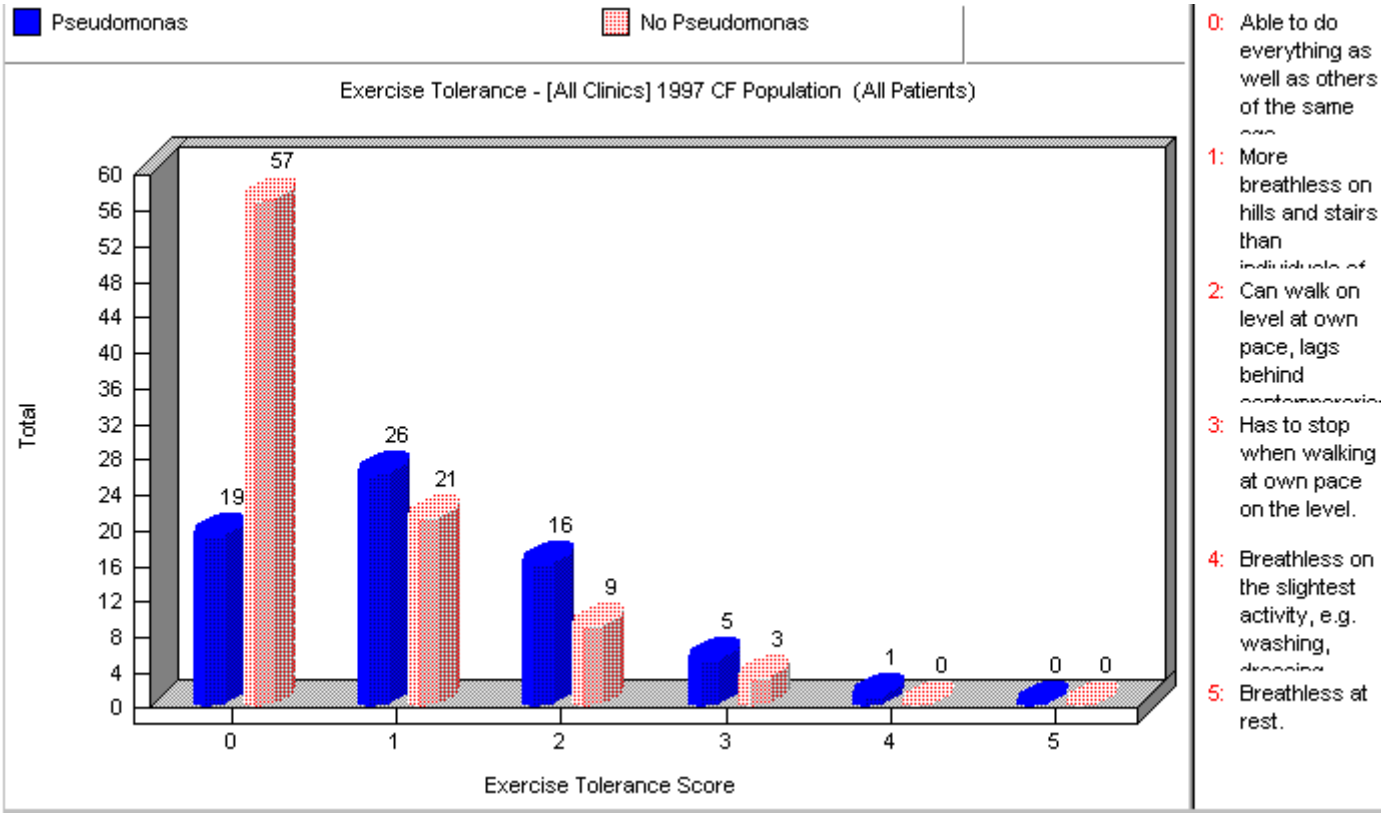
For Genotype Split

CysticFibrosisTransmembraneconductanceRegulatorAllele1	PublicPatientBiography	[38]
CysticFibrosisTransmembraneconductanceRegulatorAllele2	PublicPatientBiography	[39]

For Pseudomonas Infection Split

MostRecentBacteriologyCultureHadPseudomonasAeruginosa	PublicClinicVisit	[67]

Exercise Tolerance



Exercise Tolerance Graph

This graph shows the patients divided by their exercise tolerance. The patient is categorised according to the worst score (ie. maximum value) they have been measured with over the analysis year.
The options available on this graph are :
Splits by

- Sex
- Pseudomonas Infection– If Pseudomonas has ever been detected in any clinic visit during the year being analysed, the program accumulates the figures into the Pseudomonas total.
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

Data Specification

Data Fields Used

FieldName	Table	Field ID	Criteria
ExerciseToleranceScoreAtVisit	PublicClinicVisit	[57]	Numeric
YearFormCompleted	PublicClinicVisit	[8]	Parameter

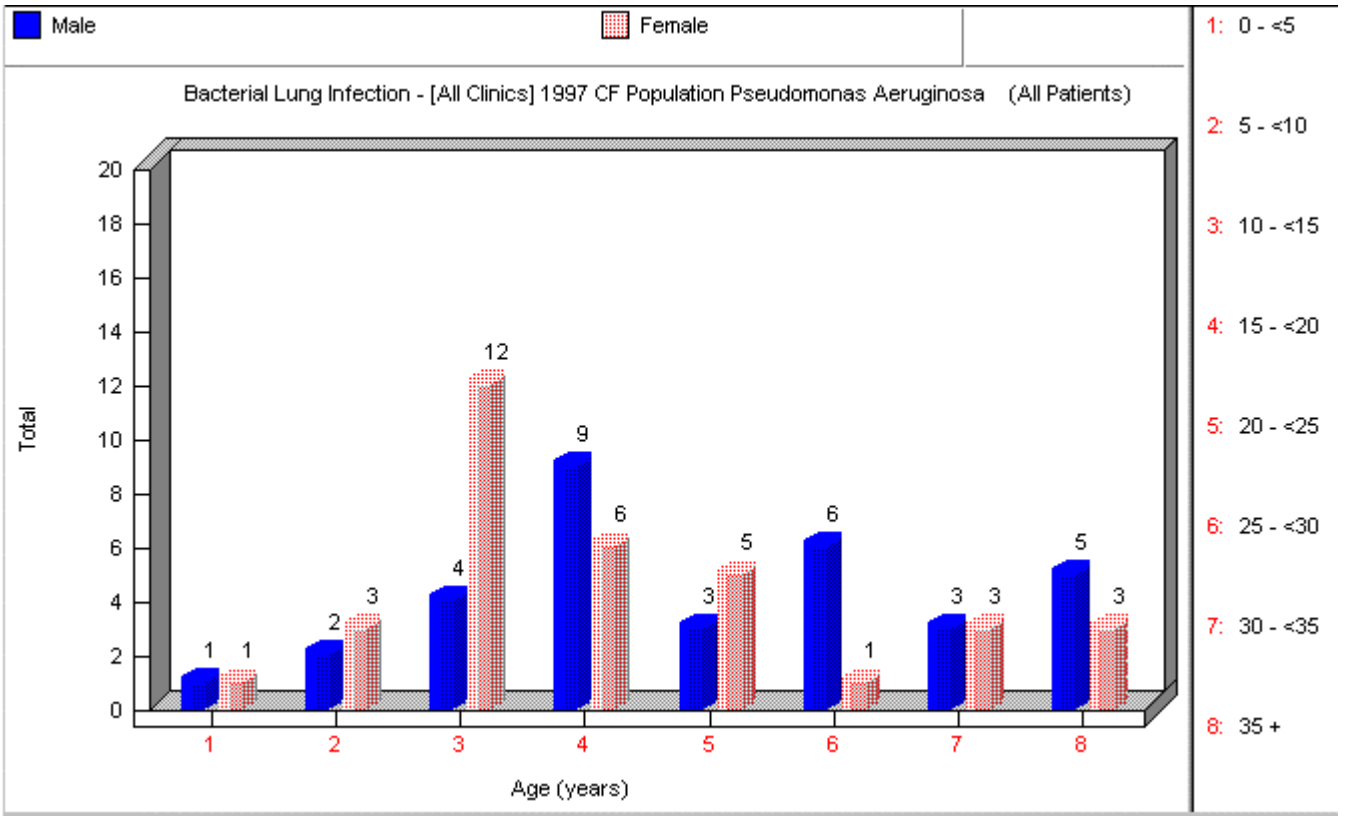
For Sex Split

SexAtBirth	PublicPatientBiography	[9/10/11]

For Pseudomonas Infection Split

MostRecentBacteriologyCultureHad PseudomonasAeruginosa	PublicClinicVisit	[67]

Bacterial Lung Infection



Bacterial Lung Infection - Pseudomonas Graph

This graph shows the patients divided into age categories for each of the four main lung bacteria - Pseudomonas Aeruginosa,Burkholderia Cepaciae,Staphylococcus Aureus and Haemophilus Influenzae. The prevalence of the bacteria in the age category, or total numbers of patients in the age category can be shown.

The options available on this graph are :
Splits by

- Sex
- Genotype

Patients are selected if YearOfBacteriologyCulture = Year being analysed. The age of the patient is calculated at the time of the bacteriology culture. Percent prevalence is calculated in each category, eg. No. of 0-5 year olds who have Pseudomonas/ Total No. of 0-5 year olds. The age of the cohort is as of 31st December of the analysis year.

Eg. If there are 6 patients with PsAer in the 0 – 5 age range, and 10 patients altogether aged 0 – 5, and of these, 2 are male and 4 are female, the age-specific prevalence is 2/10*100 for males, 4/10*100 for females in the split graph, or 6/10*100 in the unsplit graph for the age range 0 - 5.

The program selects all patients in the Biography table and calculates the numbers in each age range 0 - 5, 5 - 10 etc. (whether or not they have had clinic visits in the year being analysed). It then compares this list with all patients who had a bacteriology culture in the year under analysis, and determines which of the four bugs were isolated. It then calculates the percent prevalence as shown.

If a patient's bacteriology isolates a bug on two separate clinic visits and the age of the patient crosses over into the next age band at the second visit, he is counted just once, and in the higher age band.

Data Specification

Data Fields Used

FieldName	Table	Field ID	Criteria
YearOfMostRecentBacteriologyCulture	PublicClinicVisit	[65]	Parameter
MonthOfMostRecentBacteriologyCulture	PublicClinicVisit	[64]	Numeric
DayOfMostRecentBacteriologyCulture	PublicClinicVisit	[63]	Numeric
YearOfBirth	PublicPatientBiography	[8]	Numeric
MonthOfBirth	PublicPatientBiography	[7]	Numeric
MostRecentBacteriologyCultureHadPseudomonasAeruginosa	PublicClinicVisit	[67]	=True
MostRecentBacteriologyCultureHadBurkholderiaCepacia	PublicClinicVisit	[68]	=True
MostRecentBacteriologyCultureHadHaemophilusInfluenzae	PublicClinicVisit	[70]	=True
MostRecentBacteriologyCultureHadStaphyloccusAureus	PublicClinicVisit	[71]	=True

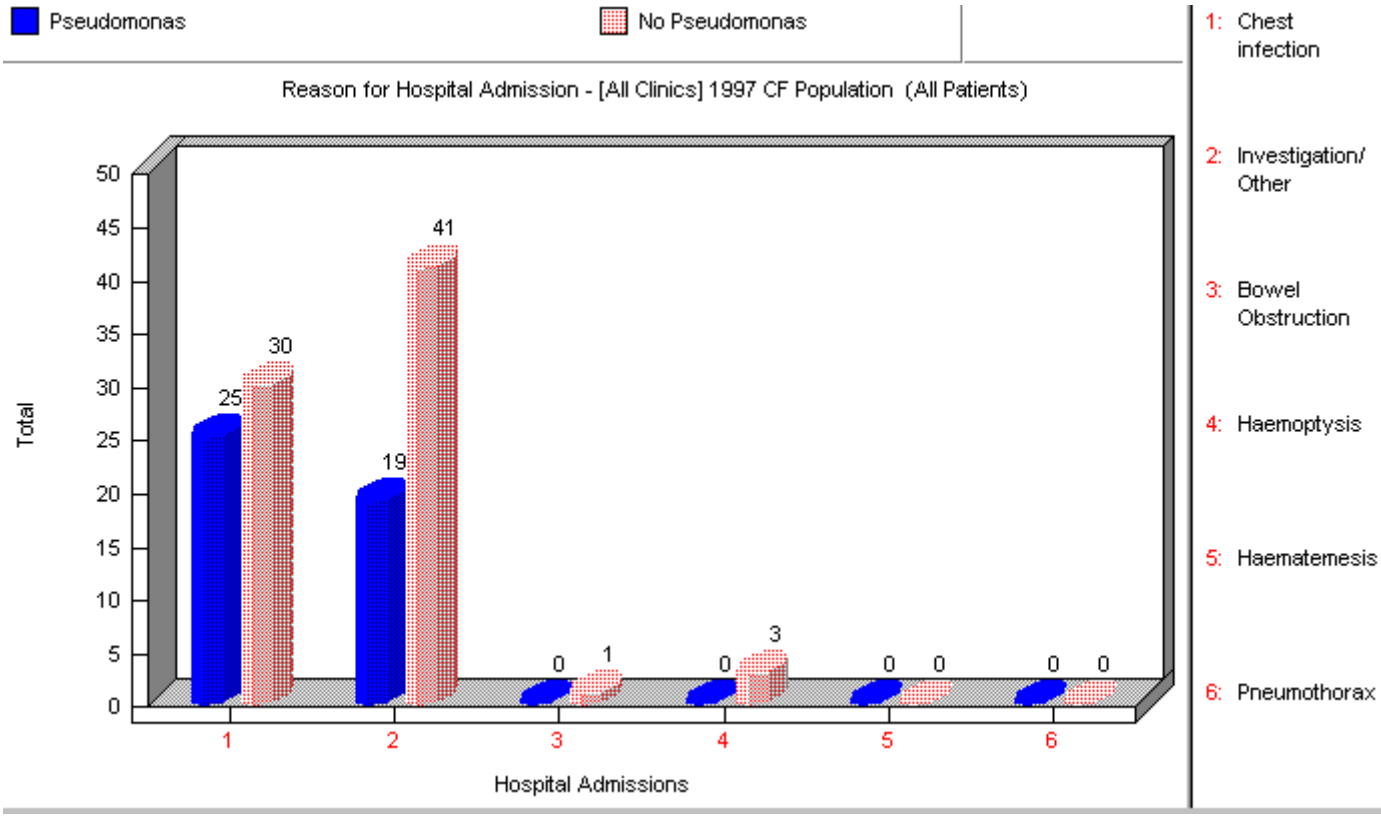
For Sex Split

SexAtBirth	PublicPatientBiography	[9/10/11]

For Genotype Split

CysticFibrosisTransmembraneconductanceRegulatorAllele1	PublicPatientBiography	[38]
CysticFibrosisTransmembraneconductanceRegulatorAllele2	PublicPatientBiography	[39]

Reason for Hospital Admission



Reason for Hospital Admissions Graph for entire year

This graph shows the numbers of patients admitted to hospital and the reasons for their admission. The data can be viewed for the entire year or for a given quarter.
The options available on this graph are :
Splits by

- Sex
- Genotype
- Pseudomonas Infection
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

The program first selects all clinic visits where NoRecentHospitalAdmissions is not 'True'.It then selects only those visits where a value has been entered for the Length of the admission (ie. Length…<>"-"). For any given clinic visit, if the patient is marked as admitted for both 'Elective Investigation' and 'Other', that visit is only counted once. In all other cases, the program counts every hospital admission in calculating its totals. Hence, if a given patient is marked as admitted for chest infection on two separate clinic visits in the year, this will add two to the numbers admitted for Chest Infection.

Note that for the Pseudomonas Infection split, the program looks at whether the patient had pseudomonas detected *in the same clinic visit* record as he was entered as having been admitted to hospital. If no pseudomonas was detected in the details entered for that clinic visit, that hospital admission is accumulated under 'No Pseudomonas' (even though pseudomonas may have been isolated at some other clinic visit in the year being analysed). If pseudomonas was detected on the same clinic visit as a hospital admission took place, the patient will be counted in the appropriate 'Pseudomonas' category.

Data Specification

Data Fields Used

FieldName	Table	Field ID	Criteria
LengthOfMostRecentAdmissionForChestInfection	PublicClinicVisit	[16]	<>"-"
LengthOfMostRecentAdmissionForElectiveInvestigation	PublicClinicVisit	[12]	<>"-"
LengthOfMostRecentAdmissionForOtherReason	PublicClinicVisit	[31]	<>"-"
LengthOfMostRecentAdmissionForBowelObstruction	PublicClinicVisit	[19]	<>"-"
LengthOfMostRecentAdmissionForHaemoptysis	PublicClinicVisit	[22]	<>"-"
LengthOfMostRecentAdmissionForHaematemesis	PublicClinicVisit	[25]	<>"-"
LengthOfMostRecentAdmissionForPneumothorax	PublicClinicVisit	[28]	<>"-"
YearFormCompleted	PublicClinicVisit	[8]	Numeric
MonthFormCompleted	PublicClinicVisit	[7]	Numeric
DayFormCompleted	PublicClinicVisit	[6]	Numeric

For Sex Split

SexAtBirth	PublicPatientBiography	[9/10/11]

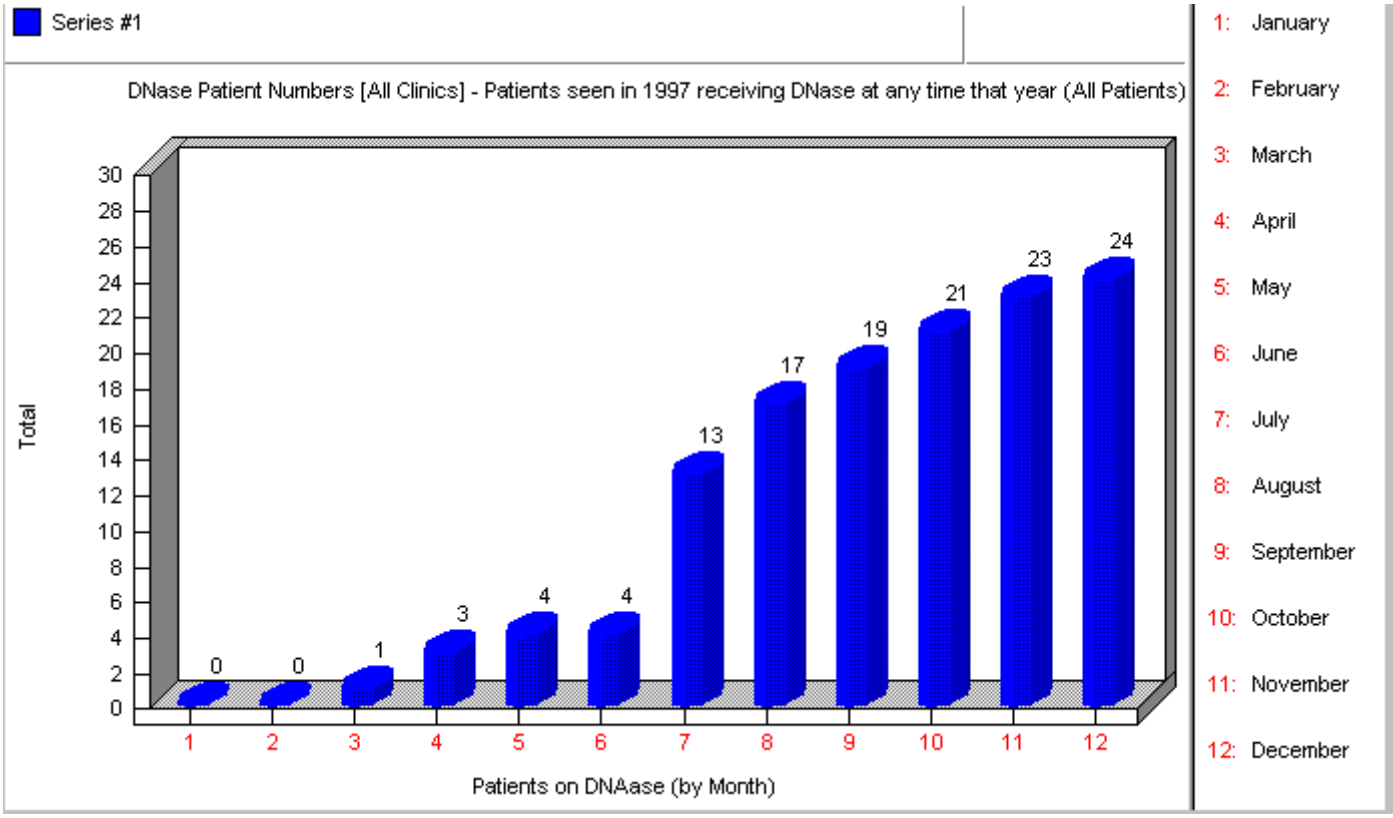
For Genotype Split

CysticFibrosisTransmembraneconductanceRegulatorAllele1	PublicPatientBiography	[38]
CysticFibrosisTransmembraneconductanceRegulatorAllele2	PublicPatientBiography	[39]

For Pseudomonas Infection Split

MostRecentBacteriologyCultureHadPseudomonasAeruginosa	PublicClinicVisit	[67]

Patients on Dnase at any time in the year



Patients on DNAse at any time in the year

This graph shows the number of patients that have been put on DNAse over the analysis year. The numbers are cumulative.
The options available on this graph are :
Splits by

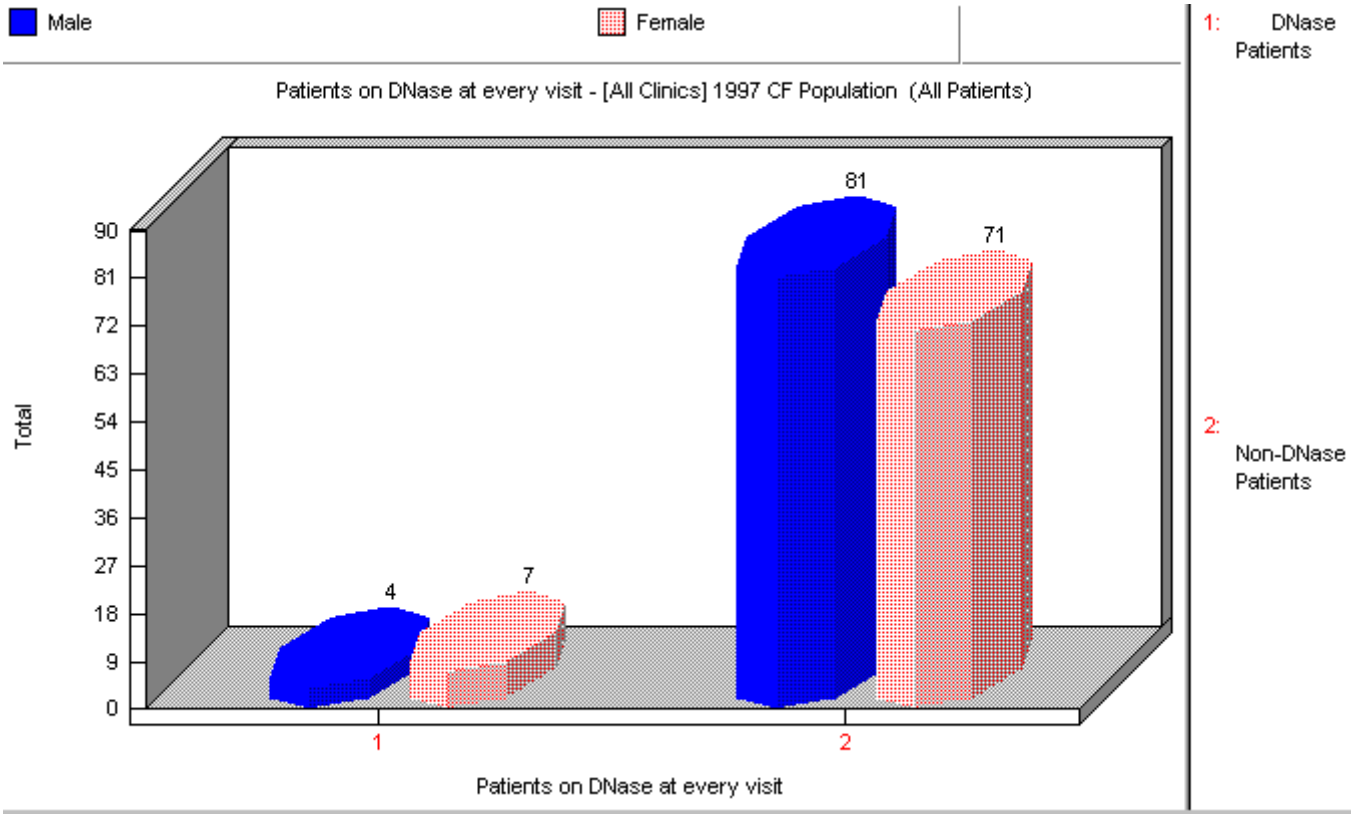
- Sex
- Pseudomonas Infection– If Pseudomonas has ever been detected in any clinic visit during the year being analysed, the program accumulates the figures into the Pseudomonas total.
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

From the first clinic visit date (in the year being analysed) at which a patient is marked as taking DNAse, they are added to the that month's totals to give a cumulative total over the year. The program does not look at the end of the previous year to see if the patient might have been on DNAse in January of the year being analysed as each year is treated in isolation. Thus, if a patient has a clinic visit in December 1997 on which he was on DNAse, is seen again in April 1998 and is again on DNAse, a 1998 run of this graph would identify this patient as being on DNAse for the first time from April. If the patient subsequently comes off DNAse in the year being analysed, the cumulative totals on this graphs are not adjusted to reflect this.

Data Specification: Data Fields Used

FieldName	Table	Field ID	Criteria
ReceivedLongTermDNAse	PublicClinicVisit	[98]	=True
YearFormCompleted	PublicClinicVisit	[8]	Numeric
MonthFormCompleted	PublicClinicVisit	[7]	Numeric
DayFormCompleted	PublicClinicVisit	[6]	Numeric
For Sex Split			
SexAtBirth	PublicPatientBiography	[9/10/11]	
For Pseudomonas Infection Split			
MostRecentBacteriologyCultureHad PseudomonasAeruginosa	PublicClinicVisit	[67]	

Patients on Dnase at every visit in the year



Patients on DNAse at every visit in the year

This graph shows the number of patients that have been on DNAse at every clinic visit in the year *vs* those who have not.
The options available on this graph are :
Split by

- Sex
- Age Groups – in 5 year age bands (age as at 31st December in the year being analysed)

Data Specification: Data Fields Used

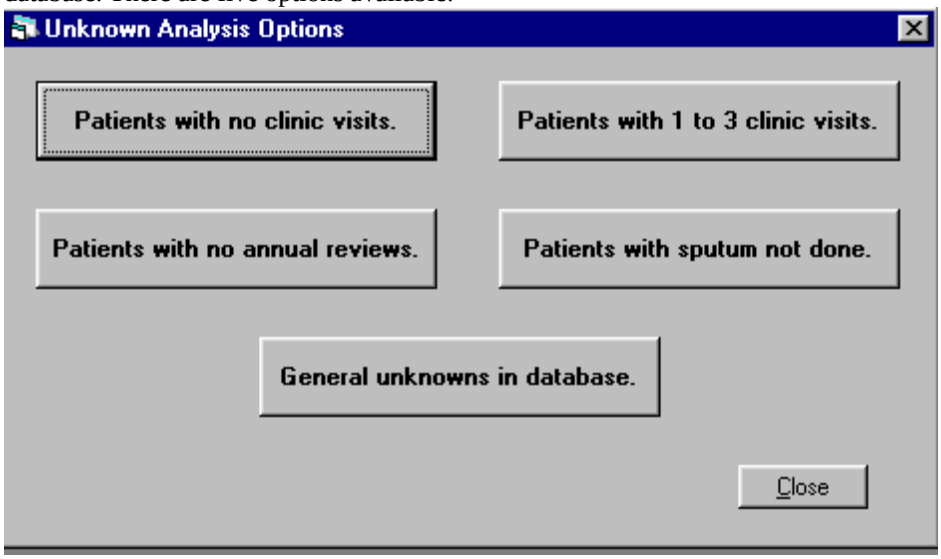
FieldName	Table	Field ID	Criteria
ReceivedLongTermDNAse	PublicClinicVisit	[98]	=True
YearFormCompleted	PublicClinicVisit	[8]	Numeric
MonthFormCompleted	PublicClinicVisit	[7]	Numeric
DayFormCompleted	PublicClinicVisit	[6]	Numeric

For Sex Split

SexAtBirth	PublicPatientBiography	[9/10/11]

Unknowns Analysis - Overview

The button with the Question mark on the top of the main analysis tools screen opens up the Unknowns Analyses in the database. This is useful for analysing the completeness of the data collected in the database. There are five options available:

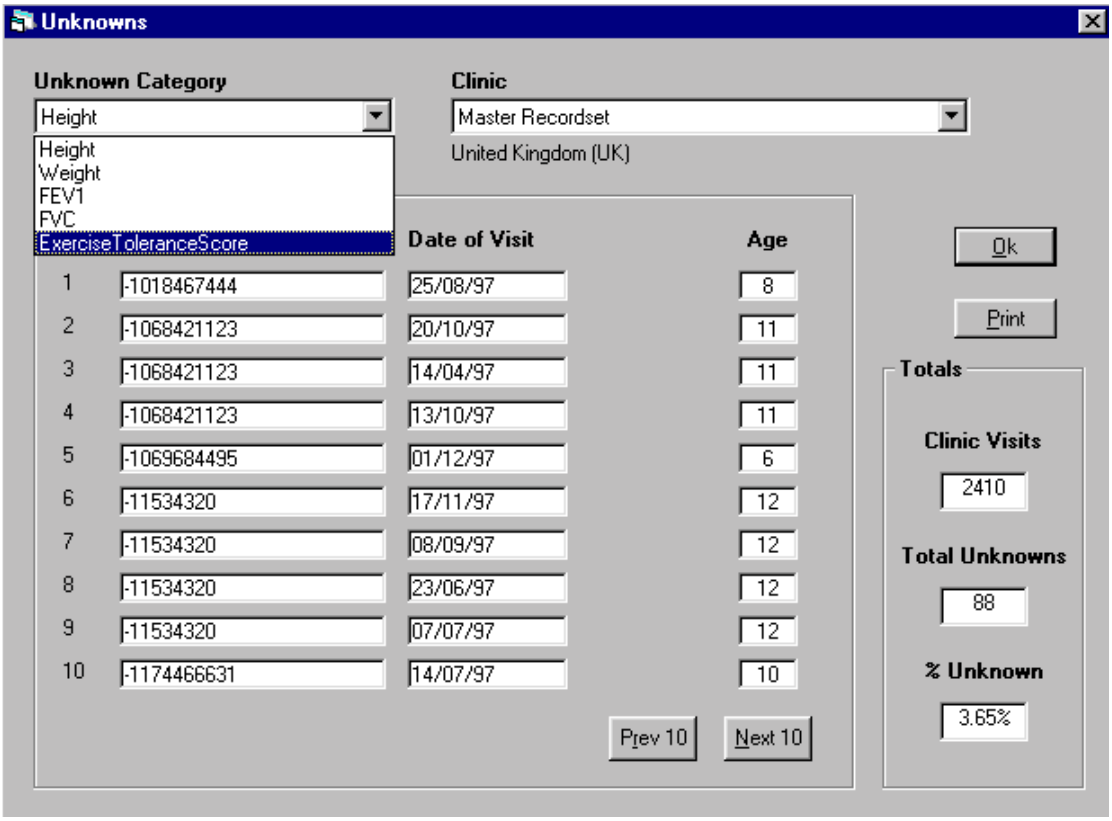


Unknowns Options Screen

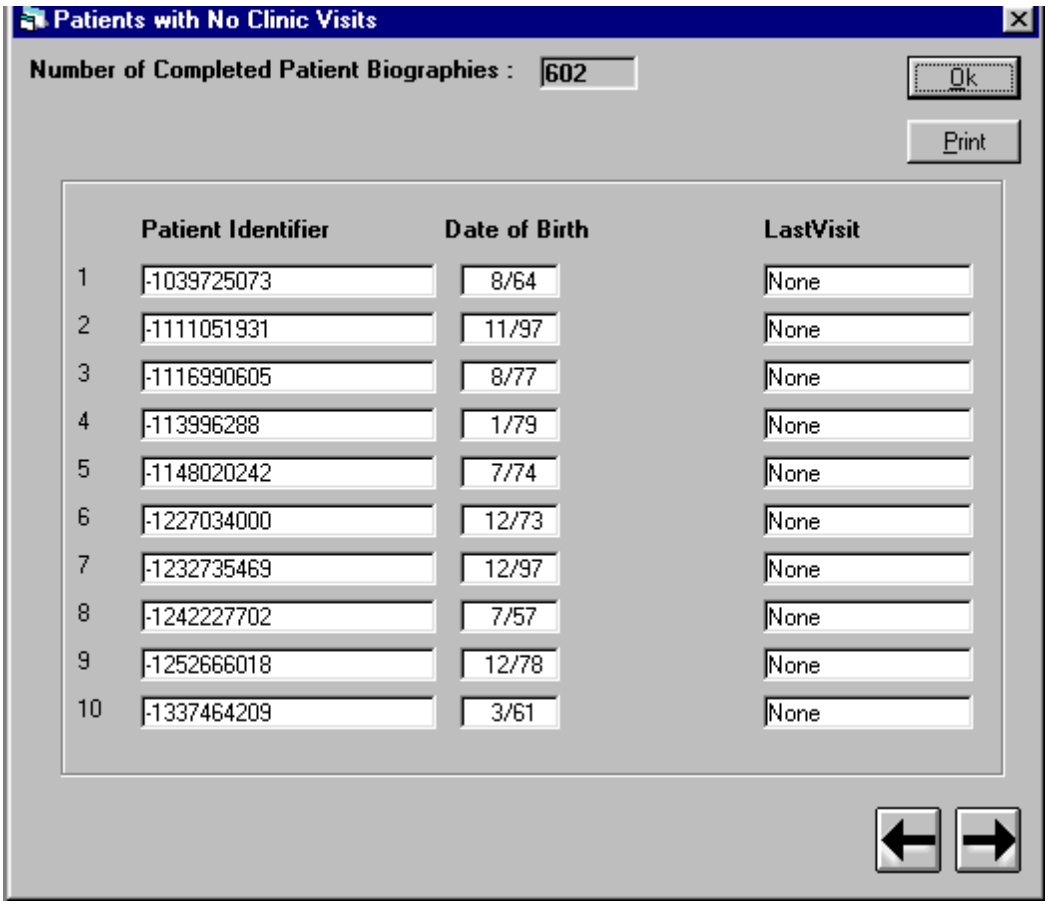
The first 5 buttons displays patient details as specified on the button. The option *Patients seeing non-specialists* is not available at present.

The General Unknowns button displays a screen enabling the selection of patients who have clinic visits incomplete for each of the following measurements: Height, Weight, FEV1, FVC and Exercise tolerance score. Eg. Selecting Height will show all patients who have not had their height measured during all clinic visit for the year being analysed.

The total number of clinic visits in the year being analysed and the number of clinic visits with an unknown value for height are displayed in the bottom right corner of the screen.



Unknowns – Patients with no clinic visits



Patients with no clinic visits

This graph lists all patients who have had registration and biography details entered into the system, but had no clinic visits/snapshots entered for them for the year being analysed.

The date of the last clinic visit/snapshot (where entered in the database) is displayed. If no previous clinic visit has been recorded, 'None' is displayed.

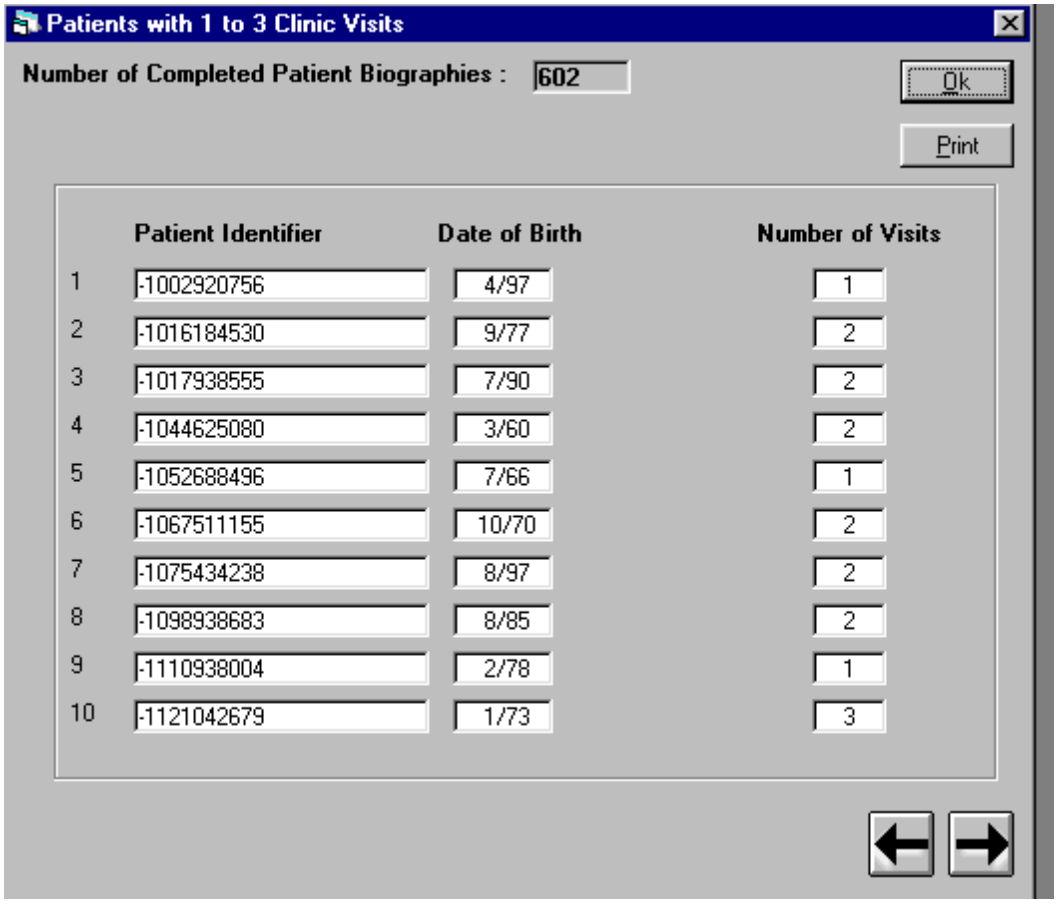
The patient's Date of Birth (month / year) as entered on the Biography form is displayed.

The program counts the number of clinic visits for each patient in the year being analysed, and selects those where number of visits = 0.

Data Specification : Data Fields Used

Field Name	Table	Field ID	Criteria
PatientIdentifier	PublicPatientBiography	[1]	
YearOfBirth	PublicPatientBiography	[8]	
MonthOfBirth	PublicPatientBiography	[7]	
YearFormCompleted	PublicClinicVisit	[8]	Parameter
MonthFormCompleted	PublicClinicVisit	[7]	
DayFormCompleted	PublicClinicVisit	[6]	

Unknowns- Patients with one, two or three clinic visits



Patients with one, two or three clinic visits

This graph lists all patients who have had registration and biography details entered into the system, and between one and three clinic visits/snapshots entered for the year being analysed.

The number of clinic visits for the year is displayed

The patient's Date of Birth (month / year) as entered on the Biography form is displayed.

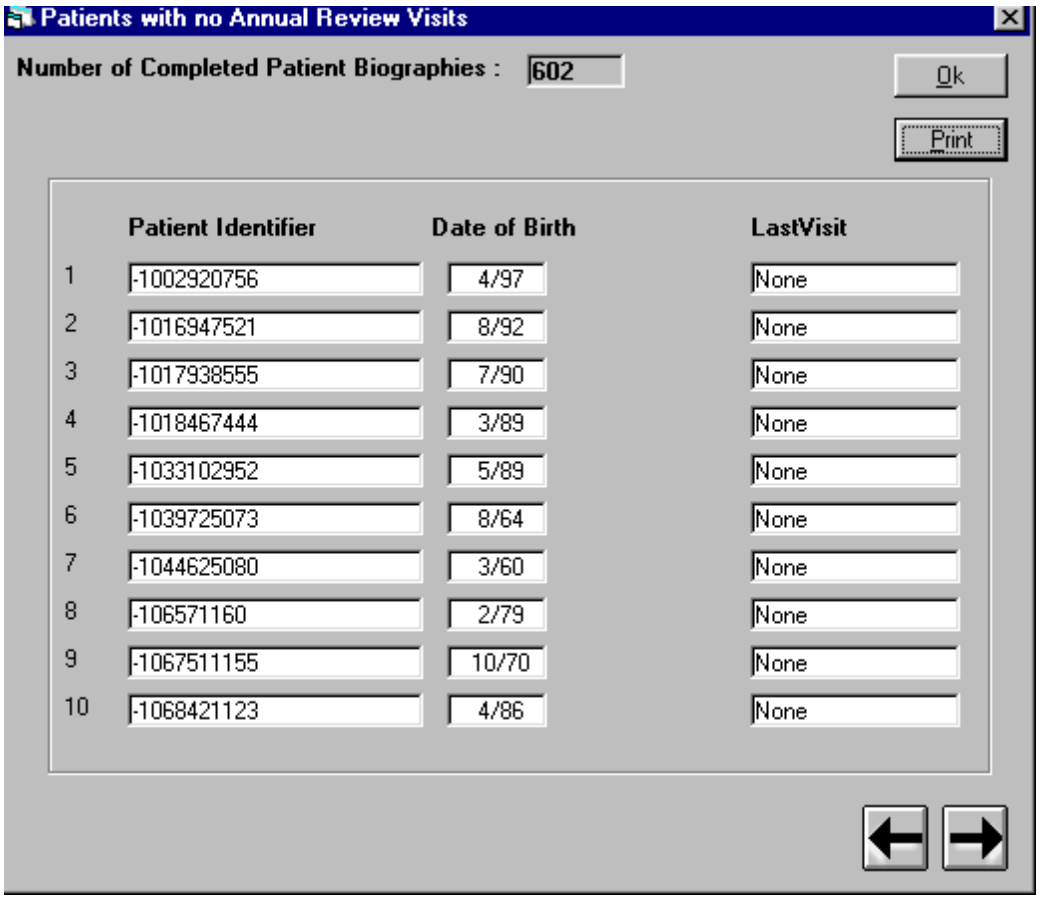
The program counts the number of clinic visits for each patient in the year being analysed, and selects those where number of visits is either 1, 2 or 3.

Data Specification

Data Fields Used

Field Name	Table	Field ID	Criteria
PatientIdentifier	PublicPatientBiography	[1]	
YearOfBirth	PublicPatientBiography	[8]	
MonthOfBirth	PublicPatientBiography	[7]	
YearFormCompleted	PublicClinicVisit	[8]	Parameter
MonthFormCompleted	PublicClinicVisit	[7]	
DayFormCompleted	PublicClinicVisit	[6]	

Unknowns – Patients with no Annual Reviews



Patients with no Annual Reviews

This graph lists all patients who have had registration and biography details entered into the system, but had no annual reviews entered for them for the year being analysed.

The date of the last annual reviews (where entered in the database) is displayed. If no previous annual review has been recorded, 'None' is displayed.

The patient's Date of Birth (month / year) as entered on the Biography form is displayed.

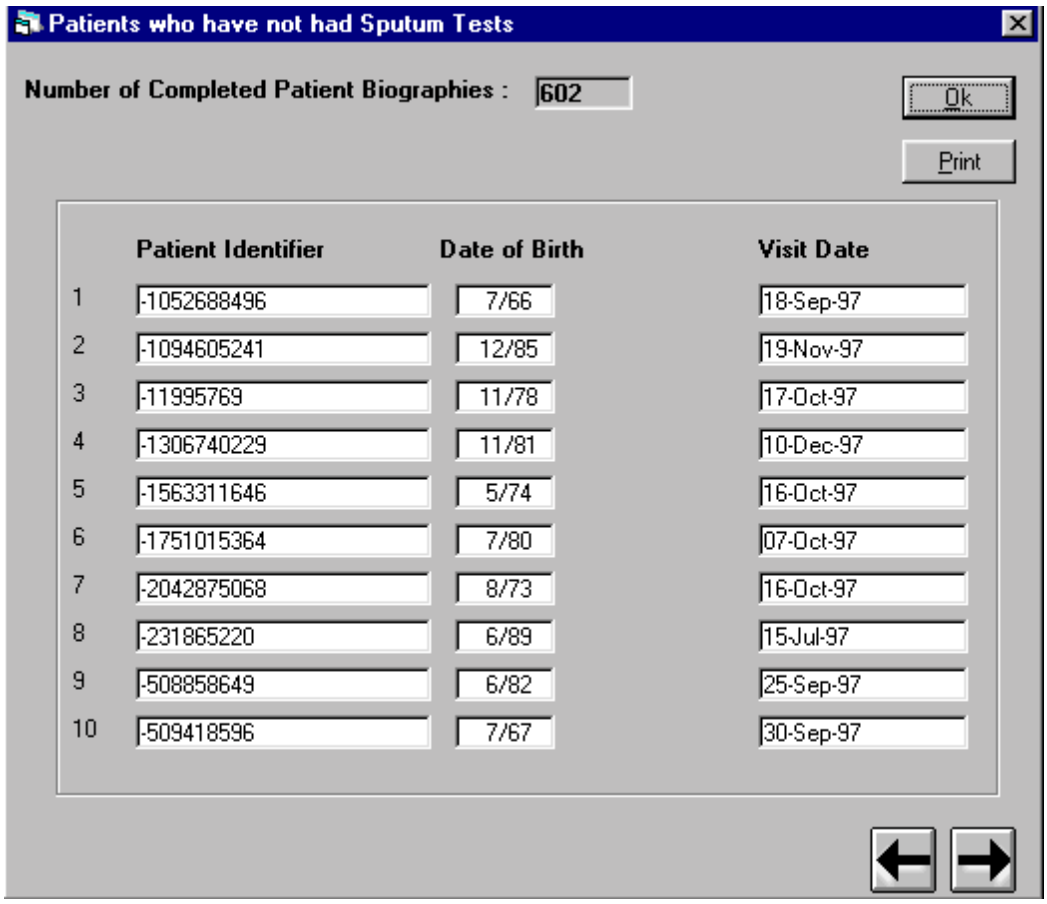
The program counts the number of annual reviews for each patient in the year being analysed, and selects those where number of reviews = 0.

Data Specification

Data Fields Used

Field Name	Table	Field ID	Criteria
PatientIdentifier	PublicPatientBiography	[1]	
YearOfBirth	PublicPatientBiography	[8]	
MonthOfBirth	PublicPatientBiography	[7]	
YearOfVisit	PublicCFAnnualReview	[9]	Parameter
MonthOfVisit	PublicCFAnnualReview	[8]	
DayOfVisit	PublicCFAnnualReview	[7]	

Unknowns – Patients with sputum not done



Patients who have not had sputum tests in clinic visit shown

This graph lists all patients over 6 years old who have never had a bacteriology culture done in any clinic visit in the year being analysed (ie. NoRecentBacteriologyCulture = true). It checks whether the value of 'No bacteriology performed since last clinic visit' is ticked on the form as this puts a value of 'True' in the table, and *all* clinic visits in the year must have this value set to True. It then checks the age of the patient and only selects them for display if they are over 6 years old.

The date of the last clinic visit/snapshot is displayed.

The patient's Date of Birth (month / year) as entered on the Biography form is displayed.

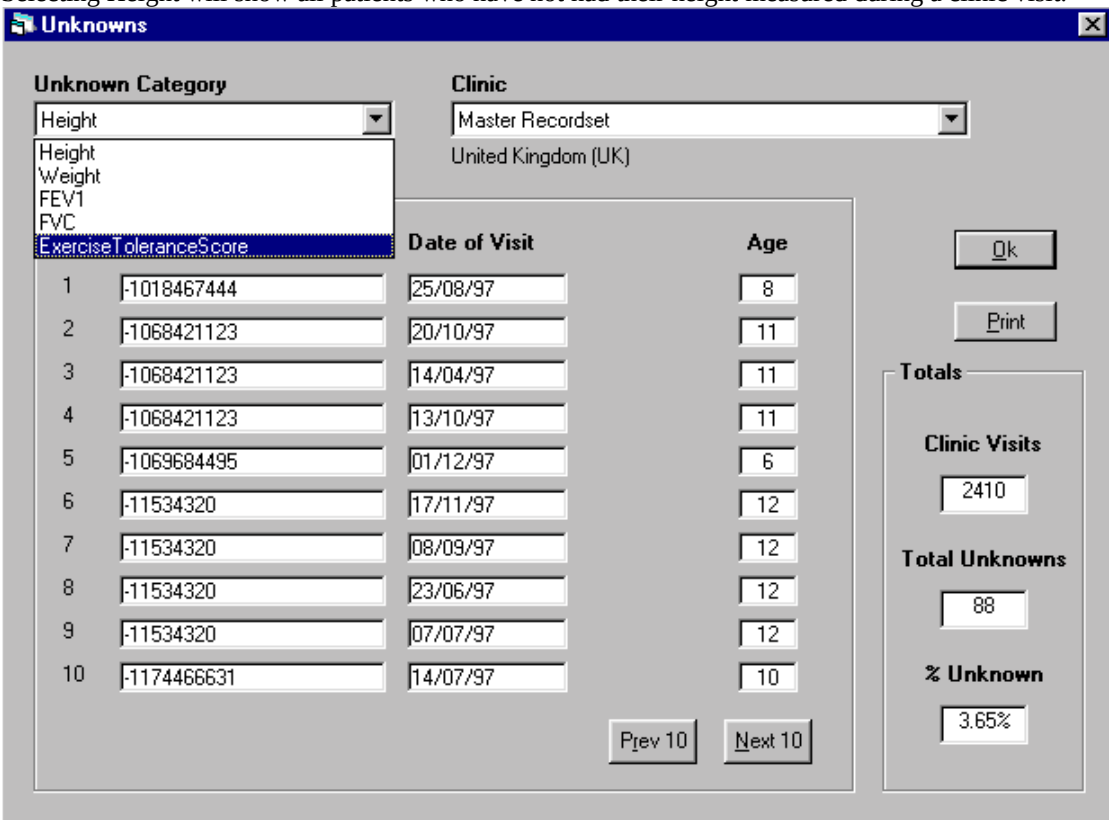
Data Specification

Data Fields Used

Field Name	**Table**	**Field ID**	**Criteria**
PatientIdentifier	PublicPatientBiography	[1]	
YearOfBirth	PublicPatientBiography	[8]	
MonthOfBirth	PublicPatientBiography	[7]	
YearFormCompleted	PublicClinicVisit	[8]	Parameter
MonthFormCompleted	PublicClinicVisit	[7]	
DayFormCompleted	PublicClinicVisit	[6]	
NoRecentBacteriologyCulture	PublicClinicVisit	[64]	True (?=false)

Unknowns – General unknowns in database

The General Unknowns program enables the selection of patients who have clinic visits incomplete for each of the following measurements: Height, Weight, FEV1, FVC, and Exercise tolerance score. Eg. Selecting Height will show all patients who have not had their height measured during a clinic visit.



General Unknowns screen for selected key measurements

This graph allows the user to select a measurement from those in the drop-down list in order to display all clinic visits (in the year being analysed) where a value for that measurement has not been recorded.

If height, weight, FEV1, FVC or Exercise tolerance are being analysed, only patients over 6 years of age are selected. The program displays the clinic visit details if the value entered in the database is either '?' or 'x'.

The details displayed are the Patient number, the date of the visit with the unknown value and the age of the patient.

The total number of clinic visits in the year being analysed and the number of clinic visits with an unknown value for the measurement selected are displayed in the bottom right corner of the screen.

Data Specification

Data Fields Used

Field Name	Table	Field ID	Criteria
PatientIdentifier	PublicClinicVisit	[1]	
YearOfBirth	PublicPatientBiography	[8]	
MonthOfBirth	PublicPatientBiography	[7]	
YearFormCompleted	PublicClinicVisit	[8]	Parameter
MonthFormCompleted	PublicClinicVisit	[7]	
DayFormCompleted	PublicClinicVisit	[6]	
HeightAtVisit	PublicClinicVisit	[56]	? or x

WeightAtVisit	PublicClinicVisit	[60]	? or x
ExerciseToleranceAtVisit	PublicClinicVisit	[63]	? or x
FEV1AtVisit	PublicClinicVisit	[57]	? or x
FVCAtVisit	PublicClinicVisit	[61]	? or x

Uninstalling the UKCF Database Analyser

Removing "PatTrackingOCX.ocx"

When uninstalling older versions of the 'UKCF Database Analyser' program, it is important to '**Keep' all shared files** including C:\WINDOWS\SYSTEM\MSFLXGRD.OCX if the uninstall program asks if we want to keep or remove them, **EXCEPT … REMOVE the file 'PatTrackingOCX.ocx' if it asks to keep or remove.**

If **'PatTrackingOCX.ocx'** is not successfully removed, when the new ukcf Database Analyser programs appears to install succesfully, but then running it gives "Run Time Error 339 – Component PatTrackingOCX.ocx not currently registered: file is missing or invalid".

The action to take if this happens is as follows:

- **Please phone the UK CF database team in Dundee urgently**

- Uninstall program
- (If asked, keep all shared files, including C:\WINDOWS\SYSTEM\MSFLXGRD.OCX but **do not keep 'PatTrackingOCX.ocx' .** If it gives you this option chances are a normal reinstall will work and nothing needs to be done with the dos prompt in that case. Otherwise …)
- Do Start – Programs – MS DOS Prompt
- Change dos prompt to C:\WINDOWS\SYSTEM>
- type in "Regsvr32 –u PatTrackingOCX.ocx" and press enter
- A message should say "dll unregister server succeeded" – say ok
- In Explorer, delete C:\WINDOWS\SYSTEM\PatTrackingOCX.ocx
- Reinstall from Setup Files again as before and it should all work