

# NHS Information Systems and Hospital Episode Statistics (HES)

# Introduction

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Written by: Robin Beaumont with the help of Steve Price

[robin@organplayers.co.uk](mailto:robin@organplayers.co.uk)

Available to download from: [www.robin-beaumont.co.uk/virtualclassroom/hes](http://www.robin-beaumont.co.uk/virtualclassroom/hes)

## Status: V.1

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## 1. Acknowledgements

In 1997 for approximately a year I worked with a number of people at the HES statistics division at Skipton House in London to develop an anonymous HES dataset along with several tutorials for clinicians. Thanks must go to John Davies (from IBM Global services) Steve Price (who also co-produced the book "Hes the book" 1997) for spending time explaining the structure of the HES data and its' processing as well as making valuable suggestions concerning what fields to include in a dummy teaching set and how to make the tutorials relevant.

Now, after nearly ten years I find myself once again calling on Steve Price's wisdom and advice, who is still working diligently to make sure that the HES dataset plays a pivotal role in any future developments of the NHS.

The HES dataset is a vitally important resource and I feel it is essential to make sure that as many people as possible realise this, various indicators may come and go on an almost annual basis but for most of them to have any validity there needs to be a static core dataset from which the can be derived, a function HES fulfils.

## 2. HES Ten Years on

Many things have changed since then, Hes the Book has been replaced with a web site <http://www.hesonline.org.uk/> which provides additional functions such as a very useful Data Dictionary, and (in addition to the standard publication tables) also provides a 'Self Service' query engine, enabling sub-national counts to be readily obtained.

There is talk of a Consultant Enquiry System (CES) for consultants to allow them to interrogate HES data directly in future see, <http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=462>.

The development of the system was a partnership between The NHS Information Centre (IC) with an arm of Dr Foster (Dr Foster Intelligence), and was eventually passed over to Dr Foster <http://www.drfoosterintelligence.co.uk/> unfortunately I have been unable to find out any more information about the present state of the project.

Organisational and contractual changes have also taken place, Hospital Episode Statistics has been transferred from the Department of Health (Statistics Division) to a new body, the NHS Information Centre for Health and Social Care (the 'IC'), based in Leeds, created in April 2005. The IC incorporates parts of the old DH statistics division (but not all of it – the more policy and planning oriented work remains in DH), and also parts of the (now defunct) NHS Information Authority (NHSIA).

The IC contact details are:

NHS Information Centre for health and Social Care,  
1 Trevelyan Square, Boar Lane, Leeds, LS1 6AE  
Website: [www.ic.nhs.uk](http://www.ic.nhs.uk)

Now most of the staff working on HES are currently located at Lisbon House, a satellite office in Leeds, it is probable that everyone will move to the Trevelyan Square premises eventually. Because HES already had its own website (provided by Northgate Information Solutions UK Ltd <http://www.northgate-is.com/company/index.php>), there remains a

separate url for this

[www.hesonline.nhs.uk](http://www.hesonline.nhs.uk)

### 3. NHS Information Systems

Within the NHS there are two major divisions:

- Primary Care
- Secondary Care

The Information from Primary Care is principally from GP computer systems, one of the most important ones in the UK being EMIS who have also developed PCT systems.

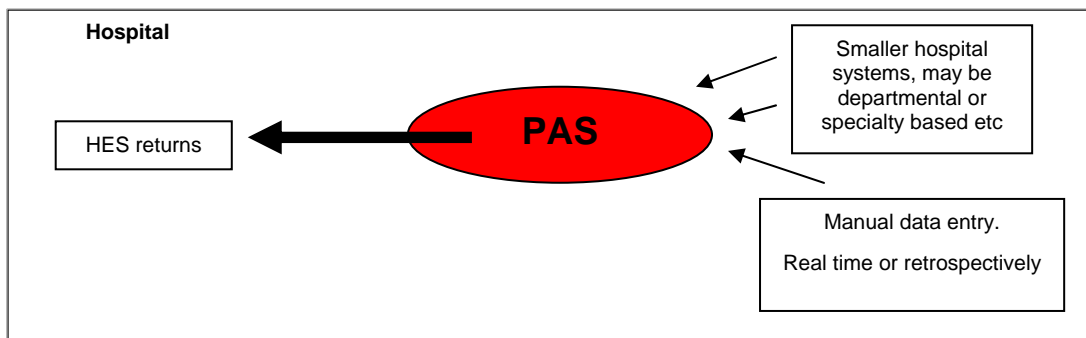
#### Exercise 1

- Visit the EMIS web site, <http://www.emis-online.com/> and have a look at their products.
- Read the medical students account of a GP system. Provided as a separate document.

Secondary care (i.e. hospital care) is far more complex, virtually each hospital having its own method of collecting information to pass up the chain. The central system in any hospital is the PAS (Patient Administration System). PAS is fed by a number of systems within the hospital, where the feeds can be either paper based or electronic. One of the main aims of the NHS National Programme for IT (NPfIT - aka Connecting for Health) was and still is, to achieve integration of these system.

When the feeder system is paper based someone, usually a very poorly paid, temporary clerk, literally goes through paper based medical records, or forms of various types and enters the details (sometimes after the patient has been discharged). Alternatively the information may be obtained electronically from various 'clinical' information feeder systems, such as a general medical, or specialist systems such as Intensive care or Renal, or another 'administrative' system such as an outpatients system. In this instance the data is sometimes collected by Clinicians (i.e. doctors and nurses).

The PAS system provides a set of data called the HES (Hospital Episode Statistics) returns which we will discuss in detail latter.



#### Exercise 2

- Go to [http://www.nhstayside.scot.nhs.uk/about\\_nhstay/commitees/archive/07\\_dpcc/01112005/50793.pdf](http://www.nhstayside.scot.nhs.uk/about_nhstay/commitees/archive/07_dpcc/01112005/50793.pdf) and read "Implementation of a Single Patient Administration System (Pas) Across NHS Tayside" November 2005

Notice the issue of keeping the data up to date and the various strategies adopted.

Traditionally Systems have been divided up into Administrative and Clinical within the Healthcare sector but this is rather a false dichotomy. Some PAS supplies have made their systems morph into virtually clinical systems, and some Clinical system developers have developed their systems to collect what would be called administrative data.

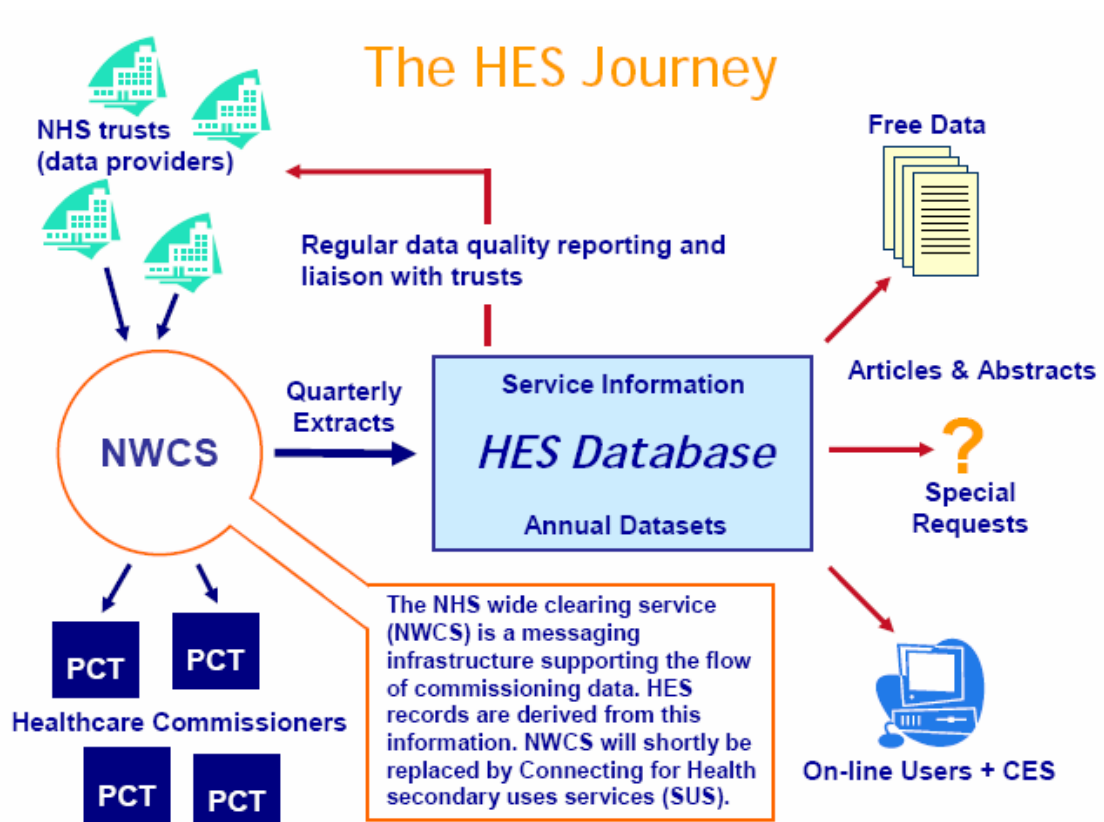
**Exercise 3**

A. Within your own working environment try to find out which computer systems there are, if you feel it is of help classify them into Administrative and Clinical. What would you say defines Clinical and Administrative?

B. If possible try to get a look at one of each variety, often with clinical systems it is a good idea to try a specialist department such as Intensive care or Renal.

**4. Introduction - What is HES**

"The Hospital Episodes Statistics (HES) system is a powerful database containing personal, medical and administrative details of all patients admitted to, and treated in, NHS hospitals in England". (HES The Book 1997).



Taken from HES for Clinicians 2006 (the NWCS is now SUS)

<http://www.appraisalssupport.nhs.uk/files2/HES%20for%20Physicians%20Guide.pdf>

For details about the Secondary User Service (SUS) see <http://www.connectingforhealth.nhs.uk/systemsandservices/sus> and for details of how it might develop see "The vision" published July 2007 by Jeremy Thorp at <http://www.connectingforhealth.nhs.uk/systemsandservices/sus/reference/sus-vision.pdf>

HES is affected by NPfIT in a number of ways, but most fundamentally by the replacement of the NHS Wide Clearing Service (NWCS) by a system known as SUS (Secondary Uses Service). SUS sits at the heart of a national NHS communications network (known as N3 <http://www.connectingforhealth.nhs.uk/systemsandservices/n3> ), run by BT. HES now receives its data from SUS but in future, planned SUS 'analysis services' could – theoretically, at least – replace HES. All CDS (Commissioning Data Set) messages sent via SUS must be coded as XML according to the appropriate national schema (but HES still receives quarterly output from SUS in the form of traditional flat file' records).

## 5. HES in detail

The following section makes use of 'HES the book' (see the acknowledgements for details).

"The Hospital Episodes Statistics (HES) system has a host of uses including....

- Policy development.
- Illustrating variations in health status and health delivery through time and across geographic area.
- Providing answers to Parliamentary Questions (PQs).
- Production of comparative statistics to assist in performance management.
- Medical research - HES contains a wealth of information of use to clinicians and others who are
- developing new treatments, investigating causal factors and monitoring trends.
- Helping to determine how much of the taxpayers money should be spent on healthcare, and how it should be distributed.

The records are collected from all hospital providers in England (Scotland and Wales have their own systems) and amalgamated on an annual basis - there were just over 10 million for 1994/95 (that's April 1994 to March 1995). In 1994 there were 40 items of information (fields), including some of the patients personal details (age, sex and usual place of residence), information about their admission to hospital (for instance, were they an emergency case, or had they been on a waiting list?), and clinical data such as the diagnoses and details of any operations. 11 of the 40 fields provided purely clinical data. Now there are over 150 fields. (see <http://www.hesonline.nhs.uk>.)

In the following sections names in uppercase, such as MAINSPEF refer to specific fields in the HES dataset you can find out details of each at: <http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=571>

### 5.1 Consultant Episodes

"Virtually all hospital in-patients are assigned to a Consultant who is responsible for their treatment (MAINSPEF), and their period of care under a Consultant is termed a "Consultant Episode" (CE - but also see Finished Consultant Episode, or FCE). In the majority of cases, patients are treated by just one Consultant during their stay in hospital, known as a "spell". For these patients, there will be only one CE, and therefore only one HES record containing details of their spell.

If primary responsibility for a patient is transferred from one Consultant to another during a spell, which happens in about 5% of cases, then a new HES record must be completed. This means that the total number of CEs will generally exceed the number of spells."

## 5.2 A Brief HESStory of Time

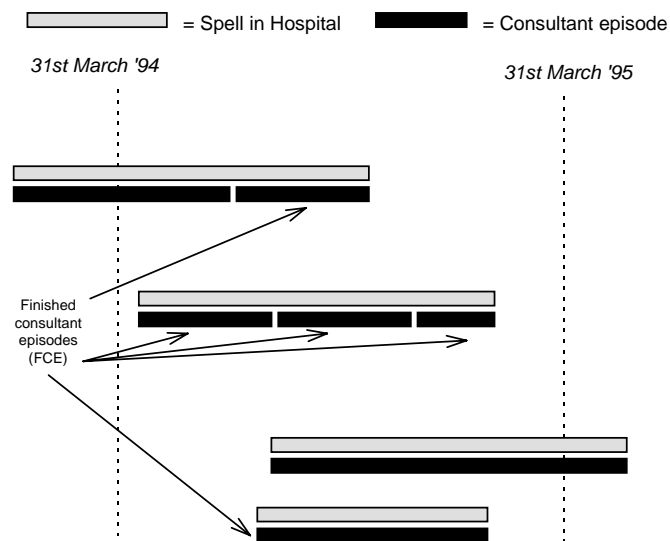
"Time is a very important measure of efficiency and effectiveness within the health service. Each episode has a duration, and this is calculated by subtracting the date that the episode started (recorded in the EPISTART field) from the date the episode ended (EPIEND). The result of this subtraction - a figure representing a whole number of days - is placed in the EPIDUR field. EPIDUR is therefore classified as a derived field. Because EPIDUR is merely the difference between two dates (EPISTART and EPIEND), the figures obtained often require careful interpretation. For example, if someone is admitted to hospital in the early hours of the morning for observation following a road accident, and is discharged later the same day, the duration of that episode is zero days, even though the patient may have occupied a bed for several hours (i.e. because EPISTART and EPIEND contain the same date). An EPIDUR of zero days will also result where someone is admitted to hospital for an operation, but due to unforeseen circumstances the operation must be cancelled, and so the patient is sent home later the same day. HES data is split into years, which run from the 1st of April to the 31st March in the following year (i.e. the 1994/95 HES year covers 1/4/94 to 31/3/95) and the file for each year contains records for every episode where EPISTART and/or EPIEND fall within that period. In most cases, patients' will be both admitted and discharged from hospital during the same year - the median duration of a spell is currently just 3 days (although this overall figure conceals the fact that for certain consultant specialties, for example geriatric medicine, the median is considerably higher). Therefore, around 97% of Consultant episodes will end during the HES year in which they started and so are recorded as Finished Consultant Episodes (FCEs). Where someone is not discharged before the end of the year - perhaps because they were admitted in late March - the hospital will submit a record of the unfinished episode, which will not contain any clinical data like diagnosis. You can tell whether an episode was finished at the end of the HES year by looking at the EPISTAT (Episode Status) field." [You can also tell by looking at the EPIEND field.]

## 5.3 Hospital stays which straddle HES years

"Our neat view of the World is threatened by people who enter hospital in one HES year, but do not leave until the next (these patients will generate an unfinished record at the end of the HES year in which they were admitted). Remember, unfinished records are partial - they rarely carry any clinical data, ie. Diagnosis or Operative procedure, and so should not be used in clinical analysis. The consultant specialty, however, (MAINSPEF) is included. When the patient is discharged, a separate, finished HES record will be constructed for their "second" HES year. This will have the same EPISTART as the first record and so this date tells us that they were admitted in the previous HES year.

But why do we need two records in these cases, especially when the first (unfinished) record is only partial anyway? Surely it would be better to have just one record, completed during the year in which the patient is discharged? The answer to these questions is that unfinished episodes are an integral part of both hospital information systems and HES itself, and they allow us to obtain a more complete picture of hospital activity within a particular year than would otherwise be possible. In many HES analyses the unfinished records are simply ignored - this avoids the possibility of double counting patients when time series data for two or more consecutive years is being formulated. However there are instances where they should be included" [further details provided in the HES book].

The diagram below provides examples of the two different types of episode, finished and



## 6. Summary

This brief handout has provided you with an introduction to where HES sites in the NHS and what the HES dataset is with some information about the terminology used such as "Consultant Episode" (CE) and Finished Consultant Episode (FCE). In the following practical sessions we will look in much more depth at the dataset and begin to understand the fields and how they provide valuable information to clinicians.

## 7. More information?

Do not worry if you feel that you need more information, we will be investigating the dataset in detail later. For those of you who can't wait there is the HES website (url given earlier) and details concerning ICD coding including its history at <http://en.wikipedia.org/wiki/ICD#ICD9> .and details of coding in the NHS at <http://www.connectingforhealth.nhs.uk/systemsandservices/data/clinicalcoding>

All the best Robin Beaumont