

WHONET

Analysis macros



**WHO Collaborating Centre for
Surveillance of Antimicrobial Resistance**

Boston, July 2022

WHONET Tutorial – Macros and Excel Reports

Macros and Reports are valuable features which can be used to facilitate the preparation of standard outputs for use within the laboratory or for distribution to other services. In WHONET, a Macro is a small file which remembers the details of one of your analysis requests, and a Report is a collection of multiple macros. Reports can be viewed on the screen, but are more usefully saved as formatted Excel files for later viewing.

For someone who knows WHONET well, macros and reports can be a significant time saver. For users new to WHONET or to microbiology, the use of WHONET standard reports or locally prepared reports is learned easily, and provides access to focused, important information with minimal effort.

In addition to their value in interactive WHONET use, Macros and Reports can be used to automate analyses or to integrate WHONET into an internet page or other development package.

- Part 1. Creating and using Macros in Data Analysis
- Part 2. Saving analysis results as an Excel file
- Part 3. Quick Analysis and Standard Reports
- Part 4. Quick Analysis and User-defined Reports
- Part 5. Macros, Reports, and Automation

Part 1. Creating and using Macros in Data Analysis

A macro is a small file which remembers the details of one of your analysis requests. You can save a macro at any time during Data Analysis, and then call up this macro again easily at any time in the future.

As an example, go to WHONET, find the “WHO Test Hospital” and “Open Laboratory”. Enter the Data Analysis program. Enter a simple analysis with the following selections: Analysis Type = %RIS and test measurements, Organisms = *E. coli* and *S. aureus*. Data file = w0195who.tst. Begin Analysis. Review the analysis results, and select Continue twice to return to the main analysis screen.

Data analysis: USA Test Hospital

Analysis type

Study = RIS and test measurements
All antibiotics

Options

One per patient

Organisms

eco Escherichia coli
sau Staphylococcus aureus ss. aureus

Isolates

Data files

w0195usa.tst

Output to: Screen

Macros

Begin analysis Exit

To save these analysis parameters as a macro, click on “Macros”, and you will see the following.

Macro definitions

C:\whowin32\vb6\Macros\

New

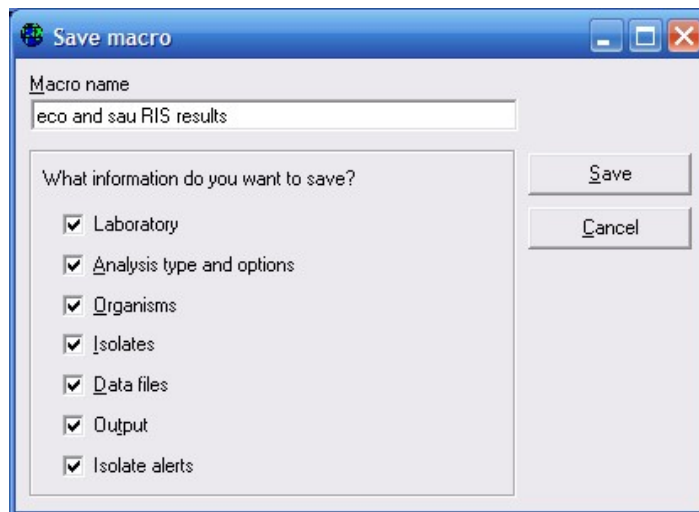
Load

Edit

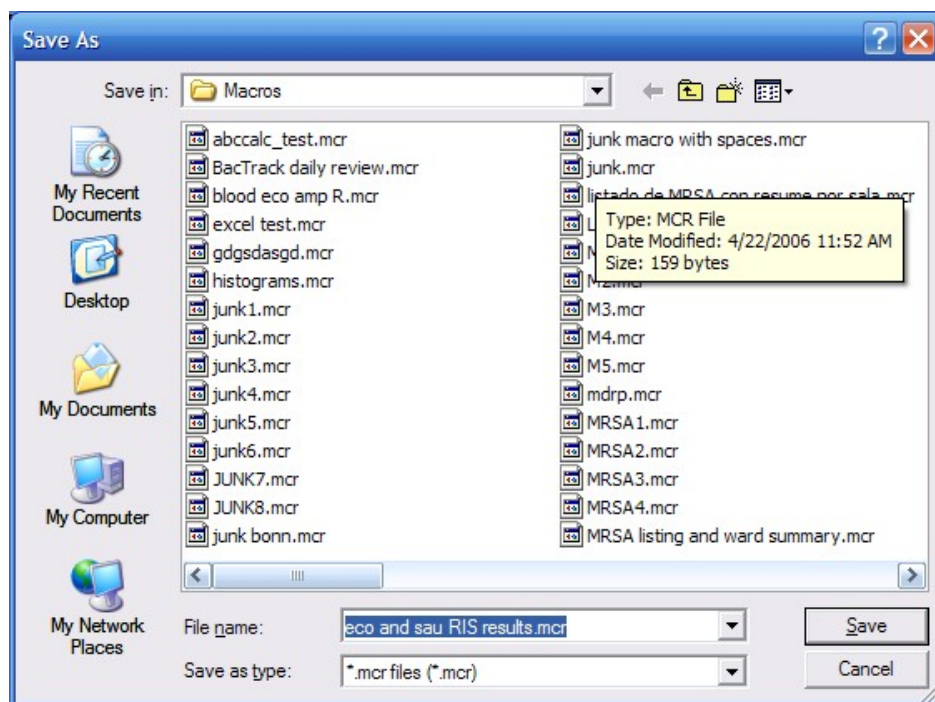
Delete

Browse Exit

Click on “New” to define a new macro. Give a name to the macro, for example “eco and sau RIS results”.



After entering a name, click on “Save” to save the macro. Windows will ask you to give a name to the macro file. By default, WHONET will use the macro name plus the letters “.mcr”. Macros by default are saved in the c:\whonet\macros, but could be saved in any other folder as well.



Click on “Save” and “Exit” to return to the main analysis screen. Next, leave WHONET completely.

Then restart WHONET, select the WHO Test Hospital, and go to Data Analysis. In Data Analysis, click on “Macros”. Select the macro which you have just created, and then click “Load”. WHONET will then load all of the options which you had previously selected. You could then “Begin Analysis” immediately to view the analysis results, or

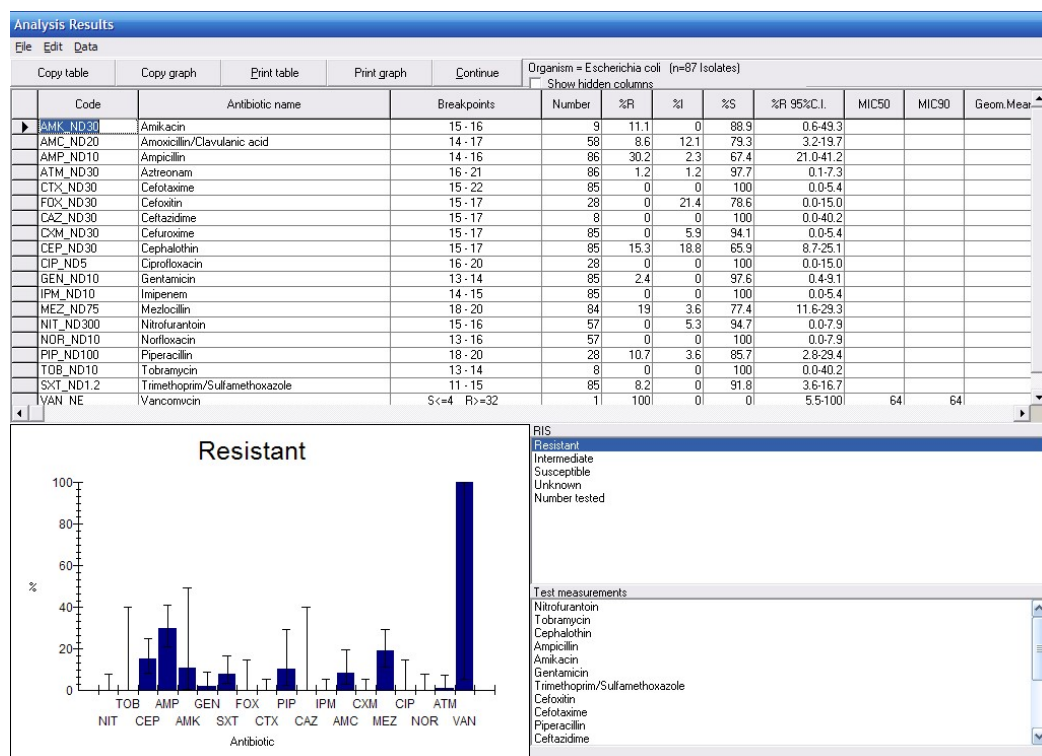
you could make modifications to the options loaded from the macro prior to starting the analysis.

As a second example, try to create a macro with the following details. Give the macro the name “MRSA listing and ward summary”. Run the macro to ensure that it works correctly.

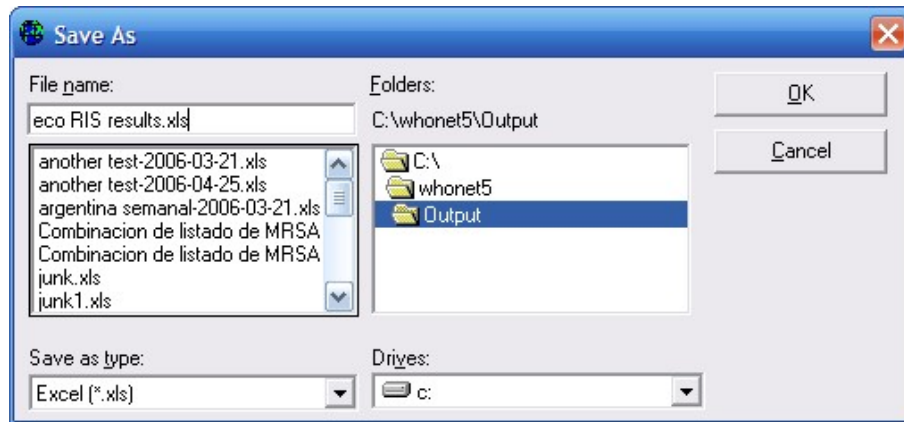
Analysis type = Isolate listing and summary, Row=Location, Column=Specimen Date
Organism = *S. aureus*
Isolates: Oxacillin = Resistant
Data file = w0195who.tst

Part 2. Saving analysis results as an Excel file

The value of macros and reports has been significantly enhanced through improvements in the formatting of Excel files prepared by WHONET. To see these modifications, load up the macro created in Part 1 and run the analysis. You will see the following screen for *E. coli*.

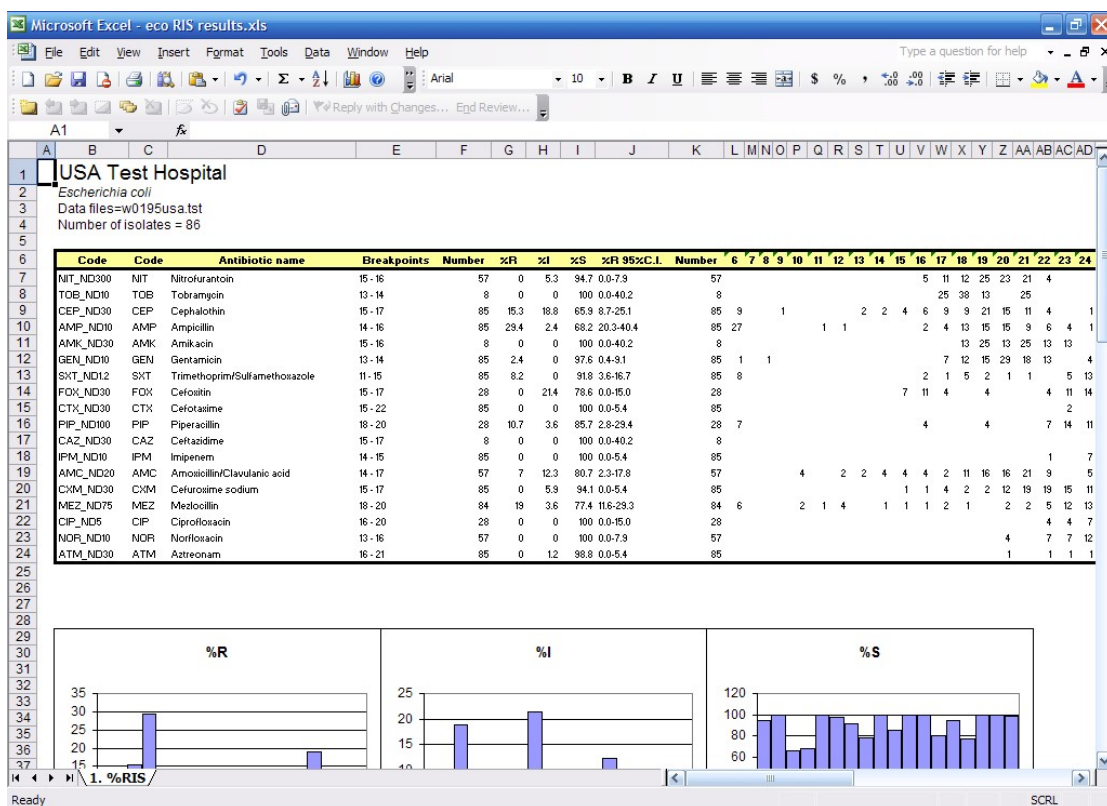


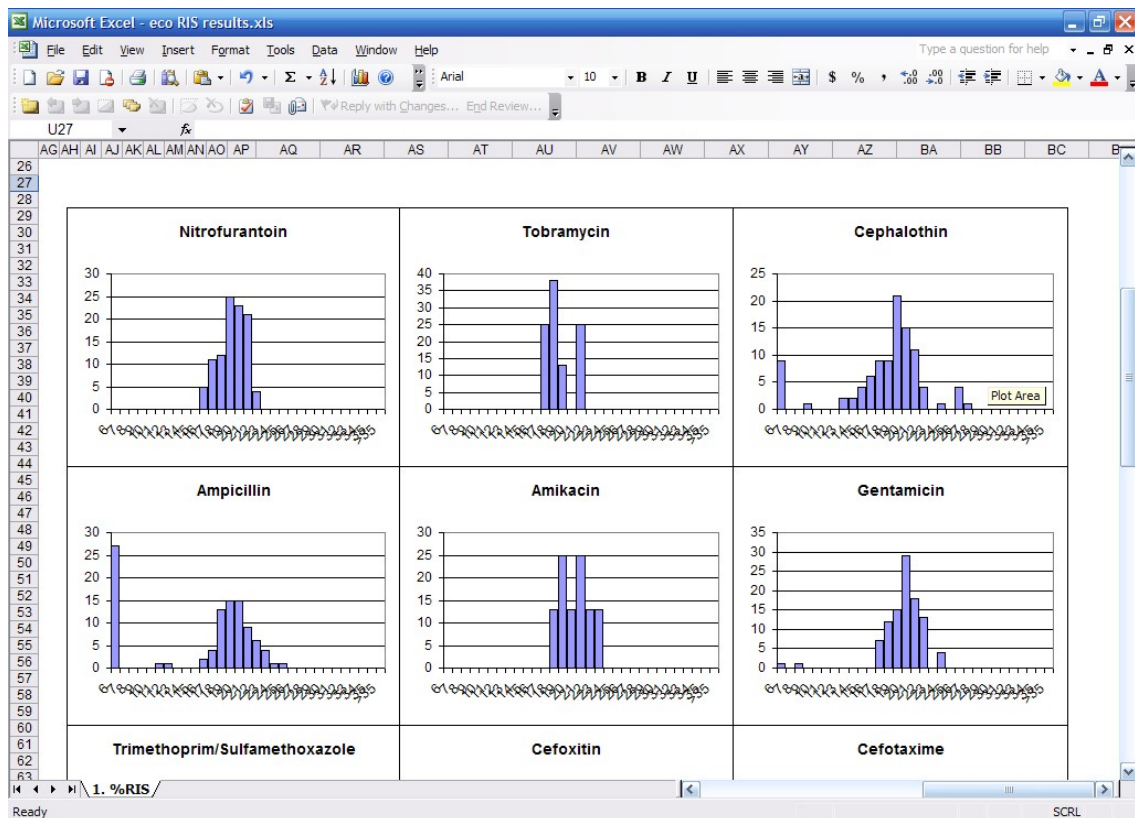
The click on “File”, “Save table”. For the file name, enter “eco RIS results.xls”. For the question “Save as type”, select Excel.



WHONET will save the analysis results as an Excel file. Note that by default, WHONET will save the results in the c:\whonet5\output folder.

Now go to Excel and open the file: c:\whonet5\output\eco RIS results.xls. Two parts of the Excel spreadsheet are shown below.

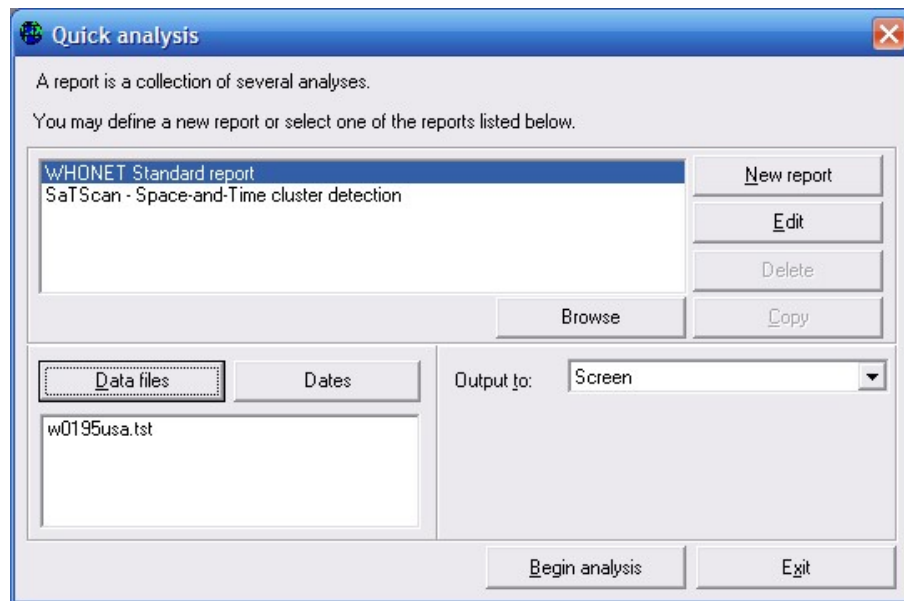




Part 3. Quick Analysis and Standard Reports

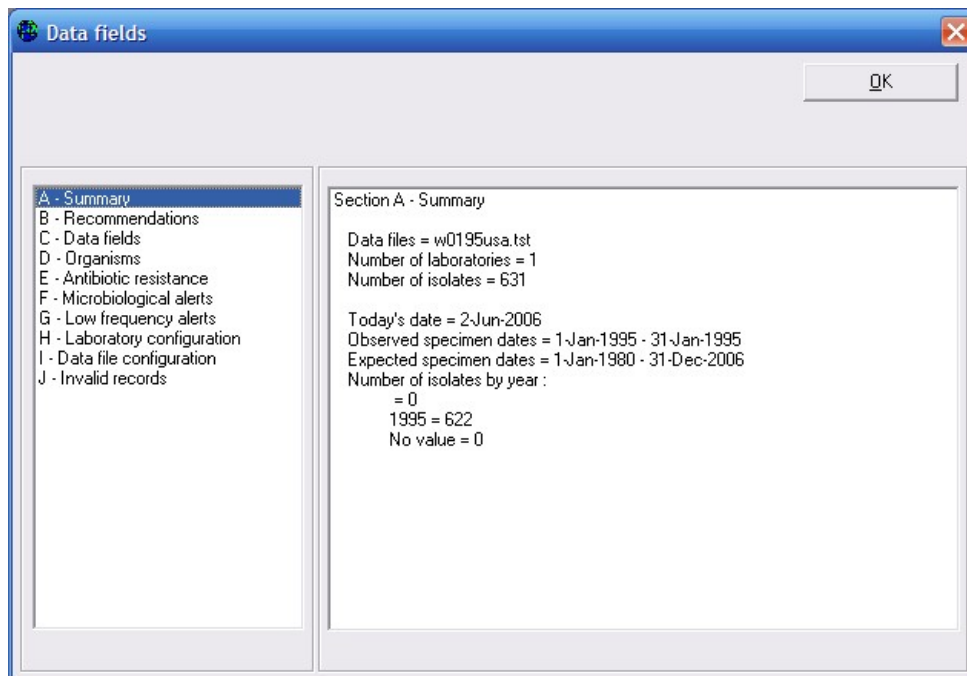
Quick Analysis is a new analysis area in WHONET. The intent is to provide much of the benefit of the WHONET interactive analysis program, but with minimal time and effort. Users can choose from a few Standard Reports offered by WHONET or they may create their own reports for use within the laboratory or by clinical services in other hospital areas, such as infection control or pharmacy.

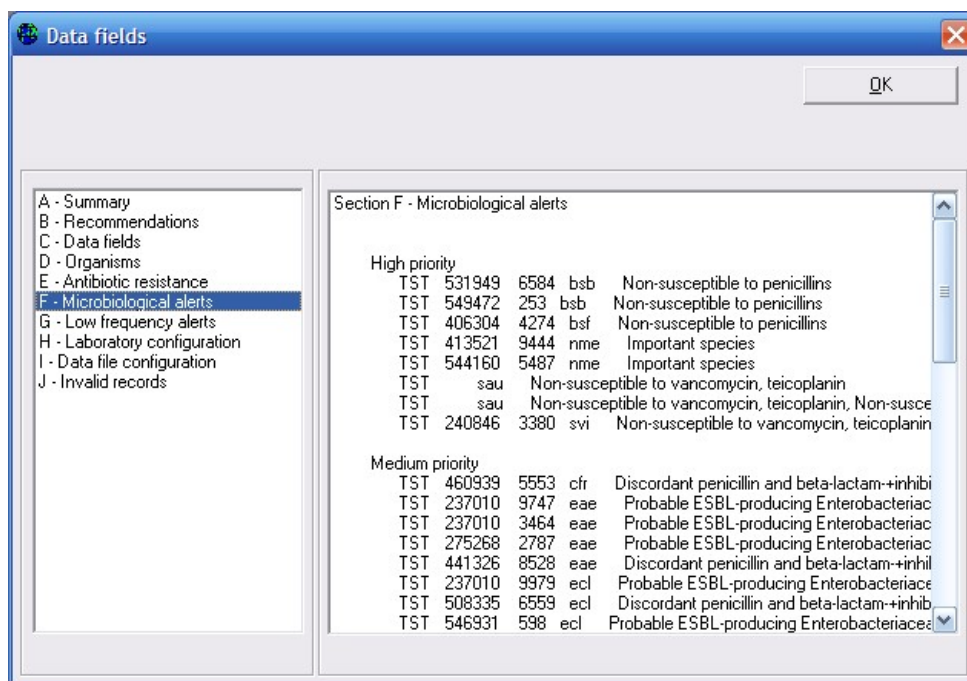
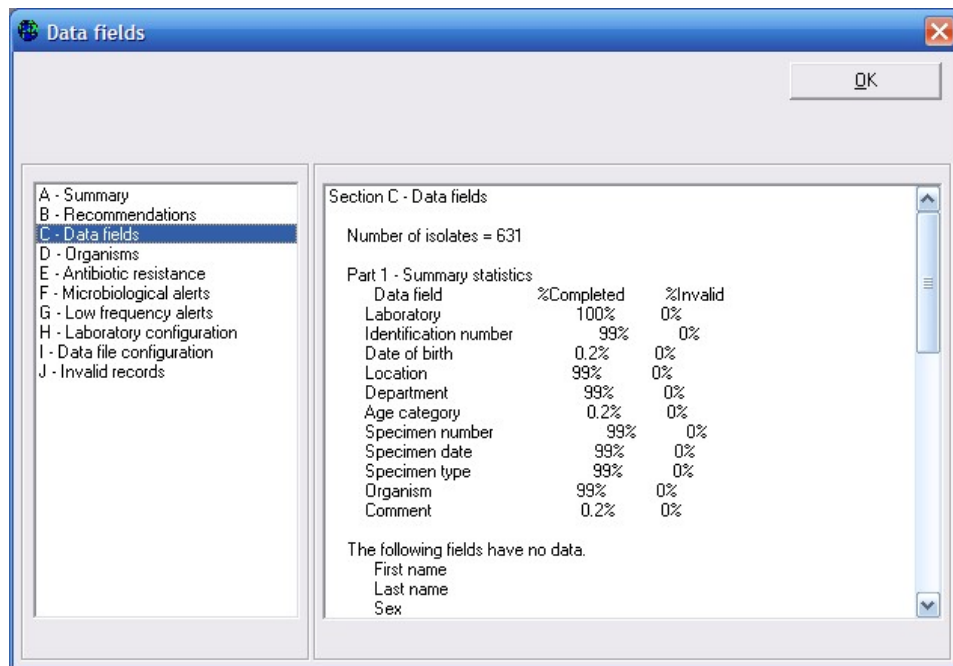
For this example, begin WHONET, open the "WHO Test Hospital", go to "Analysis" and select "Quick Analysis".



Select “WHONET Standard report”, and choose the w0195who.tst data file. Click on “Begin Analysis”.

WHONET will perform multiple analyses on the selected data file(s), and prepare a multi-part overview of key results. A few of the sections are depicted below. (Note: The formatting and presentation of the standard report on the screen has not been optimized. This will be completed in the near future.)



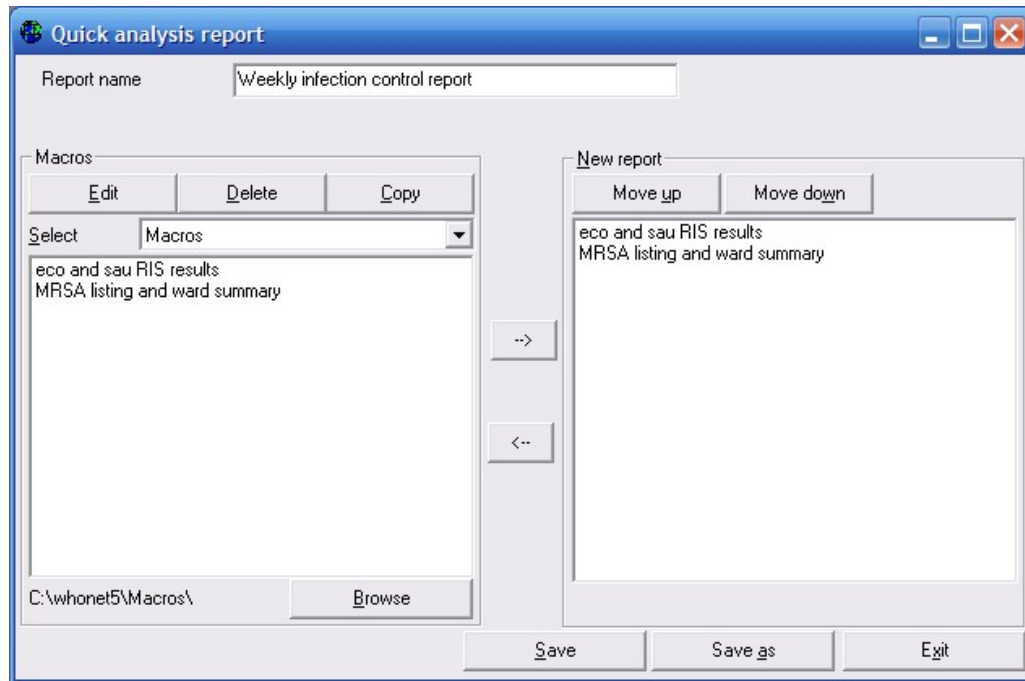


Part 4. Quick Analysis and User-defined Reports

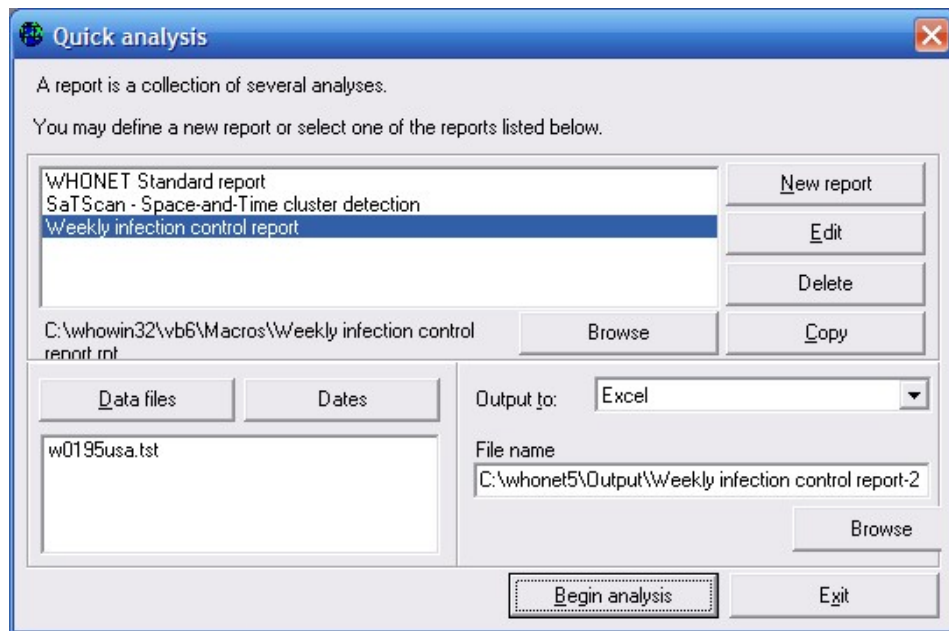
Part 3 illustrated the use of a multi-part analysis to provide various types of information to the user. In this part, the creation of a new report format by the user is described. To take advantage of this option, you will need to create one or macros, as described earlier in Part 1.

In the Quick Analysis screen, click on “New”. Give a name to the new report, for example “Weekly infection control report”. On the left side of the screen, you will see the macros that you created earlier in Part 1. Select these macros over to the right side of the screen.

A report typically consists of multiple macros, but a report can also include other reports. In this way, you can build up more complete reports from smaller subreports.

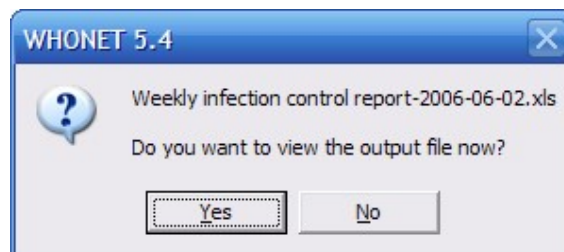


After you have selected the macros and reports to include in this report, click on Save. By default the name of this file will be “Weekly infection control report.rpt”, and the file will be saved in c:\whonet5\macros. After you save the report file, click on “Exit” to return to the main Quick Analysis screen.



Choose the new report that you have just created. Choose the w0195who.tst data file. Change the “Output” destination to “Excel”. WHONET will give the default name: “C:\whonet5\Output\Weekly infection control report-2006-06-02.xls” to the file, *i.e.* the name of the report plus the date of creation.

Begin the analysis. When the analysis is completed you will be asked if you want to view the new Excel file. Click “Yes”.



WHONET will now open Excel. If it does not pop up on the screen in front of you, check the list of open programs at the bottom of the screen to see if Excel is open. If so, click on Excel to see your results file.

Below is a portion of the Excel report created by WHONET. You will notice that the file has four worksheets. These correspond to the following four pages generated by the two macros selected for the report: 1. eco - %RIS, 2. sau - %RIS, 3. MRSA – Isolate listing, and 4. MRSA – Location summary.

Microsoft Excel - Weekly infection control report-2006-06-02.xls

File Edit View Insert Format Tools Data Window Help

Type a question for help

Reply with Changes... End Review...

USA Test Hospital

Macro = MRSA listing and ward summary

Staphylococcus aureus ss. aureus

Data files=w0195usa.tst

Number of isolates = 9

Oxacillin =R

Isolate listing

Origin	Country	Laboratory	Identification number	First name	Last name	Sex	Date of birth	Age	Location	Institution	Department	Location type	Age
USA	TST		204613						le		icu		
USA	TST		228431						hs		mox		
USA	TST		410205						op		out		
USA	TST		469706						op		out		
USA	TST		482382						op		out		
USA	TST		483404						4b		mox		
USA	TST		483404						4w		mox		
USA	TST		528635						hs		mox		
USA	TST		546339						hs		mox		

Ready

SCRL

Part 5. Macros, Reports, and Automation – For Advanced Users

With the use of macros and reports, WHONET analyses can be accessed from the Windows command line, Windows Task Scheduler, other softwares developed by programmers involved in public health surveillance, or Internet pages. The syntax is simple. Simply write the name of the macro or report after the program name – whonet.exe. An example of a command to automatically call WHONET using one of the above macros would be: c:\whonet5\whonet.exe “eco and sau RIS results.mcr”

Note – if the macro name includes spaces, you must enclose the macro name in quotation marks. If the macro is in the default macros folder (usually c:\whonet5\macros), then you do not need to indicate the macros location. Otherwise, you should include it in the command.

The Windows Task Scheduler

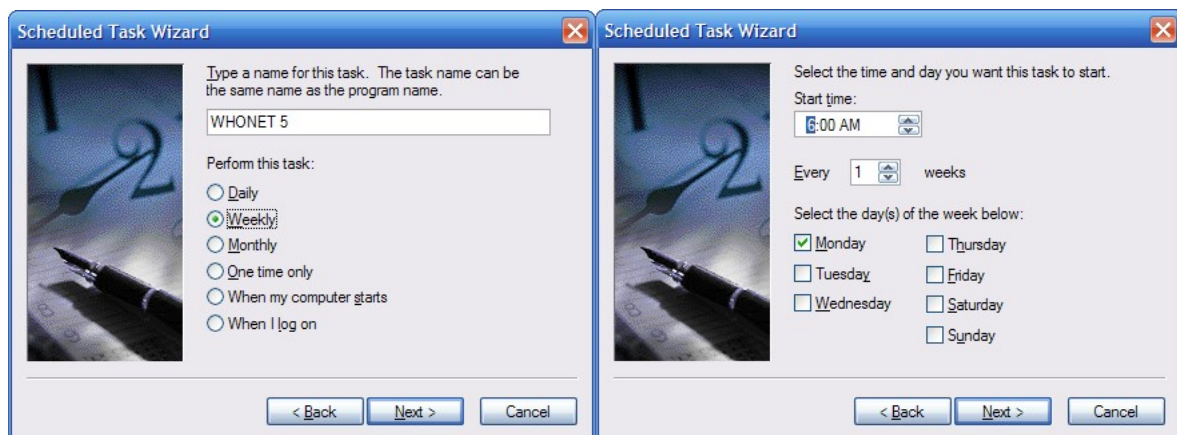
The Window Task Scheduler is a standard feature in Windows computers, and is often used to automate repetitive tasks, such as virus checking or software backups.

Note: In the absence an automated BacLink download, a scheduled WHONET analysis will be of little benefit for most users. In the future, as automated BacLink setups become more common, then automated analyses with WHONET and automatic e-mailing of reports to relevant hospital staff will become much more valuable.

You can access the “Task Scheduler” either from the Windows Control Panel or from “All Programs”, “Accessories”, “System Tools”, “Scheduled Tasks”. Click on “Add Scheduled Task”. From the list of softwares on your computer, select WHONET 5.4.



Indicate the desired scheduling, for example “Weekly” or “One time only”. The below example sets up an automated analysis every Monday morning at 6am. Click Next. If requested, provide your Windows password.

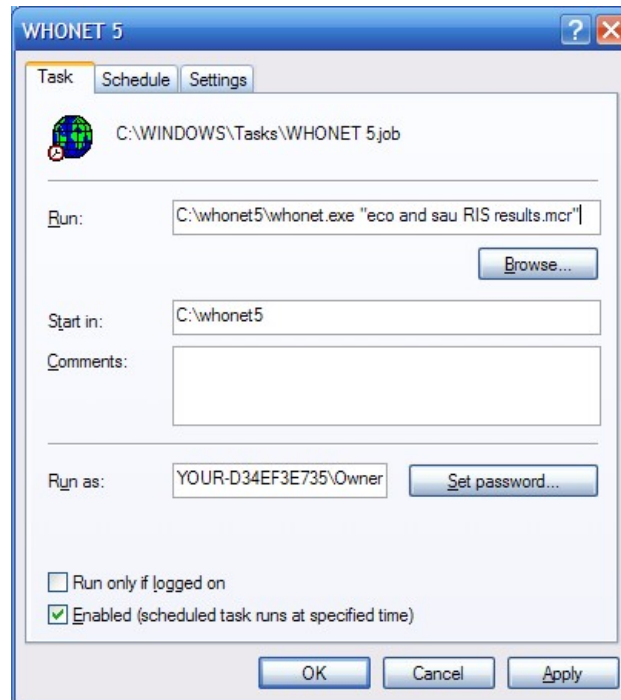


You will then see the final screen of the basic setup.

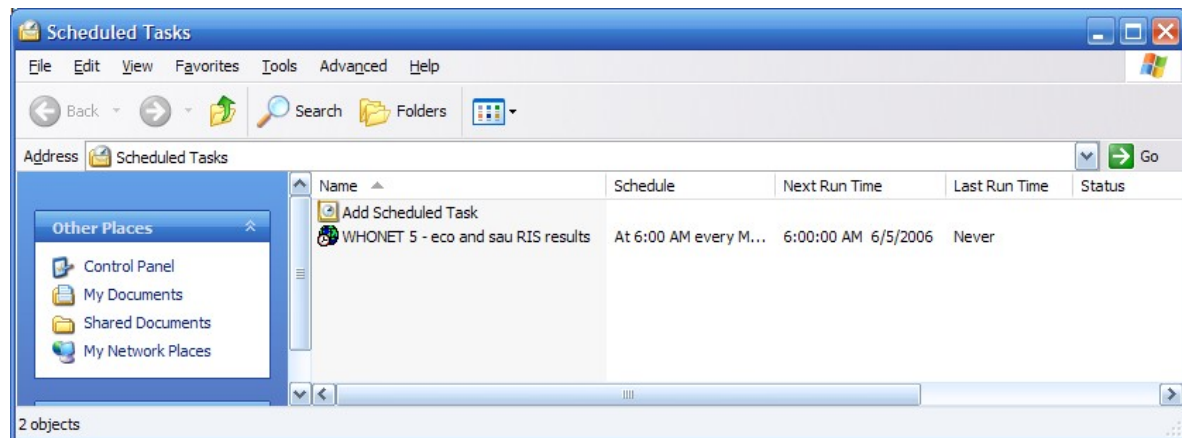


You are not quite finished yet. If you click “Finish” now, WHONET will run at 6am on Monday, but it will simply open and not perform any analyses. We need to tell the system which macro or report we want WHONET to run.

To do this, click on the box labeled “Open advanced properties for the task when I click Finish”. After putting a checkmark there, click on Finish to proceed to the advanced properties. Under “Run”, the system will just have “c:\whonet5\whonet.exe”. To this you need to add the name of your macro or report, for example “eco and sau RIS results.mcr” in the below screen. Click OK to finalize the task.



Click “OK” to finalize the task. You will be returned to the Scheduled Tasks folder. The default name of the task is “WHONET 5”, but you can change this to a more meaningful name. To view all details of the task, click on “View”, “Details”.



Calling WHONET from another program

Here is an example from an early version of the new ABC Calc software under development at the State Serum Institute in Copenhagen. The focus of ABC Calc is the management of antimicrobial consumption data, but ABC Calc will also have an integration tool allowing for the simultaneous analysis, presentation, and correlation of antimicrobial resistance data (from WHONET) and consumption data (from ABC Calc).

In the below screen, the user selects their analysis options from an interface similar to WHONET. When the user clicks on “Load WHONET data”, ABC Calc prepares a WHONET macro with the user selections, which it sends to WHONET for analysis. WHONET runs the analysis, and saves the results in a simple text file. ABC Calc waits for WHONET to finish and then reads and displays the text file back to the user, for example on a graph which also displays antimicrobial consumption statistics.

