

# User Manual

## Prescribed Specialised Services 2017/18 Operational Tool

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## Quick Start

This section is intended to provide a brief overview of downloading, installing and starting to use the Prescribed Specialised Services application. For more detailed information, you are advised to read the whole manual.

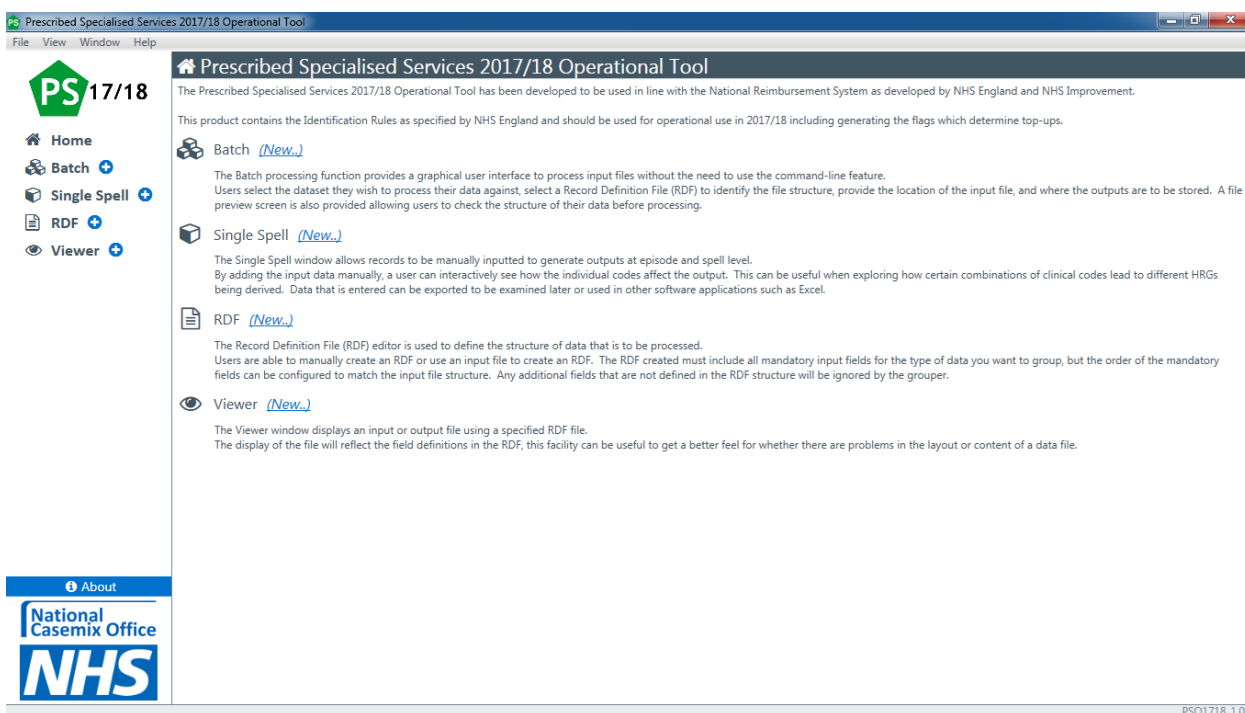
## Download and Install the Tool





- Go to <http://content.digital.nhs.uk/casemix/downloads>
- Click on Prescribed Specialised Services.
- There may be more than one version available. Older versions are on the archive pages.
- Click on the Tool application link in the Download section at the right of the screen.
- Save the Zip file to an appropriate location on your computer.
- Open the Zip file and extract the installer.
- Double-click the installer file and follow the installation setup wizard.
- It is advised to install the Tool to the default destination as provided in the installation set up wizard – **C:\Program Files\NHS Digital\PSS 2017\_18 Operational Tool**.
- If a user wishes to install the Tool to a different destination to that provided in the installation set up wizard, then they can. It is strongly advised to ensure that the standard 21 Grouper application files including 5 folders (3 folders if Sample Data and Sample RDF folders are excluded), are extracted and maintained within a sub-directory.
- An Uninstall executable is provided as part of the product installation. Users are advised that when running this executable the folder in which the files are stored will be deleted in its entirety. Users are therefore advised to ensure that only the grouper files that require deletion are contained within this sub-directory.

## Walkthrough Using Sample Data

The following walkthrough describes processing a sample Admitted Patient Care (APC) input file, available from the Casemix website.

- Download the “PS 2017/18 Operational Tool Sample Data and Expected Results.zip” file from the same page as the PS Tool.
- Extract the contents of the zip file to a suitable location.
- Open the Prescribed Specialised Services Operational Tool.



- In the navigation pane click the  icon next to **Batch** to open a new batch window.
- Click the  icon next to the **Record Definition File** drop-down list.
- In the **Open RDF File...** dialog box, browse for the sample RDF. The sample RDFs are located in the application’s installation folder in a sub-folder called `Sample RDF`.
- Open the file `PS_sample_APC.rdf`. An alternative sample RDF file should be used for other database selections.
- Click the  icon to the right of the **Input File** field.
- In the **Open Input File...** dialog box, browse to and select the downloaded APC sample input file.
- Ensure that the **Input data has headings** box is checked.
- Click the  icon next to the **Output File** field.
- In the **Save Output File...** dialog box browse to the folder containing the input file and type `output_apc_sample` (or anything similarly appropriate) in the **File name** box.
- Click **Save**. The filename of the output file are displayed in the **Output File** field.

- Ensure that the **Add headings to output data** box is checked.
- Click the **Process** button.
- When finished, the log display area shows information about the grouping session, including the number of records grouped. These details can also be found in the file `hrg.log`. The log file can be opened from **Help** on the menu bar and selecting **View Log**.

The screenshot shows the 'Batch 1' configuration window. The 'Record Definition File' is 'PS\_sample\_APC.rdf', the 'Database' is 'PSO\_1718 - Admitted Patient Care (APC)', and the 'Input File' is 'PSS\_APC\_Sample\_Data.csv'. The 'File Preview' section shows a table with the following columns: PROCODET (PROCODET), PROVSPNO (PROVSPNO), STARTAGE (AGE), SEX (SEX), CLASSPAT (CLASSPAT), ADMIMETH (ADMIMETH), MAINSPEF (MAINSPEF), TRETSPF (TRETSPF), DIAG\_01 (DIAG01), DIAG\_02 (DIAG02), DIAG\_03 (DIAG03), DIAG\_04 (DIAG04), DIAG\_05 (DIAG05), and DIA (DI). The table contains 9 rows of data. The 'Output File' is 'output\_apc\_sample.csv' and the 'Add headings to output data' checkbox is checked. The progress bar shows 'Complete' at 100%. The 'Output log' window at the bottom shows the following messages:

```

10-Apr-2017 14:12 - Starting grouping of \\VIC.Green.Net\VIC_User_DFS\PDdrive\WHepples\NHS Digital\PSS 2017_18 Operational Tool\Sample Data\PSS_APC_Sample_Data.csv mode PSO_1718
10-Apr-2017 14:12 - Starting -----
10-Apr-2017 14:12 - Using Input File: \\VIC.Green.Net\VIC_User_DFS\PDdrive\WHepples\NHS Digital\PSS 2017_18 Operational Tool\Sample Data\PSS_APC_Sample_Data.csv
10-Apr-2017 14:12 - Using Output File: C:\Temp\PSS Sample Data and Expected Data\output_apc_sample.csv
10-Apr-2017 14:12 - Using Record Definition File: C:\Program Files\NHS Digital\PSS 2017_18 Operational Tool\Sample RDF\PS_sample_APC.rdf
10-Apr-2017 14:12 - Using Logic: APC
10-Apr-2017 14:12 - Using Database version PSO1718_20170310
10-Apr-2017 14:12 - Maximum memory used - 115.0MB
  
```

- Open Windows Explorer and browse to the folder specified for the output file.
- Open the file `output_apc_sample_FCE.csv` in Microsoft Excel. The file is a copy of the input file with HRGs and other related columns appended. Other output files are explained in the Output Files section of this document.

## Processing Your Data

In order to process your own data you need to either:

- Ensure that the structure of your data is identical to that specified in an existing record definition file (RDF), or
- Create an RDF that matches the structure of your data.

Processing can be initiated from the graphical user interface (GUI), or from the command line. Whichever approach is used the same input rules, processing and output file structures and content will result.

Another approach for single records and for single admitted patient care (APC) multi-episode spells is to use the Single Spell Tool, available from the navigation pane. To get an initial appreciation of the processing you are recommended to experiment with the Single Spell functionality.

## Record Definition File (RDF)

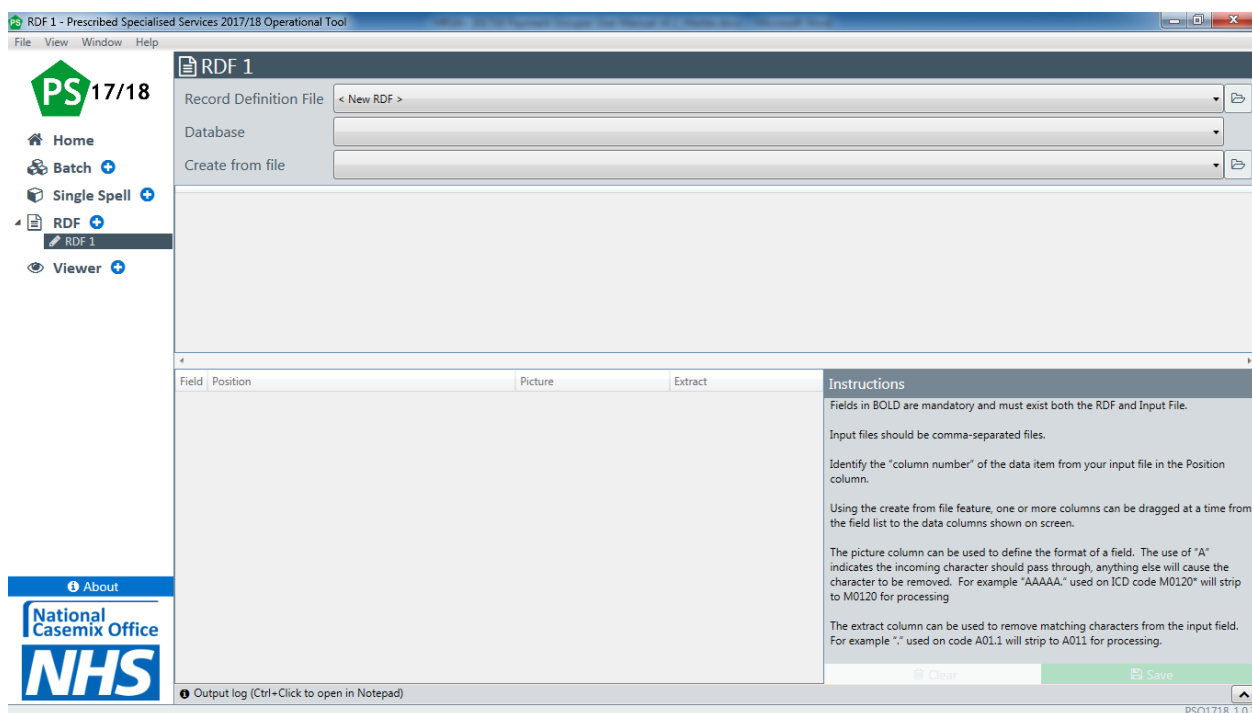
The RDF tells the Tool the structure of the data you want it to process. The field content of the RDF must include all mandatory input fields for the type of data you want to group. Although these fields are mandatory, you define their order. You can also include additional fields, which will be ignored by the Tool.

The product comes with a set of standard RDFs that hold all the mandatory fields required to be able to group data. You can adapt your data to match the standard RDFs or create an RDF manually.

To create or modify an RDF the Tool has an interactive RDF module.

## RDF Module

The RDF module allows a user to create an RDF from scratch or to modify an existing RDF.



The RDF columns are:


Name	Description
Field Name	A field name abbreviation for internal use; it cannot be modified.
Field Title	A field description which can be edited to display a locally-defined field name.
Field No	The field column number in the input file.
Picture	Specifies whether specific character positions in the field are used or ignored during processing. It must be specified as a string of "A" and "." where "A" means keep the character in that position and "." means ignore the character in that position. For example: "AAA.A" means ignore the 4th character and process

characters in positions 1,2,3 and 5 as if it is a 4 character code, so that W58.1 gets processed as W581.

Note that it is no longer necessary to use Picture to remove full stops from procedure and diagnosis codes because these now get removed automatically.

Extract	Allows you to specify that specific characters (in any position) in the field are ignored during processing. For example “.” (without quote marks) will remove all full stops from the field.
---------	---


## Create an RDF manually – Create from file

Select the  icon next to **RDF** on the navigation pane or select ‘**New**’ or the  icon on the main home screen or select ‘**File**’ on the menu bar, ‘**New**’ and then ‘**RDF**’.

When the RDF page is opened, the **Record Definition File** box is automatically set to **New RDF**.

Select the required **Database** you wish to create the RDF for (the type of input file with which the RDF will be used).

You can choose to create an RDF manually based just on the **Database** selection or **Create from file** which uses an input data file to base the RDF on.

Select **Create from file**, click the  icon, and in the **Open CSV File...** dialog box browse to and select your input data file.

The first 30 rows of the selected input file are displayed in the file preview window under the **Create from file** drop down box. If the input file contains headers then this will be displayed in the file preview window. Each field displayed in the file preview window is assigned a number (e.g. 1, 2, 3).

Depending on the data type, the number of repeating occurrences of certain fields can be increased or decreased using the Number of fields function. For example, if the input file contains 20 diagnosis codes, the number of diagnosis fields can be increased to 20 using the toggle buttons rather than the default value of 14.

All field names highlighted bold are mandatory and must be assigned to fields in the input file. Fields are assigned by either dragging the field name from the field columns list to the appropriate field number in the file preview window or typing the field number directly into the **Position** column. Once a field is dragged into the file preview window the **Position** column will populate with the relevant field position.

Multiple fields can be selected by clicking with the mouse while holding down the SHIFT and/or CTRL keys. The selected fields can then be dragged to the file preview area.

If a field is erroneously assigned, it can be removed by selecting the field position from the **Position** column and pressing the **Delete** key. The field will then be removed from the file preview window. If you wish to clear all the field positions allocated then the **Clear** button will reset all the field positions.

When all mandatory fields have been assigned the RDF can be saved by selecting the **Save** button.

## Create an RDF manually – Database

Following the steps above, an RDF can be created manually by either choosing to **Create from file** or just selecting a **Database**.

By selecting just a **Database** to create an RDF, the user is presented with the field list window. The file preview window will remain blank.



Depending on the data type, the number of repeating occurrences of certain fields can be increased or decreased using the Number of fields function. For example, if the input file contains 20 diagnosis codes, the number of diagnosis fields can be increased to 20 using the toggle buttons rather than the default value of 14.


Assign a number to each of the field names in the **Position** column.

When all mandatory fields have been assigned the RDF can be saved by selecting the **Save** button.

## Edit an Existing RDF

Rather than creating an RDF from scratch, a user can edit an already existing RDF.

Select the  next to **RDF** on the navigation pane or select **New** or the  icon on the main home screen or select 'File' on the menu bar, 'New' and then 'RDF'.

The **Record Definition File** is automatically set to **New RDF**. Click the  icon, and in the **Open RDF File...** dialog box browse and select the RDF you wish to edit.

The Database box will automatically populate with the relevant database depending on the mandatory fields contained in the RDF. If the RDF contains none of the mandatory fields for any of the datasets then the field position box will remain blank.

Once selected, the file preview window will display the fields for the relevant Database and the Field window will display the RDF field names and positions.

You can then modify the field positions and field attributes in the RDF. If you wish to increase or decrease some of the repeating occurrences of certain fields, the Number of fields function can be used. For example, if the input file contains 20 diagnosis codes, the number of diagnosis fields can be increased to 20 using the toggle buttons rather than the default value of 14.

Extra fields can be added to the RDF using the blank row at the bottom or highlighting a field row, right-click and select **Insert Row**.

To delete a non-mandatory field, select the field row to be deleted and either selecting **Delete** or right-click and select **Remove Row**, the field will be removed from the field list. Mandatory fields cannot be deleted from an RDF.

## Picture

Picture is a feature within the RDF that can be used to specify the inclusion or exclusion of specific character positions from input fields. It allows the user to provide filtering instructions for each field by describing a character template. During processing the application will apply this template to the field by selectively ignoring characters in specific positions within a field.

An "A" character indicates a character position to be included in grouping and a full-stop indicates a character position to be ignored in grouping. This 'picture' is then imposed on the

field before grouping, meaning that the modified version of the field contents is processed by the Tool.

Field	Position	Picture	Extract
PROCODET			
STARTAGE			
SEX			
CLASSPAT			
ADMIMETH			
MAINSPEF			
TRETSPEF			
DIAG_01			
DIAG_02			
DIAG_03			
DIAG_04			
DIAG_05			
DIAG_06			
DIAG_07			
DIAG_08			
DIAG_09			
DIAG_10			

To use Picture, enter a character template in the 'Picture' column of the Record Definition File using the RDF module.

- Characters should not be separated by spaces
- Quotation marks should not be used
- Can be used with alpha and numeric fields
- Where the number of characters in the field exceeds the number of characters specified in Picture, the application will implement the Picture on the left-most portion of the field. For this reason, care should be taken when using Picture with variable length fields as this may lead to unpredictable results.
- Picture is applied prior to data validation.
- Picture applies to file processing only; it does not affect single-spell grouping.

**Example 1** AAA.AA Characters 1, 2, 3, 5 and 6 are used. Character 4 is ignored

**Example 2** .A.AAA Characters 2, 4, 5 and 6 are used. Characters 1 and 3 are ignored

**Example 3** .A. Character 2 is used. Characters 1 and 3 are ignored

**Example 4** AA Characters 1 and 2 are used (Note that full stops are not required if consecutive characters from the beginning of the field are the only characters required).

## Extract

Extract is a feature of the RDF that can be used to make the Tool ignore specific characters in input fields, irrespective of character position.

Entering one or more characters in the 'Extract' column of the RDF using the RDF module will instruct the Tool that any occurrence of any of these characters in that field should be ignored in processing. (Note: Commas can not be excluded because the input data files are comma-separated).

Field	Position	Picture	Extract
PROCODET			
STARTAGE			
SEX			
CLASSPAT			
ADMIMETH			
MAINSPEF			
TRETSPEF			
DIAG_01			
DIAG_02			
DIAG_03			
DIAG_04			
DIAG_05			
DIAG_06			
DIAG_07			
DIAG_08			
DIAG_09			
DIAG_10			

The application does not consider a series of characters as a string of characters to be ignored as a single entity. Each character entered is ignored wherever it appears in the input field.

- The characters specified will be ignored wherever they appear in the input data field.
- There is no relation between the position of a character in the extract field and the input field.
- All occurrences of the characters are affected.
- Extract is applied prior to data validation.
- Extract applies to file processing only and it does not affect single spell.

### Extract Field Examples

The examples below are shown in quotation marks (“”) to help identify the examples. Quotation marks should not be entered when using the Extract function (Unless a user wishes to „ignore“ quotation marks).

#### Example 1

Entering an Extract character of “.” informs the application that all occurrences of a decimal place or full-stop should be ignored when processing that field. This is a convenient way to remove decimal points from a field in the input file. An input field containing the character string “abc...d” will be interpreted by the application as “abcd”.

#### Example 2

Entering the characters “+” in this field informs the application that any occurrences of both the “+” character and the “\$” character are to be ignored by the application when processing that field. An input field containing the character string “46+\$\$++” will be interpreted by the application as “46”.

## Command Line Initiation

“Command line” refers to the character-based command shell user interface within Microsoft Windows, commonly known as the DOS Window. The Tool can process a file using the command line with parameters shown below.

The parameters consist of a hyphen followed by a lower-case letter and, where applicable, a value (shown in italics). All parameters are mandatory except for the optional parameters shown enclosed in square brackets.

The command line takes the following form:

```
hrggrouperc.exe -i Input_File -o Output_File -d RDF_File -l  
Grouping_Logic [-h] [-t] [-v] [-?] [> Log_File]
```

### Command line parameters:

-i <i>Input_File</i>	The path and filename of the input file.
-o <i>Output_File</i>	The path and filename of the <b>output</b> file.
-d <i>RDF_File</i>	The path and filename of the record <b>definition</b> file.
-l <i>Grouping_Logic</i>	The processing logic. Either APC or NAC.
-h	Optional. Where present, indicates that the input file has a <b>header</b> row (field names). Omit this parameter where the first row in the file is a data row.
-t	Optional. Where present, stops generation of field names in the <b>top</b> row of the output file. If this parameter is omitted then each of the output files will contain a header row.
-v	Optional. Increases verbosity of the log output.
-?	Optional. Where present, directs the Tool to list the available command line parameters. This parameter cannot be combined with other parameters.
> <i>Log_File</i>	Optional. Where present, the Tool redirects the log output to a specified file. If not used, the log output is written to the screen.

Where there are spaces in paths or filenames for parameter values, the parameter value must be enclosed within double-quote characters.

## Running the Tool

It is recommended to invoke the command line Tool from a script (also known as a batch file). For example to group some APC data (with headings) in C:\Temp\data\apc.csv using a suitable Record Definition File (APC.rdf) in the same directory, then a suitable script is:

```
@echo off
cd /d "c:\Program Files\NHS Digital\PSS 2017_18 Operational Tool"
hrggrouperc.exe -i "c:\Temp\data\apc.csv" -o "c:\Temp\data\output.csv" -
d "c:\Temp\data\apc.rdf" -l APC -h > "c:\Temp\data\hrg.log"
if %ERRORLEVEL% neq 0 echo Error in command, please check hrg.log
pause
```



Alternatively, as from Prescribed Specialised Services 2017/18 Operational Tool, it is possible to run the Tool from a working directory by invoking hrggrouperc.exe as a fully qualified path:

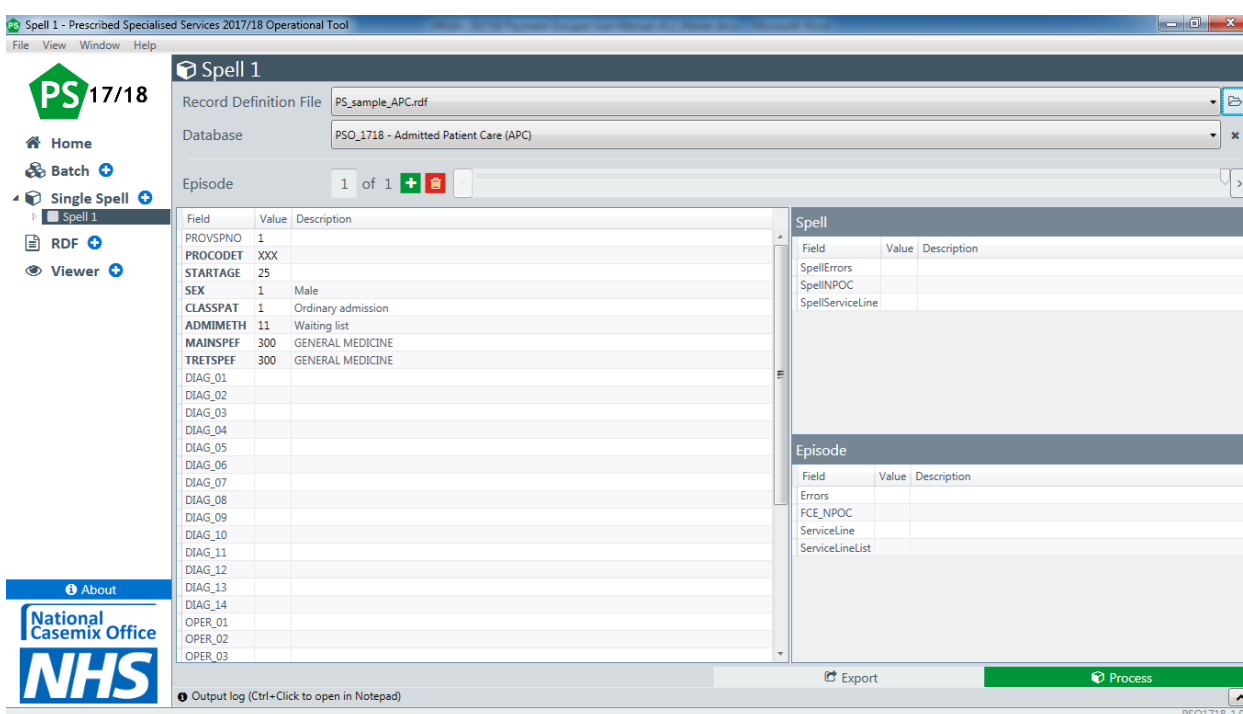
```
@echo off
cd /d "c:\Temp\data"
"c:\Program Files\NHS Digital\PSS 2017_18 Operational
Tool\hrggrouperc.exe" -i "apc.csv" -o "output.csv" -d "apc.rdf" -l APC -h
> "hrg.log"
if %ERRORLEVEL% neq 0 echo Error in command, please check hrg.log
pause
```

The penultimate statement of these scripts checks whether the Tool run successfully completed and prints a message if the run failed.


## Single Spell Processing


The Single Spell window is best used to help understand how outputs are derived for one particular spell or episode. By adding the input data manually a user can see how the individual codes affect the output in real time. This can be useful when exploring how certain combinations of clinical codes lead to different service lines being derived. It can also be useful to quickly find the descriptions of codes and ascertain which fields are mandatory (expressed in **bold text**).

The Single Spell window can be accessed by selecting the  icon next to **Single Spell** on the navigation pane or select **New** or the  icon on the main home screen or select 'File' on the menu bar, 'New' and then 'Single Spell'.



To add a Record you can either select a **Record Definition File** which will automatically choose the relevant **Database** or you can just choose a **Database**.

For some of the databases such as Admitted Patient Care it is possible to build up a spell consisting of multiple episodes by selecting the  icon on the Single Spell window.

You can navigate between different episodes within a Spell by either clicking on the **Episode** in the navigation pane, entering an episode number in the **Episode Number box** or use the **Slider bar**. Episodes can be deleted by either using the  icon or right-clicking on an episode in the navigation pane and select **Delete Episode**. To close the Spell, right-click on the relevant Spell number in the navigation pane and select **Close**.

Certain fields are populated with useful values to save some data input effort, and the user can edit these and populate other fields as appropriate. Changing or adding values to the input fields will automatically update the output values. If using a database that allows multiple episodes to be opened, any new episodes added will require the **Process** button to be selected or changes made to the input fields for the output values to be populated. You will see outputs for each record (episode) shown in the "**Episode**" window and see outputs for the entire Spell in the "**Spell**" window.

Once patient information is entered for an episode, all attributes other than non-primary diagnosis codes and procedure codes are repeated for a new episode within the spell saving the user from needing to change relevant fields for every episode. The Diag\_01 field uses the same diagnosis code as the previous episode. All other diagnosis codes and the procedure codes start as blank fields in newly added episodes.

Entering values does not have to be monotonous. A user can copy a row or column of codes from applications such as Excel and paste them into the Single Spell. The Single Spell will recognise a string of codes and paste them appropriately transposing a row of codes automatically.

For example; after ensuring the columns are in the same order as the Single Spell rows, a user can simply copy a row of episode data from Excel...

	A	B	C	D	E	F	G	H	I	J	K	L
1	PROVSPNO	PROCDEET	STARTAGE	SEX	CLASSPAT	ADMIMET	MAINSPEF	TRETSPEF	DIAG_01	DIAG_02	DIAG_03	DIAG_04
2	1	XXX	40	2	1	11	502	502	N804	N803	N805	N736
3	1	XXX	40	2	1	11	170	221	Q211			
4	1	XXX	40	2	1	11	420	420	D619			

A user can simply paste them into the Single Spell (Ctrl + V)

Field	Value	Description
PROVSPNO	1	
PROCDEET	XXX	
STARTAGE	40	
SEX	2	Female
CLASSPAT	1	Ordinary admission
ADMIMETH	11	Waiting list
MAINSPEF	502	GYNAECOLOGY
TRETSPEF	502	GYNAECOLOGY
DIAG_01	N804	Endometriosis of rectovaginal septum and vagina
DIAG_02	N803	Endometriosis of pelvic peritoneum
DIAG_03	N805	Endometriosis of intestine
DIAG_04	N736	Female pelvic peritoneal adhesions
DIAG_05		
DIAG_06		
DIAG_07		
DIAG_08		
DIAG_09		
DIAG_10		
DIAG_11		
DIAG_12		
DIAG_13		
DIAG_14		
OPER_01		
OPER_02		
OPER_03		

Notice how it automatically transposes and pastes a row of codes into the column.

In addition to the copy and paste, the Tool supports “Smart Pasting” which allows a user to copy a row of codes from applications such as Excel and along with the headers and paste them into the Single Spell. Smart Pasting recognises which fields to paste the codes into meaning that the ordering of the fields do not need to match the same structure of the RDF.

In order for Smart Pasting to work the headers from which the codes are being copied must match the names in Single Spell window.

For example; after copying a row of data from Excel with matching headings to those in Single Spell ...

	A	B	C	D	E	F	G	H	I	J	K	L
1	PROCODET	PROVSPNO	STARTAGE	SEX	MAINSPEF	TRETSPEF	CLASSPAT	ADMIMET	DIAG_01	DIAG_02	DIAG_03	DIAG_04
2	XXX	1	40	2	502	502	1	11	N804	N803	N805	N736
3	XXX	1	40	2	170	221	1	11	Q211			
4	XXX	1	40	2	420	420	1	11	D619			

A user can simply paste them into the Single Spell (Ctrl + V)

Field	Value	Description
PROVSPNO	1	
PROCODET	XXX	
STARTAGE	40	
SEX	2	Female
CLASSPAT	1	Ordinary admission
ADMIMETH	11	Waiting list
MAINSPEF	502	GYNAECOLOGY
TRETSPEF	502	GYNAECOLOGY
DIAG_01	N804	Endometriosis of rectovaginal septum and vagina
DIAG_02	N803	Endometriosis of pelvic peritoneum
DIAG_03	N805	Endometriosis of intestine
DIAG_04	N736	Female pelvic peritoneal adhesions
DIAG_05		
DIAG_06		
DIAG_07		
DIAG_08		
DIAG_09		
DIAG_10		
DIAG_11		
DIAG_12		
DIAG_13		
DIAG_14		
OPER_01		
OPER_02		
OPER_03		

For information on what the output values mean please jump to the [Output Files](#) section of this document.

Any errors are highlighted in red in both the Input and Output sections.

**Spell 1**

Record Definition File: PS\_sample\_APC.rdf

Database: PSO\_1718 - Admitted Patient Care (APC)

Episode: 1 of 1

Field	Value	Description
PROVSPNO	1	
PROCODET	XXX	
STARTAGE	18	
SEX	3	
CLASSAT	1	Ordinary admission
ADMIMETH	11	Waiting list
MAINSPEF	502	GYNAECOLOGY
TRETSPEF	502	GYNAECOLOGY
DIAG_01	N804	Endometriosis of rectovaginal septum and vagina
DIAG_02	N803	Endometriosis of pelvic peritoneum
DIAG_03	N805	Endometriosis of intestine
DIAG_04	N736	Female pelvic peritoneal adhesions
DIAG_05		
DIAG_06		
DIAG_07		
DIAG_08		
DIAG_09		
DIAG_10		
DIAG_11		
DIAG_12		
DIAG_13		
DIAG_14		
OPER_01		
OPER_02		
OPER_03		

**Spell**

Field	Value	Description
Errors		
SpellINPOC		
SpellServiceLine		

**Episode**

Field	Value	Description
SEX	3	Sex is invalid
FCE_INPOC		
ServiceLine		
ServiceLineList		

Output log (Ctrl+Click to open in Notepad)      Export      Process

PSO1718\_1.0.3

# Viewer

The Tool provides a file viewer which can be used to view input or output files. To access the file viewer select **Viewer** from the navigation pane.

Selecting a **Record Definition File** and a **File** will display the input file data organised into the columns specified in the RDF and can be used as an aid to see if there are problems in the layout or content of a data file.

Viewer 1

Record Definition File: PS\_sample\_APC.rdf

File: PSS\_APC\_Sample\_Data.csv

File View: 1 of 11

PROCODET	PROVSPNO	STARTAGE	SEX	CLASSPAT	ADMIMETH	MAINSPEF	TRETSPEF	DIAG_01	DIAG_02	DIAG_03	DIAG_04	DIAG_05	DIAG_06	DIAG_07	DIAG_08	DIAG_09	DIAG_10	DIAG_11
XXX	1	5	1	2	13	420	251	Q432	Z876	Z931								
XXX	2	0	1	1	12	170	221	Q210	Q211	Q250								
XXX	3	55	1	1	21	100	100	C220	C780	K746	B169	R18X	I81X	R030				
XXX	4	30	2	1	11	502	502	N801	N803	N906								
XXX	5	65	2	2	13	800	370	C578	Z511	E039								
XXX	5	65	2	1	81	420	258	J22X	G473	G710	G931	G409	M419	F819	H541	Z931	Z998	
XXX	6	60	1	1	21	300	300	I429	I500	I481	I258	E119	J439	Z864	Z886	Z955		
XXX	7	0	1	2	13	420	253	D696	C749	C793	Z513							
XXX	7	0	1	1	11	170	221	Q210	Q228	J22X	R620	Z827						
XXX	8	20	2	1	13	710	710	F509										
XXX	9	85	1	1	21	340	340	J150	Y95X	J80X	K850	I481	I258	N183	Z867			
XXX	10	10	2	2	11	130	216	H332										
XXX	11	80	1	2	12	130	130	H251	H218	H401	I258	I209	I10X	J449				
XXX	12	50	1	1	24	110	110	L923										
XXX	13	70	2	1	11	170	173	C341	C795	C798	C779	R590	I350	I10X	I481	A099	R031	R001
XXX	13	70	2	1	12	100	100	E668	I10X	K449	K219	Z864						
XXX	14	15	2	1	28	711	711	F309										
XXX	15	75	1	1	11	100	100	D128	E119	Z951	Z867	Z864						
XXX	16	0	1	1	28	170	221	Q251	Q250	Q211	R628	Z861						
XXX	17	15	2	1	11	420	420	M4190										
XXX	18	80	2	1	24	800	800	C249	A099	Z515	R104	R18X	R11X	Z867				
XXX	18	80	2	1	28	800	800	C714	Z510	I618	I269	G936	I10X	E119	L97X	Z602	M1999	Z591
XXX	18		2	2	13	320	320	I456										
XXX	19	90	2	1	13	301	301	C240	J189	Y95X	N179	E872	I501	I350				
XXX	20	25	1	2	13	370	370	C787	Z858	Z850	Z924	Z923	Z511					
XXX	21	5	2	1	28	303	253	D70X	A419	C837	B370	Z926	Z904					
XXX	22	25	1	1	11	320	320	I471										
XXX	22	25		2	13	302	252	E230	Z512									
XXX	23	50	2	1	11	100	105	C787	I10X	Z850	Z904	Z926						

Output log (Ctrl+Click to open in Notepad)

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Depending on the number of rows of data in your data file, the Viewer will display the data over a number of pages. You can use the navigation buttons to move between pages in the Viewer window or move to the first or last page of the Viewer window.

## Input File Preparation

This section provides guidance about preparing input files for processing with the Tool.

### Note

Unless otherwise stated, the values in each field are validated against enumerated sets of values – generally based on NHS Data Dictionary definitions.

### File Format

Input data must be in comma-separated value (CSV) format using the American Standard Code for Information Interchange (ASCII) character set, excluding the non-printing ASCII characters. The input file must not include qualifiers, such as quotes, surrounding the fields.

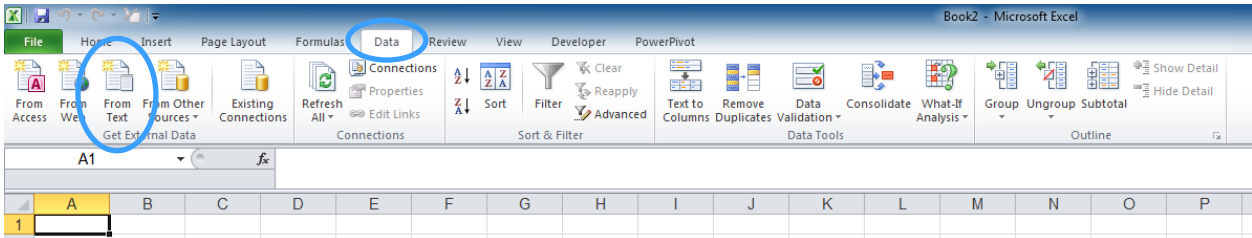
### Using Excel for File Preparation

If some of the records end with empty fields then a file structure issue can arise when saving a text file using Microsoft Excel (for more information please refer to Microsoft Article ID 77295 “Column delimiters are missing in an Excel spreadsheet that is saved as text” [<https://support.microsoft.com/en-us/kb/77295>]). To prevent this issue arising, ensure that the final (rightmost) column of data is populated for every record in the file with dummy data such as “x”.

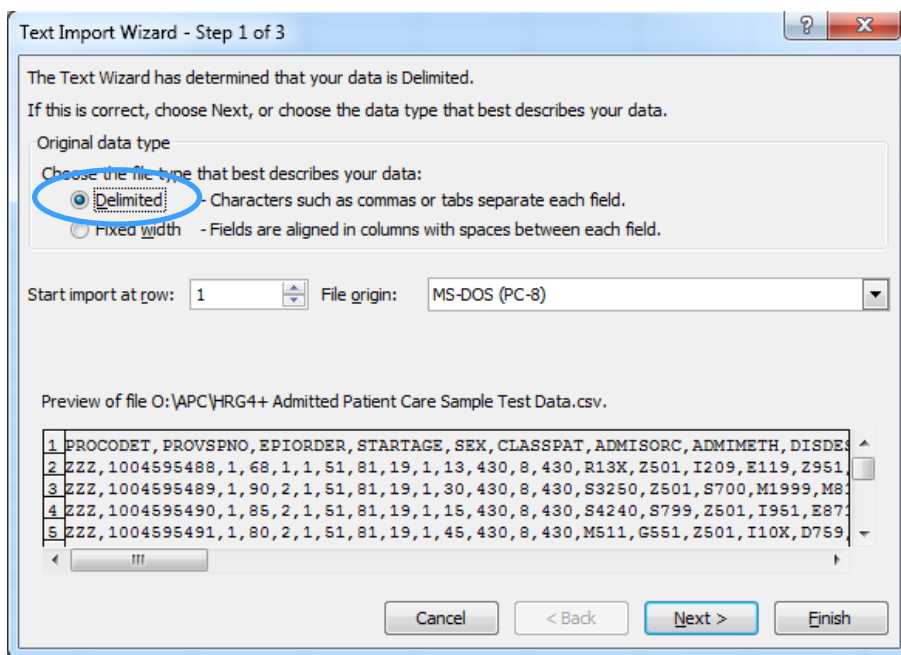
Please be aware that unless properly imported, opening a CSV in Excel will cause changes to the data. A common occurrence is for leading zeros to be stripped when a CSV file is opened in Excel. For code types such as source of referral codes the field length is set and the Tool expects a specific number of characters. With leading zeros stripped the field length is short of the expected amount and the Tool will produce no service lines and give an explanation in the output Quality file.

To open a CSV in Excel whilst retaining the correct values please follow the below guide:

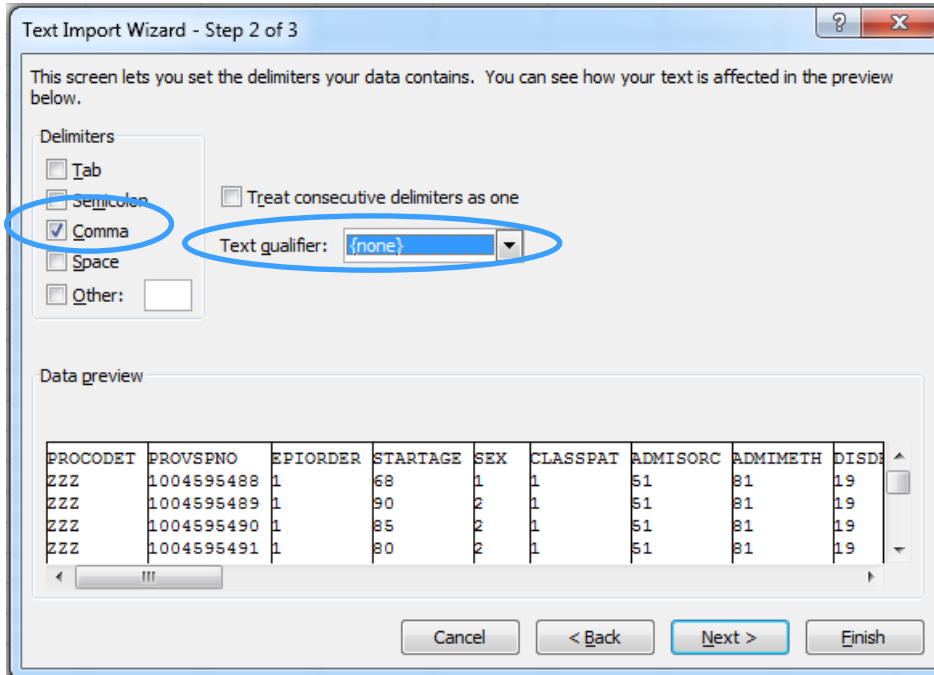
1. Open Excel. Click on the “Data” tab and click “From Text” in the ribbon.



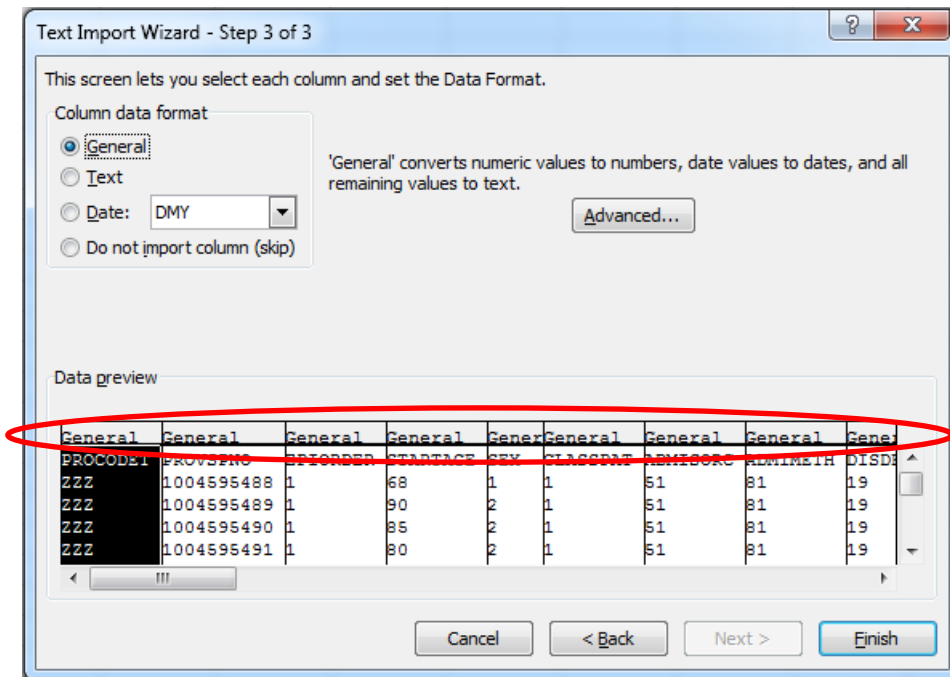
2. Navigate to your input file. In the Text Import Wizard select “Delimited” in step 1/3



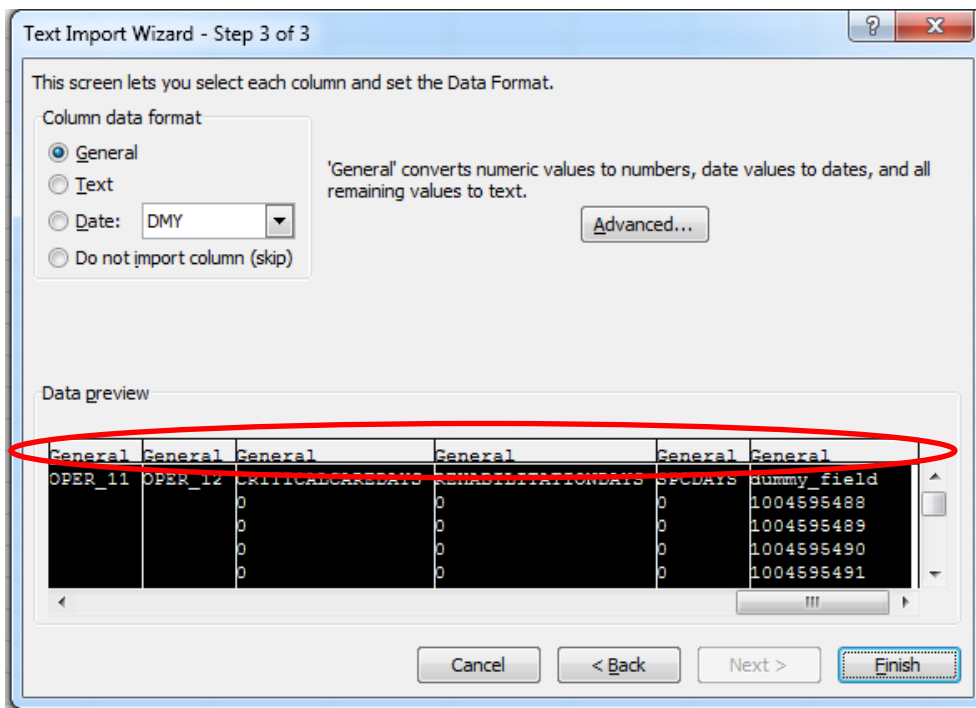
3. Then select “Comma” delimited in step 2/3



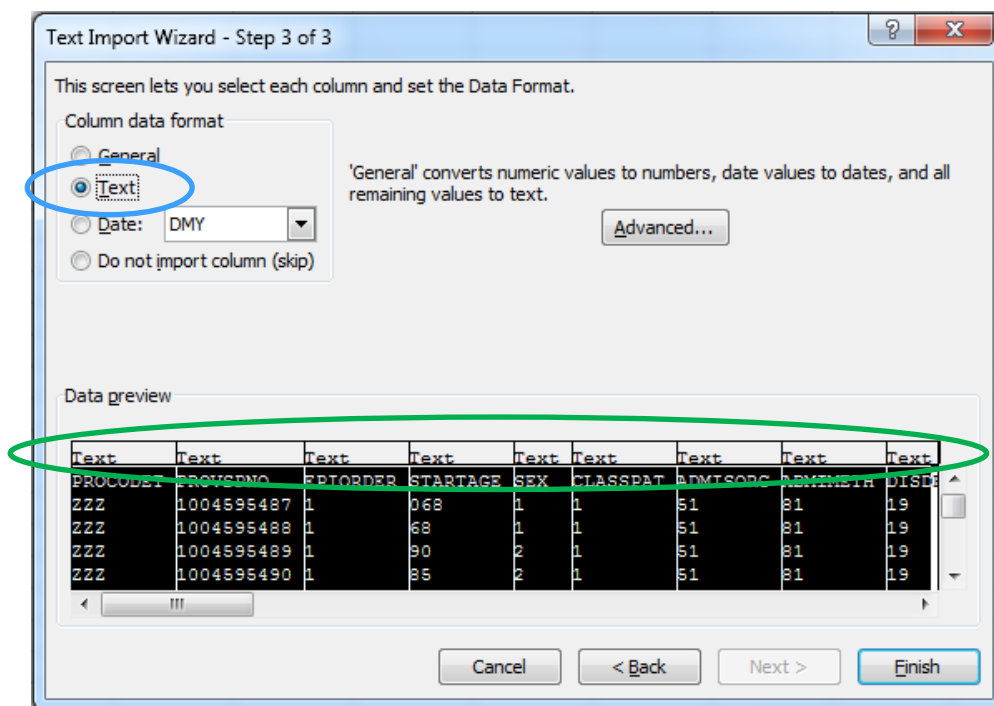
4. In step 3/3 notice Excel wants to pull the data into cells formatted as “general” not “text”.



It is essential to highlight all columns to change the format option to text. To do this scroll all the way to the right and press “shift” and click on the last column. This will select all columns.



Then choose the “Text” option.



Finally click “Finish” and choose what cell you want to pull the data into. This will ensure the data is imported as text for all columns.

It is recommended that you pull the data into cell A1 if you intend to save as CSV and run through the Tool.

For more information on which fields have leading zeros please see the notes column in the below dataset tables.

## Admitted Patient Care (APC)

The field list below shows the fields required by the Tool. The field order of the input file is defined by the Record Definition File used for the session; there is no significance to the order in which the fields are listed below.

Tool Field Name	CDS/DD Field Name	Notes
PROCODET	ORGANISATION CODE (CODE OF PROVIDER)	A value must be supplied but is not validated. For NHS organisations use the first 3 characters for non-NHS organisations use all 5 characters.
PROVSPNO	HOSPITAL PROVIDER SPELL NUMBER	A value must be supplied but is not validated.
STARTAGE	Derived	Whole years rounded down: START DATE (EPISODE) - PERSON BIRTH DATE
SEX	PERSON GENDER CODE CURRENT	
CLASSPAT	PATIENT CLASSIFICATION CODE	
ADMIMETH	ADMISSION METHOD CODE (HOSPITAL PROVIDER SPELL)	
MAINSPEF	CARE PROFESSIONAL MAIN SPECIALTY CODE	
TRETSPEF	ACTIVITY TREATMENT FUNCTION CODE	
DIAG_01	PRIMARY DIAGNOSIS (ICD)	Valid ICD-10 code. If this field is blank an error will be generated.
DIAG_02 - DIAG_99	SECONDARY DIAGNOSIS (ICD)	As above, but blank allowed.
OPER_01 - OPER_99	PRIMARY PROCEDURE (OPCS) and PROCEDURE (OPCS)	Valid OPCS-4 codes or blank.
WARDSEC_01 - WARDSEC_99	WARD SECURITY LEVEL	Blank allowed.
PURCODE	ORGANISATION CODE (CODE OF COMMISSIONER)	Not validated, and blank allowed.

CSNUM	COMMISSIONING SERIAL NUMBER	Not validated, and blank allowed.
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## Non-Admitted Consultations (NAC)

Non-admitted Consultations are outpatient attendances or attendances by patients for nursing care on a ward (ward attenders). Since 1 April 2005 the Outpatient Attendance CDS has contained both of these types of data.

The field list below shows the fields required by the Tool. The field order of the input file is defined by the Record Definition File used for the session; there is no significance to the order in which the fields are listed below.

Tool Field Name	CDS/DD Field Name	Notes
PROCODET	ORGANISATION CODE (CODE OF PROVIDER)	A value must be supplied but is not validated. For NHS organisations use the first 3 characters for non-NHS organisations use all 5 characters.
STARTAGE	Derived	Whole years rounded down: APPOINTMENT DATE - PERSON BIRTH DATE
SEX	PERSON GENDER CODE CURRENT	
ATTENDED	ATTENDED OR DID NOT ATTEND CODE	
REFSOURC	SOURCE OF REFERRAL FOR OUT-PATIENTS	
MAINSPEF	CARE PROFESSIONAL MAIN SPECIALTY CODE	
TRETSPEF	ACTIVITY TREATMENT FUNCTION CODE	
DIAG_01 - DIAG_99	PRIMARY DIAGNOSIS (ICD) and SECONDARY DIAGNOSIS (ICD)	Valid ICD-10 codes or blank.
OPER_01 - OPER_99	PRIMARY PROCEDURE (OPCS) and PROCEDURE (OPCS)	Valid OPCS-4 codes or blank.
PURCODE	ORGANISATION CODE (CODE OF COMMISSIONER)	Not validated, and blank allowed.

## Output Files

In the text below and the tables on the following pages, the output file name supplied by the user during processing is referred to as [name]; the remainder of the file name is a standard suffix that is appended by the Tool.

A single input file produces a number of output files. User requirements determine which files are used; some users may not require certain output files. In most cases an output field appears in more than one file thus enabling users to select the files that best suit their needs.

Output files are produced as comma-separated text. These files may be opened with Microsoft Excel but very large files may exceed the maximum number of rows for Excel. In these cases an error message such as “File not loaded completely” will be displayed when attempting to open the file. The output files may be opened with a variety of applications, including Windows Notepad.

### Relational Outputs

Relational output files can be identified by the presence of “\_rel” as part of the filename. They are characterised by the following features:

- They include row number references in order to allow files to be linked.
- Where items are repeated (e.g. service lines, error messages) this is represented by the addition of rows rather than columns – the data is normalised.

The relational output files are supplied to support users who wish to import the Tool output into a relational database; other users may choose to ignore them – and vice versa.

### RowNo Field

**RowNo** is an identifier that can be used to link rows in output files to rows in other output files. This is particularly useful in the case of the relational output files. Use of a system generated row number avoids problems using input values where they may not be unique.

Note that, depending on the file’s role in a relationship with another file, **RowNo** may not contain consecutive values i.e. there may be values missing; this is by design. For example, the **RowNo** values in the [name]\_FCE\_rel.csv file will contain non-consecutive values where the input data contains episodes that do not relate to a prescribed service.

### Iteration Field

**Iteration** appears in some relational output files where it is used to distinguish between occurrences within the same key value. There is no significance to the numerical values of Iteration; the values are assigned in order, being numbered 1, 2, 3 etc.

## Admitted Patient Care

There are eight output files.

File Name/Field Name	Description
[name].csv	A list of the other output files.
[name]_sort.csv	A copy of the input data after it has been sorted by PROCODET and PROVSPNO prior to processing.

	<input data>	All of the input data, including any non-mandatory fields.
	RowNo	The generated row number of the record after sorting. This will match the equivalent fields in other output files from the same processing run.
<b>[name]_FCE.csv</b>		Contains both episode and spell output fields. The spell fields are repeated for each episode in the spell; care must be taken to avoid double-counting when using spell fields.
	<input data>	All of the input data, including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	FCE_NPOC	The dominant National Programme of Care service code for the episode.
	ServiceLine	The dominant Service Line for the episode.
	ServiceLineList	A semi-colon separated list of all the Service Lines the episode qualifies for.
	SpellNPOC	The dominant National Programme of Care service code for the spell.
	SpellServiceLine	The dominant Service Line for the spell.
<b>[name]_spell.csv</b>		Contains one row per spell.
	RowNo	Matches the run generated row number of the first episode in the spell in the sorted input data.
	SpellNPOC	The dominant National Programme of Care service code for the spell.
	SpellServiceLine	The dominant Service Line for the spell.
<b>[name]_quality.csv</b>		Contains a row for each episode that contains an error. Where one or more episodes within a multi-episode spell contain errors, all the episodes from the spell, including those that do not contain errors, are included in the quality file. Thus there are records in the quality file that do not include error messages.
	<input data>	All of the input data for the episode, including any non-mandatory fields, are reproduced in the output.
	RowNo	Matches the run generated row number.
	Error Message(s)	A variable number of fields, each consisting of Code Type, Code and Error Message, separated by pipe (“ ”) symbols.
<b>[name]_FCE_rel.csv</b>		Episode-level output in relational form.
	RowNo	Matches the run generated row number.

	Iteration	The ordinal number of the Service Line for the episode.
	ServiceLine	One of the Service Lines the episode qualifies for.
<b>[name]_quality_rel.csv</b>		The relational format includes a row for each error that an episode contains.
	RowNo	Matches the run generated row number.
	Iteration	The ordinal number of the quality message.
	Code Type	The type of code that has failed validation.
	Code	The value of the code that has failed validation. Blank where the code is missing from the input data.
	Error Message	Description of the error.
<b>[name]_summary.csv</b>		Contains details about the processing session.
	Groupver Version	The version of the Tool that produced the output files.
	Database Version	The Tool's internal database version.
	FCE Count	The number of episodes in the input data.
	Spell Count	The number of spells in the input data.
	FCE Error Count	The number of episodes having errors.
	Spell Error Count	The number of spells whose episodes have at least one error.
	Run Start Date/Time	The date and time that the processing run started.
	Run End Date/Time	The date and time that the processing run finished.
	Input Filename	The path and filename of the input file.
	Output Filename	The path and filename of the output, as selected by the user.
	RDF path and name	The path and filename of the Record Definition File used for processing.

## Non-Admitted Consultations

There are five output files.

File Name/Field Name	Description
<b>[name].csv</b>	A list of the other output files.
<b>[name]_attend.csv</b>	The main output file.
<input data>	All of the input data, including any non-mandatory fields.
RowNo	The generated row number of the record.

	NPOC	The dominant National Programme of Care service code for the attendance.
	ServiceLine	The dominant Service Line for the attendance.
<b>[name]_quality.csv</b>		Contains one row for each attendance that contains errors.
	<input data>	All of the input data, including any non-mandatory fields.
	RowNo	Matches the run generated row number.
	Error Message(s)	A variable number of fields, consisting of Code Type, Code and Error Message, separated by pipe (“ ”) symbols.
<b>[name]_quality_rel.csv</b>		All error messages in relational form.
	RowNo	Matches the run generated row number.
	Iteration	The ordinal number of the quality message.
	Code Type	The type of code that has failed validation.
	Code	The value of the code that has failed validation. Blank where the code is missing from the input data.
	Error Message	Description of the error.
<b>[name]_summary.csv</b>		Contains details about the processing session.
	Groupver Version	The version of the Tool that produced the output files.
	Database Version	The Tool's internal database version.
	Attendance Count	The number of records in the input data.
	Attendance Error Count	The number of records having errors.
	Run Start Date/Time	The date and time that the processing run started.
	Run End Date/Time	The date and time that the processing run finished.
	Input Filename	The path and filename of the input file.
	Output Filename	The path and filename of the output, as selected by the user.
	RDF path and name	The path and filename of the Record Definition File used for processing.

## Errors and Validation

As part of processing the Tool carries out validation checks on many of the mandatory input fields. Where one or more fields fail validation the Tool will not derive any service lines for the record.

Caution must be exercised when considering multi-episode spells that contain a mixture of episodes that pass validation and episodes that fail validation. The Tool will derive a spell service line from the episode service lines. Once the episode level errors have been fixed the spell service line could change. The Spell Errors field in the summary file indicates how many spells may be affected.

Details of all errors encountered are reported in the output quality file. The listings in the Output Files section of this document include a description of the quality files. The Input File Preparation section provides further information regarding the input field validation.

### Error Message Format

Error messages in the quality file are displayed in three sections, the sections being separated by a pipe character. The format is as follows:

```
Code Type|Code|Error Description
```

“Code Type” identifies the field or field type.

“Code” is the unrecognised value. Where an error is due to the absence of a code, this section is left blank.

“Error Description” explains the nature of the error.

An example error message is:

```
DIAG_01|H547|Primary Diagnosis is invalid.
```

Most of the mandatory input fields are validated against lists of acceptable values within the Tool and will generate errors similar to this if an invalid value is used.

Most mandatory fields will also report if a value has not been supplied, for example:

```
MAINSPEF||Main Specialty Code is blank
```

### Note

When one error is found in a record the Tool does not stop the validation process. The software aims to identify all errors and output them together.

## Casemix Methodology

This section explains how the Tool is aligned with existing Casemix methodology, as used in the HRG Groupers for example. The intention is to highlight variations in implementation to users of previous alternate versions of the identification rules.

## Procedures, Diagnoses and Ward Security Levels

By default the Tool is configured to consider 12 procedures, 14 diagnosis codes and 1 ward security level code. This can be altered in the software via the Record Definition File to allow for up to 99 of each.

## Dominant Procedure

In keeping with Casemix practices the Tool uses a hierarchy to determine the dominant procedure in a record. The hierarchy reflects the relative resource use of the procedures. In the majority of records the dominant procedure is that recorded in the first procedure position, but this is not always the case.

A few of the service line definitions rely on identifying the dominant procedure rather than looking for the procedure in any position in the record.

## Subsidiary Codes

Some of the service line definitions look for a subsidiary code as well as a main code. The Tool will take into account the fact that a number of subsidiary codes may be associated with a main code, and as such the required subsidiary code may not be in the next position.