



**North and Mid Hampshire  
Central Hampshire  
Electronic Health Record  
Demonstrator**

**January 2001**

**Product T4**

**Technical Specification**

**Final Version**

## AMENDMENT HISTORY

Version	Date Issued	Brief Summary of Change	Author
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0.2	29/1/2001	Additional text and definitions	Martin Budden/ Philip Goldacre
0.3	30/1/2001	Corrections and addition of HES General Episode Record definition	Philip Goldacre
0.4	1/2/2001	Reformatted Appendices	Philip Goldacre
1.0	7/2/2001	Post Review updates	Philip Goldacre

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## 1 Introduction

The main purpose of the Electronic Health Record (EHR) is to provide a summary for supporting the provision of emergency care by GP's, A & E and other services (e.g. Ambulance, Social Services and NHS Direct, etc). The Central Hampshire Electronic Health Record (CHEHR) will be created by extraction of specific data items from feeder Electronic Patient Records (EPRs), held by the various organisations providing care to the individuals.

The project will test the concept of the EHR by loading data from a selection of stakeholder organisations and offering this data back to front line emergency and out of hours staff. The stakeholders comprise:

- Four GP practices - Stockbridge Practice, Stokewood Practice, Watercross Practice, Charlton Hill Practice
- Winchester and Eastleigh NHS Trust – Acute, Community, Mental Health
- Social Services
- Ambulance records
- GP Out of Hours services
- NHS Direct records

The EHR will provide patient identifiable data at the time of presentation, with the secondary aim of having non-patient identifiable information for clinical governance analysis. It is considered at this time that the data available to the practitioner at presentation will be a summation of data from the EPRs feeding into the EHR.

This document will provide the technical specification of the Central Hampshire Electronic Healthcare Record and this has been achieved by further building on the analysis undertaken in T2 (User Requirement) and T3 (Clinical Governance) specifications, looking at:

- Further consultation with stakeholders.
- Provision of data items and output reports from current stakeholder systems.
- Provision of data items from Exeter.
- Provision of data items from system providers.

Following this work the summary data tables from each of the stakeholders have been developed and are attached in the Appendices.

In addition, further decisions have been made in relation to:

- merging the Patient Master Index
- development of interfaces

- presentation of data
- volumetrics
- clinical governance analysis
- migration to new systems during the life of the project.
- standards for clinical coding

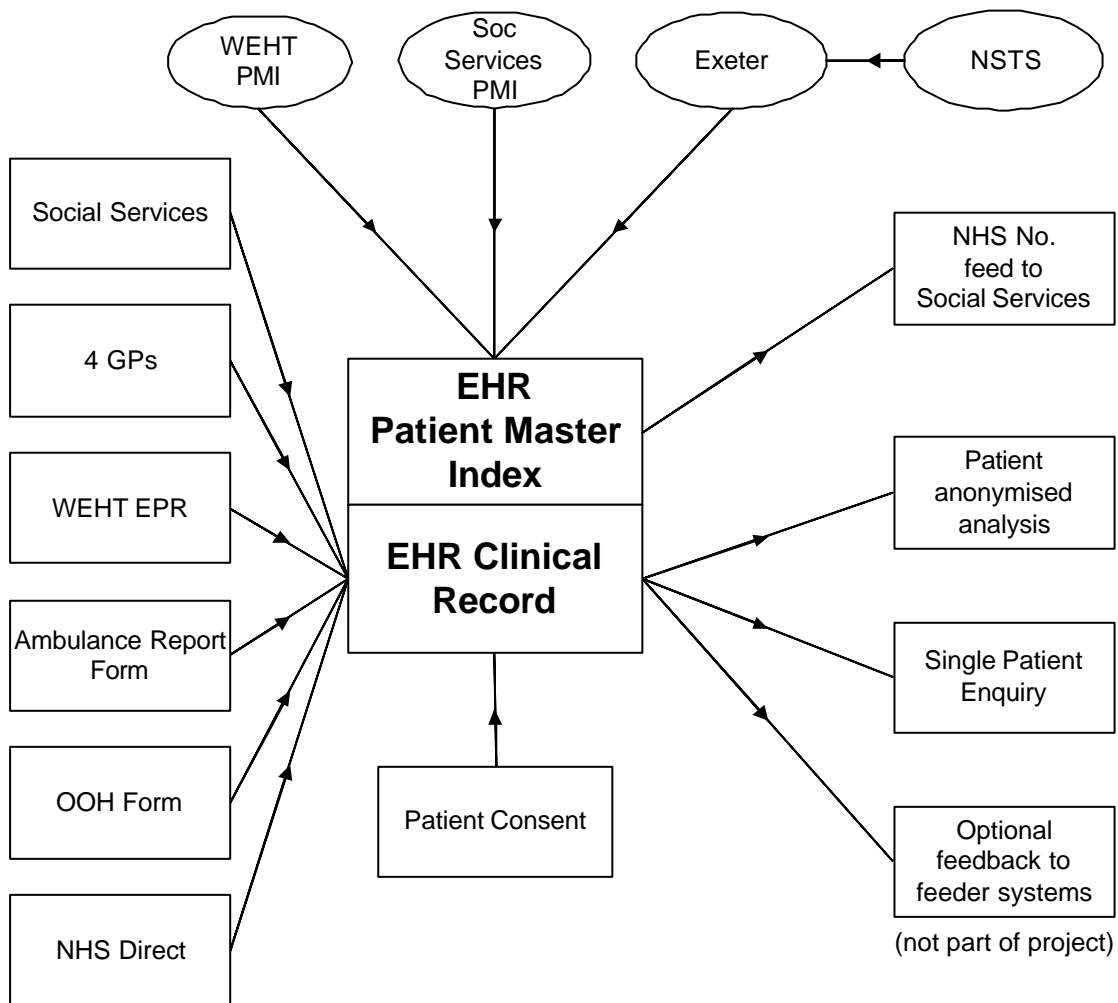
These issues will be discussed in the body of the document.

During the development of the Technical Specification it was evident that the Core Dataset for Exchange between Social and Health Care Services (T5) was also being developed. This product (T5) is presented as an Addendum to this document.

## 2 General Requirements

### 2.1 Information Flows

The following diagram is a conceptual representation of the data flows into and out of the Electronic Health Record. There will need to be an initial exercise to populate Social Services with the NHS number.



The application envisaged will take a component based approach, which will leave the existing operational systems in place. This Technical Specification will inform the procurement and implementation phases in Stage 3.

The information flows between existing EPR's will not be replaced by the Electronic Health Record. For example, existing flows of information from hospital to GP, out-of-hours GP to GP, paramedic to A&E, will not be replaced. The EHR will enable new information flows to be created.

## **2.2 Patient Consent**

Guidance will be needed about how this demonstrator deals with the issue of patient consent, in particular, whether and how we should deal with explicit consent. That is turn will need to be represented by functionality to support the agreed process.

## **2.3 Easy access**

It is most important that all operational stakeholders have easy access to up-to-date, secure information which will support their daily activities, on a need to know basis, as well as the ability to record information as simply and quickly as possible.

## **2.4 NHSnet and Hampshire PSN**

Any implemented system must be capable of running over the NHSnet network. This is already in place in a great deal of the North and Mid Hampshire Health Authority. Some GPs are already connected to NHSnet and there is a programme in operation to roll out the network to the rest of the GPs in Central Hampshire by the end of financial year 2000/1. For Social Services the system must also be accessible by those with appropriate authority via the Hampshire Public Service Network.

## **2.5 Patient Master Index**

The Electronic Health Record will require a consolidated Patient Master Index. This will be primarily indexed using the NHS number. It will also include reference keys that will allow reference to records in the feeder systems.

Several data matching issues need to be resolved. These include matching records between the WEHT HIS, Social Services, GP systems, etc to verify that the records that currently reside on these systems actually relate to the correct patients, e.g. Social Services records are keyed on a unique identifying code that is not related to the patients' NHS number. Social Services are not a recipient of information from the Exeter or NSTS systems, so a considerable amount of work will be required to ensure that these records are accurately matched.

## **2.6 Record Management**

The Electronic Health Record will amass information rather than replace information. This will allow an historical record to be developed.

However there will be exceptions to this rule. There will need to be facilities to correct or flag erroneous information.

There will also be a need to remove some information after a certain period to comply with the requirements of the Data Protection Act.

## 2.7 Resilience

Appropriate resilience will be necessary if we are to maximise the benefits of secure technology and allow for access to be achieved easily and in a timely fashion. 24/7 availability will be required which may necessitate some operational redundancy and/or off-site facilities providing planned service degradation in the event of system failure.

## 2.8 Flags

The Electronic Health Record should hold flags that identify where a particular patient/client record has come from.

It will also need a structure of flags to identify issues about patient consent.

## 3 Scope

The scope of this document is to provide the technical specification of the EHR server and associated linkages as the first step in procuring the EHR equipment. This is to be achieved by building on those data items specified as being needed for extraction to the EHR in the User Requirement which are again detailed below:

Source	Data Items	
<b>Ambulance</b>	<b>Demographic Information</b> NHS Number Name Alias/es Address Date of Birth Gender etc	<b>History</b> Contacts (times/dates) Problem lists Diagnoses Treatments (including drugs) Vital Signs
<b>Social Services</b>	<b>Demographic Information</b> Name Alias/es Address Date of Birth Gender Office of Registration Main Carer Contact Details Next of Kin Contact Details	<b>History</b> Client file is currently open Client Group Caution Notes exist Concern Notes exist Summary of Disabilities Summary of Legal Status CP Registered Summary of non-residential Services Summary of Current Placements

Source	Data Items	
<b>NHS Direct</b>	<b>Demographic Information</b> NHS Number (System Key) Name Alias Address Date of Birth, etc	<b>History</b> Contacts (times/dates) Problem lists Advice given Agency referred to
<b>Out-of-Hours Co-operative</b>	<b>Demographic Information</b> NHS Number Name Alias/es Address Date of Birth Gender, etc	<b>History</b> Contacts (times/dates) Problem lists Diagnoses Treatments (including drugs)
<b>GP systems</b>	<b>Demographic Information</b> NHS Number (System Key) Name Alias/es Address Date of Birth Date of Death Gender, etc  <b>History</b> Dates of visits Practitioner Name Confirmed diagnoses Intervention details Outcome details, etc.  <b>Medication</b> Practitioner Name Prescription Date Medication Name Medication Dosage, etc Date Prescription supplied	<b>Allergies/Alerts</b> Name of Allergen Reaction to Allergen Medication Required Name of Confirming Practitioner Previous Alerts  <b>Other</b> Referrals (including letters) Disability Carer

Source	Data Items	
<p><b>WEHT</b></p> <p>Hospital/ community systems (including medical imaging, laboratory, clinical systems, (endoscopy, diabetes, rheumatology, colorectal cancer, maternity, breast cancer, ICU) networked word processors</p>	<p><b>Demographic Information</b></p> <p>NHS Number (System Key)</p> <p>Name</p> <p>Alias/es</p> <p>Address</p> <p>Date of Birth</p> <p>Date of Death</p> <p>Gender, etc</p> <p><b>History</b></p> <p>Dates of visits</p> <p>Practitioner Name</p> <p>Confirmed diagnoses</p> <p>Blood Group</p> <p>Intervention details</p> <p>Outcome details, etc.</p> <p><b>Medication</b></p> <p>Practitioner Name</p> <p>Prescription Date</p> <p>Medication Name</p> <p>Medication Dosage, etc</p> <p>Date Prescription supplied</p>	<p><b>Test Results</b></p> <p>Test ID</p> <p>Name of Requesting Practitioner</p> <p>Date of Test Request</p> <p>Results of Test</p> <p>Date Result Sent</p> <p>Date Result Received</p> <p><b>Nursing Notes</b></p> <p>Data Items to be confirmed in consultation with community nurses, health visitors and other professionals.</p> <p><b>Therapist Notes</b></p> <p>Data Items to be confirmed in consultation with physiotherapy and other professionals</p> <p><b>Other</b></p> <p>Referral letters</p> <p>Forthcoming appointments and waiting times</p>

### 3.1 EHR Information

This gives a consolidated view of the information that will be recorded in the Electronic Health Record:

<p><b>Patient Master Index</b></p>	<p><b>Demographic Information</b>                  NHS Number, Name, Alias/es, Address, Gender, Date of Birth, Date of Death, Feeder system keys, etc. plus past addresses, etc. with dates (NB ref NHS CADS standard)</p>
<p><b>Clinical Record</b></p>	<p><b>Demographic Information</b>                  NHS Number</p> <p><b>History</b>                  Dates of visits, Practitioner Name, Confirmed diagnoses, Blood Group, Intervention details, Outcome details, Problem lists, Care assessments, Care services provided, Last Discharge Summary, A&amp;E Summary, etc.</p> <p><b>Medication</b>                  Practitioner Name, Prescription Date, Medication Name, Medication Dosage, etc, Date Prescription supplied</p> <p><b>Test Results</b>                  Test ID, Name of Requesting Practitioner, Date of Test Request, Name of Tester, Results of Test, Date Result Sent, Date Result Received</p> <p><b>Allergies/Alerts</b>                  Name of Allergen, Reaction to Allergen, Medication Required, Name of Confirming Practitioner, Previous Alerts</p> <p><b>Social Care History</b>                  Contact Details for Health Professionals                  Current Medication/s                  Alerts/Cautions                  Allergies                  Summary of current services and placements</p> <p><b>Nursing Notes</b>                  Data Items to be confirmed in consultation with community nurses, health visitors and other professionals.</p> <p><b>Therapist Notes</b>                  Data Items to be confirmed in consultation with physiotherapy and other professionals</p> <p><b>Other</b>                  Referral letters, Forthcoming appointments and waiting times</p>

## 4 Merging Patient Master Indexes

As identified in the User Requirement specification, the Electronic Health Record will require a consolidated Patient Master Index. It will hold demographic data for the population of the 3 PCGs involved, Andover, Mid Hampshire and Eastleigh North, based on Post Code, totalling approximately 225,000 people. This will be primarily indexed using the NHS Number and will also include reference keys that will allow access to records in the feeder systems.

As discussed previously, patient identification will be carried out as an enquiry against the Patient Master Index and only when one person has been identified will access to the Electronic Health Record be allowed.

Populating the PMI is expected to start with a copy of the registration data in the Exeter System. This will be achieved by identifying the fields which provide the output from Exeter to the Organisational Links package.

The definition of the information available from the Exeter System is shown in Appendix 1.

### 4.1 Social Services and WEHT

An extract from Organisational Links for those patients identified in the 3 PCG areas of this project (based on postcode) will then be provided to Social Services and WEHT so that they can populate their databases with the NHS Number.

The matching of the records will need to be achieved by using set criteria. One suggestion is to use the same criteria as applied by the ERDIP – Cornwall Demonstrator Project.

For example, to identify whether the records relate to the same person, they (Cornwall) determined 7 data items and decided that two records would be a “match”, i.e. the same person, if 6 or more of the data items chosen from the list below provided an accurate match.

1. Surname
2. Forename
3. Date of Birth
4. Gender
5. GP Name or Practice
6. First line of the address
7. Postcode

The result was that of 800 000 records in the completed Referrals index, approximately 30 000 (3.7%) were double registered using the above process.

The Post Code sorted demographic records will be passed to Social Services, matching will be carried out within the Social Services system and the resulting matched records, complete with NHS Numbers, will be passed back to the EHR.

A decision will be taken on the rules to apply when matching the Exeter data to Social Services and WEHT and then the exercise undertaken. Once this

has been completed only data from WEHT and Social Services that has an NHS Number will be uploaded into the PMI.

For the purposes of this demonstrator, some basic principles will apply. These are not necessarily the principles that will apply for the operational system.

1. As discussed previously, only residents of the 3 PCG areas will be loaded.
2. The PMI will include the history of address and other changes. The current address will be regarded as the latest notified address.
3. The PMI, and hence the Electronic Health Record, will not hold information about "sensitive" categories of patient, for example adopted children, where it could provide a backdoor means to trace back.

The relevant but rejected records are likely to result from a Number of causes, for example:

1. Patients who have moved away from the area, i.e. no longer resident and so not held in the Exeter System
2. Patients resident here but not registered with a local GP
3. Patients where insufficient identification information is available to make an easy match.
4. New babies
5. Patients who have died but are still held on some systems

Dealing with these records could become a problem. Judgements will be made at the time of populating the PMI, once the scale of problems is known, about how far to take the exercise of loading rejected records.

#### **4.2 Ambulance and NHS Direct**

Using the criteria specified in the Cornwall Demonstrator may be difficult for both the Ambulance and NHS Direct due to incomplete datasets.

The Ambulance Command and Control System (Fortek Medic v1.10.), which provides downloads to the Access Database, does not capture all the data items needed to fit the above criteria.

The dataset for NHS Direct, although having these fields specified, has incomplete information due to the unwillingness of callers to identify themselves. Therefore, testing the use of this against the Exeter data will need to be undertaken prior to loading to the PMI.

Likely difficulties are:

- Personal information is not always available to Ambulance crews or Command and Control, especially when dealing with unconscious patients.

- NHS Direct callers are commonly unwilling to identify themselves or give false information. NHS Direct records show that identification sufficient to categorise under care algorithms is only available in 10% of calls and there is a 10% data input error rate.

Should data be loaded to the PMI from these sources that has not passed the set criteria they should contain a warning of the same.

## 5 Interfaces to Feeders

As discussed previously, the interfaces between the feeder systems and the EHR will be created by identifying, and copying the data from, those fields in each system which support the standard patient record outputs from them. These are detailed in Appendices 1 – 7.

It is planned that initial uploads will be of the full required dataset from each system which will then be tested for accuracy and completeness. Once the success of the bulk historical data load is proven then regular differential uploads will commence.

Analyses of the time taken to complete the uploads and of the performance implications for the feeder systems during them will help to determine the best time of day and the extent of the data to be copied during each upload to the EHR.

Once these have been established, schedules can be developed to minimise the impact on the operational efficiency of the feeder systems.

Work will also have to take place on interfacing the EHR with the feeder systems to enable them to access the data they will require to enhance the service they provide to the patients and practitioners they support.

Further to T2 User Requirement Specification paragraph 5.3, any requirement to provide feedback to the feeder systems is outside the scope of the CHEHR pilot project. If requirements emerge later, they will be dealt with as separate, local projects.

It is anticipated that feedback interfaces with the feeder systems will be achieved by allowing users of those systems to read information held in the EHR in addition to the information currently held in their own systems. Departmental contact details may be held in the EHR in case more detailed information on any given patient event is required.

All interfaces between the feeder systems and CHEHR will comply as far as possible with government approved standards such as e-GIF, CEN, ISO, etc

### 5.1 GP Practice Information

Following discussions with the GPs it was agreed to use extracts currently provided should a patient move from one GP to another, less the part of the consultation record which records informal notes. The viability of achieving these has been agreed with the system providers.

Output from the GP Practice Information system is intended to comply with e-GIF. Where this is impossible, any variance to the e-GIF standards will be

implemented on the basis of the best solution and the methods used will be reported to the IPU.

The definition of the information available from the GP clinical systems is shown in Appendix 2.

## **5.2 Ambulance**

An analysis of the data items provided in the Access Database used by the Ambulance has identified some gaps in what was proposed in the table in Section 3 above as some of these items do not exist. For example, Date of Birth, Address, etc. This may raise some issues in relation to assigning a NHS Number so that we can match an episode to an individual. This will be covered more comprehensively later in this document.

Work is taking place to procure a Patient Information system for use on mobile units at incidents. Several systems are currently being considered. Hampshire Ambulance Service will be keeping this project informed about progress so that any system acquired can be incorporated into the EHR should the procurement be completed during the lifetime of CHEHR.

The projected cost for a 2 vehicle trial is estimated at £27k although the Ambulance Trust may be able to arrange it at no cost.

The definition of the information available from the Ambulance systems is shown in Appendix 3.

## **5.3 Social Services**

The information provided by Social Services was a match to those data items indicated in Section 3 above and will form a significant part of the Core Dataset for Exchange in Addendum 1. However, further work needs to be done to provide the NHS Number to this dataset and how to manage this, and the rules to be applied have been discussed in Section 4.1.

Output from the Social Services system is intended to comply with e-GIF. Where this is impossible, any variance to the e-GIF standards will be implemented on the basis of the best solution and the methods used will be reported to the IPU.

The definition of the information available from the Social Services systems is shown in Appendix 4.

## **5.4 NHS Direct**

NHS Direct provided a dataset which can be extracted from an excel spreadsheet. There are however, some issues regarding consumer compliance in providing person identifiable information and this could cause problems when developing a merged PMI. This again will be covered under that section in this document.

The definition of the information available from the NHS Direct systems is shown in Appendix 5.

## 5.5 WEHT

The Winchester and Eastleigh Health Trust has provided a comprehensive list of data items available from the HIS. A subset of the available information will be extracted to the EHR, based on the required data items listed above. Further work is going on to identify precisely the full Pathology, Radiology and Drugs Given records held in HIS.

The records to be extracted from WEHT are defined by:

- Only one year of historical data to be uploaded to EHR
- The records loaded will include drugs, discharge, laboratory, radiology and A&E. These are defined in the appendices.
- Discharge information will be replaced or added to by the HES FCE data when it is available as this has clinical coding information added.
- Outpatients, mental health and community records will also be stored but more work is required to agree the format
- Word processed clinical letters and discharge letters will also be stored

There may be some benefit in using the 'Finished Consultant Episode' extract as this provides a significant portion of the data items identified in the table above. However, there are some concerns in regard to the timeliness of this data as the coding of the episode is often not completed until approximately one month post discharge.

The definition of the information available from the WEHT systems is shown in Appendix 6.

## 5.6 Out-of-Hours GP Cooperative

Work is going on with potential suppliers of Out of Hours Service systems to identify the data items involved in the patient consultation record which will be required as output from these systems. As a decision has not yet been made on which system will eventually be employed, this work will continue throughout the procurement as these systems continue to be developed in response to user requirements.

The progress of this development will be continually monitored by the project team to ensure that the benefits of introducing these systems are captured by the EHR.

Although there is a body of opinion that Out of Hours GP calls are best handled if the practitioner has no access to patient history information at the time of the call, a method of recording the actions of practitioners on these calls will still be required to enable the information to be fed back to the patient's own GP.

There is also the possibility that this software could handle the charging processes which need to be carried out if the attending GP is not a member of the patient's GP's own practice. This element, though is likely to be outside the remit of the pilot project in its currently projected lifetime.

The definition of the information available from the out of hours systems is shown in Appendix 7.

## 6 Volumetrics

An exercise will be carried out to extract historical records from the feeder system. It would seem sensible that these are limited to them relating to patients when fall within the geographical area on a particular date to be decided. This would exclude data which do not directly support the operational purposes of the system.

It may be that more records than these are required for the purposes of establishing a dataset for clinical governance, but this would need to be decided upon by Dr Hugh Sanderson.

At this stage, it would be very difficult to estimate the volume of data held in historical records, either for HIS or for the GP practices.

This demonstrator covers a potential population of 225,000. Attention will focus primarily on the patient lists of four GP practices. Electronic Patient Record information for the full 225,000 will be loaded.

There might be issues about available time for improving data quality and reconciling patient identifiers. If this proves to be the case, efforts will be focussed on the pilot four areas so that the demonstrator can proceed. That covers a population of approximately 46,000.

The volume of the database will be determined by the number of patients' records it holds.

It is planned to hold demographic data for the whole population of the Central Hampshire postcode area.

WEHT will provide its full dataset from a system managing 277 423 episode records of 82 482 patients.

GP practices will provide their full datasets to the project as follows:

Stockbridge Practice	8 122	patients
Stokewood Practice	13 471	patients
Watercress Practice	7 590	patients
Charlton Hill Practice	9 298	patients
4 Practice Total	38 481	patients
Social Services records	165 000	clients
Ambulance records	40 000	
NHS Direct records	40 000	
Out of Hours records	20 000	

It is likely that there will never be more than 16 users concurrently logged on to the EHR system.

The storage requirements for the system will be determined by a computation of the figures above multiplied by the record sizes, derived from the field sizes, of each system.

It is intended to rent, rather than buy, storage and processing equipment for the lifetime of the pilot project only.

Decisions on the continuance of the project will be made at the end of the project lifetime which will determine future needs. Suppliers will be requested to provide upgrade paths and facilities if the project is rolled out beyond the lifetime of the pilot.

## **7 General System Functionality**

The overview of processing functions required as part of the EHR are listed in Appendices 8 and 9. Specific outputs are also outlined below

### **7.1 Patient Specific Outputs**

As discussed in the User Requirement Specification definitions of restricted views of the information held in the Electronic Health Record were still to be decided. It was, however, agreed that there would need to be at least two analyses, the first patient specific and the second patient anonymised.

It is intended that 'relevant views' will be accessed by practitioners and others whilst acknowledging the need to protect the privacy and confidentiality of patient information by assigning users appropriate security access on a 'need to know' basis. These issues will be covered more extensively in later documentation.

A dialogue to identify the patient will be required (typically input name, sex, address, DoB etc) until there is only one match. This will be facilitated by the ability to undertake 'fuzzy' searches. If the patient does not want past records reviewed the Electronic Health Record will not be used.

The initial dialogue will be followed by:

- Process to deal with restrictions to access, e.g. either explicit patient approval or access to predetermined patient access agreements or fallback to some generic access rights, followed by:
- First view of headline clinical and care information, followed by:
- Ability for each data area to "scroll" back through earlier records or maybe search.

### **7.2 Analytical Requirements for Clinical Governance**

To support clinical governance a sophisticated analytical package will be required. The section below outlines our current thinking about the way this

package might be used. Later, outside the scope of this project, additional analyses might be required to support other forms of clinical and management information.

In the longer term these requirements might need to be satisfied using a separate database so that complex analysis does not have an adverse affect on the performance for direct patient care. In the short term, though, it is anticipated that both patient care and analysis for clinical governance will be serviced from a common database.

Key measures of the quality of service focus on the 'structure/process/outcome' model that has been developed over many years. In principle this will require the ability to identify specific components within the basic equation of care:

**Condition + Intervention = Outcome**

Structure measures focus around who delivers the intervention, in what setting, with what facilities.

Process measures focus around what intervention is delivered for a particular condition.

Outcome measures focus on the outcome of a specific intervention for a specific condition.

This relates to the four components of Clinical Governance:

Clinical Effectiveness	Process (clinical effective process) and Outcome (satisfactory outcome).
Risk Management	Structure (risk assessment and controls) and process (safe processes).
User Involvement	Process (providing information) and outcome (patient knowledge).
Education and Training	Structure and Process (qualified staff, who provides care).

To achieve these sorts of analyses from the EHR requires specific capabilities of both the database and the database query facilities.

Events (both conditions and interventions) need to be related to time and capable of being linked in time and episodes of condition/care.

It should be possible to create classes of patients or interventions, which can be further used in analysis. These need to be available for both individual and system definition.

The query language should be simple enough for the occasional users to use safely and efficiently, but flexible enough to provide all of the necessary manipulations. (If this cannot be provided in a single product, then appropriate

analysis tools for different classes of user should be provided in a single product, then appropriate analysis tools for different classes of user should be provided in an integrated way.)

### **7.2.1 Time/Episode Linkage Issues**

Most clinical conditions (apart from simple acute, rapidly resolving conditions) progress through a number of states, for example, symptomatic presentation, confirmed early disease, ongoing chronic/late stage disease. (The Healthcare Framework provides a generalised structure for this which has been elaborated in a number of conditions.)

In each of these stages, interventions of different sorts may be appropriate, and specific outcomes may be expected, consequently analysis to identify if the process has been appropriate, or the outcome satisfactory, depends upon linking the condition and intervention together.

In an ideal world, the linkage of events to a specific condition would happen when the event was recorded. (For example, antibiotic given for wound infection) and in many cases, the sequence and nature of events allows a reasonably accurate linkage of the events within an episode of illness. However, where there are multiple concurrent conditions (for example, chronic obstructive airways disease, and lung cancer) it may be much more difficult to distinguish which episode the investigations and treatments are related to, and hence how to assess the quality the process and the outcome.

To provide a pragmatic solution to this will require the development of sets of rules, based upon the time relationships of events and underlying clinical logic, which can be applied to link events into episodes. These rules will have to be based on the best guess of the typical course of event, and in some cases of course, will lead to enable this linkage are:

- Date and time stamping of all events (including descriptions of condition and interventions)
- Development of a set of rules to identify the end of a condition episode, either through the recording of a new condition description, or the passage of a certain period of time.

For example, a patient with a description of 'chest pain' may receive investigations, including blood tests, X-Rays, ECG, exercise tolerance tests, etc.

If a positive diagnosis of angina is made (either explicitly, or from the results of an exercise tolerance test), then a new episode of care should start, in which appropriate care will include specific drug interventions or angiography.

If the diagnosis of angina is excluded, and no other clear cause of chest pain is identified, then the episode of chest pain will need to be terminated at some point after the last reference to chest pain in the record. This 'clear period' needs to be agreed with clinicians as a reasonable period of time for that condition, and might vary for between conditions from a few weeks to several months.

## 7.2.2 Development of Classes of Conditions/Interventions

In order to assess the appropriateness of a particular intervention or the adequacy of a specific outcome, it will be necessary to define the condition precisely and repeatably.

For example, 'door to needle time' for the provision of thrombolysis is an important measure of the process of care of patients with myocardial infarctions. However, not all patients with MI's should receive streptokinase, nor all patients with MI diagnosable within the effective time frame for thrombolysis. To measure the eligible population requires excluding those patients who have contraindications, and those in whom the presentation was atypical and the diagnosis was made later following a rise in cardiac enzymes. The rules for these exclusions need to be developed, but once designed, it shouldn't be necessary for all users to have to specify the precise rules again. It should therefore be possible to develop a library of definitions (in this case patients eligible for thrombolysis) and use these in subsequent queries.

It would be an advantage for this library to have a number of types of definitions:

- Nationally agreed
- Locally agreed
- Individually agreed

Use of definitions at all levels should be available to all users, but the ability to modify the definitions would be restricted to the analytical team in respect of the first two levels, and the individual user at the third level.

## 7.2.3 Query Language and Analytical Environment

Clinical Governance needs to be locally owned if it is to be an effective way of changing and developing practice. This means that individual clinicians need to be able to access and extract information about their own practice. The evidence suggests that where information is personally discovered and used, it is much more effective in supporting changes in practice than when it is delivered in a top down way from an external source.

To achieve this ability for individual clinicians to analyse complex data about healthcare is difficult. The more complicated the data, the greater the difficulty in understanding the structure and the greater the scope for drawing misleading conclusions about the data. However, relying on an expert analyst service is often frustrating because of the delays in getting results back, and the difficulty that most individuals have in specifying their question sufficiently clearly to get back an appropriate answer.

Many query languages and analysis packages exist, and these have varying degrees of ease of use and flexibility. They also often use very obscure terms to describe the available types of analysis which are difficult to understand without specific training. For use by clinicians it is important that the query can be specified in words which are similar to natural language and that the features of the analysis are similarly described in easily understood terms.

It may be that it is not possible to provide all these requirements for simplicity and sophistication in a single package. If it is necessary to obtain two packages, it should be possible to share the libraries of common definitions and move data from one environment to another with ease.

Providing access to the data by all clinicians raises some confidentiality issues that need to be addressed elsewhere. However, since there will be times when it is important to provide access to data at home, ways of ensuring that the data files are encrypted, and secure on off site computers are required.

Providing wide access to the data also means that the analysis package should be relatively cheap to provide a site wide licence, and able to run on moderate power PC's. This will also require the ability to extract subsets of the data that can be further analysed.

Despite the emphasis on making the data available to clinical staff, there will be a need for dedicated analysts to set up the analytical environment and provide more complex analyses when required. These staff need to be able to teach and provide support as much as undertaking analysis, so that they are able to facilitate a wide usage and understanding of the data.

## **8 Migration to New Systems**

Some feeder systems will be undergoing implementations, changes and upgrades during the life of the pilot.

### **8.1 Hants Ambulance**

Hants Ambulance Service Trust is evaluating several candidate products to record patient details and status at incidents. Selection procedures are ongoing and CHEHR will need to adapt to take account of these developments.

### **8.2 NHS Direct**

NHS Direct will be implementing the new AXA software from June 2001 as part of a national standardisation project.

### **8.3 Out-of-Hours Co-operatives**

The Winchester City and Rural out of hours co-operatives are looking to procure a common product. Andover co-operative currently operates a paper based system with clinical and billing information being faxed to the relevant GP practice the morning after an event.

Evaluation of candidate products is now under way. While no decisions have been made and no date is planned for implementation, CHEHR will need to be able to accept data transfer from the finally implemented system.

### **8.4 Mental Health**

The management of Mental Health services is becoming independent of the current Healthcare Trust and they are likely to introduce their own methods of record keeping. While this is likely not to affect the EHR during the lifetime of the pilot, the situation should be monitored so that interface issues with whatever system is implemented in this area can be dealt with appropriately.

## 9 Conclusion

The scope of this document was to provide the technical specification of the EHR server and associated linkages as the first step in procuring the EHR equipment. The specifics of this are addressed in Appendix 8 – System Functionality Catalogue and Appendix 9 – System Functionality Requirements.

This document should where applicable, be read in conjunction with other products, such as T2 – User Requirements, T3 – Clinical Governance, T6 – Data Standards (Final Version), T7 – Technical Standards (Draft), T8 – Security and Confidentiality (Draft), and T9 – Information Sharing Policy (Final Draft).

## Appendix 1 – Exeter System

Data Item Name	Data Type	Length	F/V	M/O	Format
<b>OUTPUT HEADER RECORD – 1 PER FILE</b>					
Sending HA cipher	Text	3	F	M	
File Type	Number	1		M	1=Match Results 2=Manual Match Results 3=Patient Change Updates 4=Rejected File 5=SOP Results
Transfer Date	Date	12	F	M	CCYYMMDD
Transfer Time	Time	6	F	M	HHMMSS
Transaction Total	Number	7	V	M	0 – 99999
Org File Ref No	Number	5	F	M	0 – 99999
Request Accept/Reject	Text	1	F	O	A or R
Request Accept/Reject Message	Text	30	V	O	
<b>OUTPUT MESSAGE RECORD TYPE 10 This type is mandatory for every file type</b>					
Active NHS No	Text	14	F	O	10=Patient Details Record 20=GP Details Record 30=Previous GP Record 40=Address Record 50=Extra Details Record
Record Type (10)	Number	2	F	M	
Surname	Text	20	V	O	
Previous Surname	Text	20	V	O	
Forename	Text	22	V	O	
Other Forenames	Text	20	V	O	
Extra Name	Text	20	V	O	
Title	Text	4	V	O	
Sex	Text	1	F	O	M=Male F=Female I=Indeterminate
Date of Birth	Text	8	F	O	CCYYMMDD
Patients New NHS No	Number	10	F	O	Now Redundant. Used for NHS Renumbering exercise
Previous NHS No	Text	14	V	O	
Organisation Identifier	Text	13	V	O	

Data Item Name	Data Type	Length	F/V	M/O	Format
Deduction Reason/ Reason for Movement	Text	3	F	O	D=Death E=Embarkation SER=Services S/D=Service Dependant R=Removal to New FHSA R/A=New FHSA/Same GP DDR=Deducted at GP's Request DPR=Deducted at Patient's Request M/H=Mental Health A/C=Adopted Child R/C= Registration Cancelled O/R=Other CGA=Corres. Indicates "Gone Away" OPA=Practice advise outside of their area PAR=Practice advise patient no longer resident PSR=Practice advise removal via screening system PVR=Practice advise removal via vaccination data RFI=Removal from Residential Institute Reasons for Movement. 1=Birth 2=First Acceptance 4=Immigrant 5=Ex Service 6=Internal Transfer R/U=Returned Undelivered RIN=Re-instated Person T=Internal Transfer TA3=Transfer In X=Internal Transfer by address change Z=Pre "G" Release
Date of Deduction	Date	8	F	O	YYYYMMDD
Match Code	Text	1	F	O	M=Matched Patient P=Possible match for Patient U=Patient Unmatched R=Patient Rejected
Type of Possible Match	Text	3	V	O	A3=NHS Number match S=Only Sex mismatch B=NHS No differs C=One of the forenames is different D=Surname matched with previous surname on database E=Duplicate records were found

Data Item Name	Data Type	Length	F/V	M/O	Format
					F=Forename entirely different H=Surname matched part of double barreled surname N=Name match, where no match could be found use the NHS No and DOB.
Date of Transaction	Date	8	F	O	YYYYMMDD
Source of Transaction	Text	2	F	O	"ID", "DP", etc.
Type of Transaction	Text	2	V	O	A=Amendment 1=Birth 2=1 <sup>st</sup> Acceptance 3=Transfer In 4=Immigrant 5=Ex Services 6=Internal Transfer D=Deduction  Preceded by "F" where full record sent, e.g. "F4"
Deductions of Type "R"	Text	20	V	O	
Deductions of Type "D"	Text	20	V	O	
<b>OUTPUT MESSAGE RECORD TYPE 20 (current GP Detail – Non Mandatory)</b>					
Active NHS No	Text	14	V	M	
Record Type	Number	2	F	M	10=Patient Details Record 20=GP Details Record 30=Previous GP Record 40=Address Record 50=Extra Details Record
Current GP Code	Text	7	F	M	
GP National Code	Text	8	F	O	G followed by 6 digits, followed by check digit, e.g. G1234569
GP Surname	Text	20	V	O	
GP Initials	Text	3	V	O	
GP Address Line 1	Text	30	V	O	
GP Address Line 2	Text	30	V	O	
GP Address Line 3	Text	30	V	O	
GP Address Line 4	Text	30	V	O	
GP Post Code	Text	8	V	O	
GP Responsible HA	Text	3	V	O	
GP Start Date	Date	8	F	O	YYYYMMDD
GP End Date	Date	8	F	O	YYYYMMDD
End Reason	Text	1	F	O	
GP Partnership Name	Text	34	V	O	
GP Senior Partner Local Code	Text	6	F	O	
Date Added	Date	8	F	O	YYYYMMDD

Data Item Name	Data Type	Length	F/V	M/O	Format
<b>OUTPUT MESSAGE RECORD TYPE 30 (Previous GP Details – Non Mandatory)</b>					
NHS No	Text	14	F	M	
Record Type (30)	Number	2	F	M	10=Patient Details Record 20=GP Details Record 30=Previous GP Record 40=Address Record 50=Extra Details Record
Previous GP Code	Text	6	F	M	
GP National Code	Text	8	F	O	G followed by 6 digits, followed by check digit, e.g. G1234569
GP Surname	Text	20	V	O	
GP Initials	Text	3	V	O	
GP Address Line 1	Text	30	V	O	
GP Address Line 2	Text	30	V	O	
GP Address Line 3	Text	30	V	O	
GP Address Line 4	Text	30	V	O	
GP Post Code	Text	8	F	O	
GP Responsible HA	Text	3	F	O	
GP Start Date	Date	8	F	O	YYYYMMDD
GP End Date	Date	8	F	O	YYYYMMDD
End Reason	Text	1	F	O	
GP Partnership Name	Text	34	V	O	
GP Senior Partner Local Code	Text	6	F	O	
Date Added	Date	8	F	O	YYYYMMDD
<b>OUTGOING ADDRESS DETAILS RECORD (Record Type 40 – Non Mandatory)</b>					
NHS No	Text	14	F	M	
Record Type (40)	Number	2	F	M	10=Patient Details Record 20=GP Details Record 30=Previous GP Record 40=Address Record 50=Extra Details Record
Address Line 1	Text	30	V	O	
Address Line 2	Text	30	V	O	
Locality	Text	30	V	O	
Town	Text	30	V	O	
County	Text	30	V	O	
Post Code	Text	8	F	O	
<b>OUTGOING EXTRA DETAILS RECORD (Record Type 50 – Non Mandatory)</b>					
Transaction ID	Number	12			
Record Type (50)	Number	2			10=Patient Details Record 20=GP Details Record 30=Previous GP Record 40=Address Record 50=Extra Details Record
Date Record Created	Date	8			YYYYMMDD

<b>Data Item Name</b>	<b>Data Type</b>	<b>Length</b>	<b>F/V</b>	<b>M/O</b>	<b>Format</b>
Time Record Created	Time	6			HHMMSS
Pre Changed NHS No	Text	14			
Pre Changed Forename	Text	22			
Pre Changed Surname	Text	20			
Pre Changed Date of Birth	Date	8			YYYYMMDD
Pre Changed Sex	Text	1			
Pre Changed Post Code	Text	8			
Current Q Code for Patient	Text	3			
Date of Acceptance	Date	8			YYYYMMDD
NNN Indicator	Text	1			
Previous HA cipher	Text	3			
Previous Q Code	Text	3			
New Q Code	Text	3			

## Appendix 2 – GP Patient Summary

Note: These fields are output from EMIS in XML format. Information detailing the structure of the underlying SQL database fields is awaited from EMIS. Accurate assessment of the volume of the EHR will be difficult without this information.

In-Practice Systems will be developing an interface to meet the requirements of the EHR. The output format is expected to follow the same XML standard format as that produced by EMIS.

Data Item Name	Data Type	Length	F/V	M/O	Format
<b>PATIENT</b>					
Patient No					
Name					
DOB	Date	8			CCYYMMDD
Age (Derived, Full Years)	Number	3			
Address1					
Address2					
Address3					
Address4					
Post Code					
NHS No					
<b>GP</b>					
GP ID					
First Name					
Surname					
Dispensing?					Y/N
Tel No					
Mobile					
<b>PRACTICE</b>					
Practice ID					
Practice Name					
Address1					
Address2					
Address3					
Address4					
Post Code					
Work Tel No					
E-Mail					
<b>PROBLEMS</b>					
Problem ID (Read Code)					
Problem Name					
Problem Date	Date	8			CCYYMMDD
Active					Y/N
Remarks					
<b>ALLERGIES</b>					
Allergy ID (Read Code)					
Allergy Name					
Allergy Date	Date	8			CCYYMMDD
Remarks					

Data Item Name	Data Type	Length	F/V	M/O	Format
<b>DISEASES or OPERATIONS</b>					
Condition ID (Read Code)					
Condition Name					
Condition Date	Date	8			CCYYMMDD
Remarks					
<b>HEALTH STATUS</b>					
Last Smear Date	Date	8			CCYYMMDD
Last Smear Type					
Cervical Smear Date	Date	8			CCYYMMDD
Cervical Smear Result					
Weight Date	Date	8			CCYYMMDD
Weight Result					(kg)
O/E Height Date	Date	8			CCYYMMDD
O/E Height Result	Number	3			(cm)
Body Mass Index Date	Date	8			CCYYMMDD
Body Mass Index Result					
Ideal Weight Date	Date	8			CCYYMMDD
Ideal Weight Result					(kg)
Date	Date	8			CCYYMMDD
BP Result	Number	6			(xxx/xxx mm Hg)
Smoking Date	Date	8			CCYYMMDD
Smoking Result					No/Day
Alcohol Date	Date	8			CCYYMMDD
Alcohol Result					Units/Week
<b>FAMILY HISTORY</b>					
Item ID (Read Code)					
Item Name					
Date	Date	8			CCYYMMDD
Remarks					Family History Taken is a value of Item ID
<b>MEDICATION</b>					
Prescription ID					
Prescription Type					(Acute/Repeat)
Drug Name					
Product Type					(tabs, suspension, etc)
Delivery Method					
Dosage					
Frequency					
Quantity					
Start Date	Date	8			CCYYMMDD
End Date	Date	8			CCYYMMDD
<b>IMMUNISATIONS</b>					
Imm ID (Read Code)					
Imm Name					
Batch No					

Data Item Name	Data Type	Length	F/V	M/O	Format
Date	Date	8			CCYYMMDD
Location					
Remarks					
<b>TEST</b>					
Test ID (Read Code)					
Test Name					
Result ID (Read Code)					
Result Name					
Remarks					
<b>CONSULTATION</b>					
Consultation No					(System Generated)
Date	Date	8			CCYYMMDD
Location					
GP ID					
D:*					Additional Text
E:*					Problem Title (Read Code/Text)
F:*					Follow Up (Read Code/Text)
G:*					Link to Mentor article (Read Code/Text)
I:*					Lab Result (Read Code/Text)
O:*					Examination (Read Code/Text)
P:*					Comment (Text)
R:*					Referral, entered using protocol (Read Code/Text)
Rq:*					X-Ray/Lab Request (Read Code/Text)
Rx:*					Medication Details (Read Code/Text)
S:*					History (Text)
T:*					Template Entry (Read Code/Text)
<p>*NB The above are the field designations intended by EMIS. It would appear, from the outputs available, that they are not always used as intended in the practices.                      E.g. R: seems to be used for storing referral information.</p>					



## Appendix 3 - Hants Ambulance Data

### MS Access 97

Data Item Name	Data Type	Length	F/V	M/O	Format
<b>TblIncident</b>					
Key (I)	Text	16	V	O	
Incident_Number (I)	Text	16	V	O	
LastUpdated	Date/Time	8	F	O	
Location	Text	6	V	O	
Post_code	Text	8	V	O	
HospitalFrom	Text	6	V	O	
CareGrpOfLocation	Text	6	V	O	
Caller	Text	17	V	O	
CallSource	Text	20	V	O	
Detail	Text	255	V	O	
Incident_Type	Text	30	V	O	
NumOfPatients	Number	2	F	O	
Patient	Text	20	V	O	
ChildUnder2	Text	1	V	O	
Doctor_Name	Text	30	V	O	
Doctor_Code	Text	6	V	O	
Clinic_Name	Text	30	V	O	
CareGrp_Name	Text	30	V	O	
Hospital	Text	30	V	O	
HA_Code	Text	4	V	O	
Rec_date (I)	Date/Time	8	F	O	
Rec_time	Date/Time	8	F	O	
ResultCode1	Text	30	V	O	
ResultCode2	Text	30	V	O	
ResultCode3	Text	30	V	O	
ResultCode4	Text	30	V	O	
Address1	Text	30	V	O	
Address2	Text	30	V	O	
Address3	Text	30	V	O	
Address4	Text	30	V	O	
<b>TblResource</b>					
Incident_Number (I)	Text	16	V	O	
Key (I)	Text	50	V	O	
Seq	Number	2	F	O	
Call_sign	Text	5	V	O	
Base_stat	Text	6	V	O	
Arrived_Time	Date/Time	8	F	O	
Arrived_Date	Date/Time	8	F	O	
Left_Time	Date/Time	8	F	O	
Left_Date	Date/Time	8	F	O	
Hospital_time	Date/Time	8	F	O	
Hospital_Date	Date/Time	8	F	O	
Available_time	Date/Time	8	F	O	
Available_Date	Date/Time	8	F	O	

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<b>Data Item Name</b>	<b>Data Type</b>	<b>Length</b>	<b>F/V</b>	<b>M/O</b>	<b>Format</b>
TimeAtScene	Number	8	F	O	
TimeToHosp	Number	8	F	O	
TimeAtHosp	Number	8	F	O	
CommittedTime	Number	8	F	O	
Passed	Date/Time	8	F	O	
Alerted	Date/Time	8	F	O	
Mobile	Date/Time	8	F	O	
OnScene	Date/Time	8	F	O	
LeftScene	Date/Time	8	F	O	
AtHospital	Date/Time	8	F	O	

## Appendix 4 - Hants Social Services

### SQL

Data Item Name	Data Type	Length	F/V	M/O	Format
<b>MAIN ADDRESS</b>					
PSP_Address_1	Text	30	V	O	
PSP_Address_2	Text	30	V	O	
PSP_Address_3	Text	30	V	O	
PSP_Address_4	Text	30	V	O	
PSP_P_Code_1	Text	4	V	O	
PSP_P_Code_2	Text	3	V	O	
PSP_Phoneday	Text	12	V	O	
PSP_Phoneeve	Text	12	V	O	
PSP_Fax	Text	12	V	O	
<b>DATE OF BIRTH, GENDER AND ETHNICITY</b>					
PSP_DOB	Date	8	F	O	YYYYMMDD
PSP_Gender	Text	1	F	O	'F'/M'/
PSP_Ethnic_Descr	Text	30	V	O	
<b>CLIENT FLAG, OFFICE AND GROUP</b>					
PSP_CLFlag	Text	1	V	O	'O'/C'/P'
CLPSP_OffName	Text	30	V	O	
PSP_CLGroup_Desc	Text	30	V	O	
<b>LAST UPDATE</b>					
PSP_Last_Update	Date	8	F	O	YYYYMMDD
<b>CAUTION AND CONCERN FLAGS</b>					
PSP_CautionD	Text	1	F	O	'Y'/
PSP_ATRISKFLAG	Text	1	F	O	'Y'/
<b>DISABILITIES</b>					
PSP_Regdis_Desc	Text	30	V	O	
PSP_Regdis_Text	Text	1	F	O	'Y'/N'/
PSP_Regdis_Sta	Date	8	F	O	YYYYMMDD
PSP_Regdis2_Desc	Text	30	V	O	
PSP_Regdis2_Text	Text	1	F	O	'Y'/N'/
PSP_Regdis2_Sta	Date	8	F	O	YYYYMMDD
<b>LEGAL STATUS</b>					
PSP_Legal1_Desc	Text	50	V	O	
PSP_Legal1_Text	Text	1	V	O	'Y'/
PSP_Legal1_Sta	Date	8	F	O	YYYYMMDD
PSP_Legal2_Desc	Text	50	V	O	
PSP_Legal2_Text	Text	1	F	O	'Y'/
PSP_Legal2_Sta	Date	8	F	O	YYYYMMDD
<b>MAIN CARER</b>					
MCPSP_Title	Text	6	V	O	
MCPSP_Forename	Text	30	V	O	
MCPSP_SurName	Text	30	V	O	
MCPSP_Address_1	Text	30	V	O	
MCPSP_Address_2	Text	30	V	O	
MCPSP_Address_3	Text	30	V	O	
MCPSP_Address_4	Text	30	V	O	

Data Item Name	Data Type	Length	F/V	M/O	Format
MCPSP_P_Code_1	Text	4	V	O	
MCPSP_P_Code_2	Text	3	V	O	
MCPSP_PhoneDay	Text	12	V	O	
MCPSP_PhoneEve	Text	12	V	O	
<b>NEXT OF KIN</b>					
NKPSP_Title	Text	6	V	O	
NKPSP_Forename	Text	30	V	O	
NKPSP_SurName	Text	30	V	O	
NKPSP_Address_1	Text	30	V	O	
NKPSP_Address_2	Text	30	V	O	
NKPSP_Address_3	Text	30	V	O	
NKPSP_Address_4	Text	30	V	O	
NKPSP_P_Code_1	Text	4	V	O	
NKPSP_P_Code_2	Text	3	V	O	
NKPSP_PhoneDay	Text	12	V	O	
NKPSP_PhoneEve	Text	12	V	O	
<b>OTHER NAMES</b>					
PSP_AliasTitle_1	Text	6	V	O	
PSP_AliasFName_1	Text	30	V	O	
PSP_AliasSName_1	Text	30	V	O	
PSP_AliasTitle_2	Text	6	V	O	
PSP_AliasFName_2	Text	30	V	O	
PSP_AliasSName_2	Text	30	V	O	
PSP_AliasTitle_3	Text	6	V	O	
PSP_AliasFName_3	Text	30	V	O	
PSP_AliasSName_3	Text	30	V	O	
PSP_AliasTitle_4	Text	6	V	O	
PSP_AliasFName_4	Text	30	V	O	
PSP_AliasSName_4	Text	30	V	O	
PSP_AliasTitle_5	Text	6	V	O	
PSP_AliasFName_5	Text	30	V	O	
PSP_AliasSName_5	Text	30	V	O	
PSP_AliasTitle_6	Text	6	V	O	
PSP_AliasFName_6	Text	30	V	O	
PSP_AliasSName_6	Text	30	V	O	
PSP_AliasTitle_7	Text	6	V	O	
PSP_AliasFName_7	Text	30	V	O	
PSP_AliasSName_7	Text	30	V	O	
PSP_AliasTitle_8	Text	6	V	O	
PSP_AliasFName_8	Text	30	V	O	
PSP_AliasSName_8	Text	30	V	O	
PSP_AliasTitle_9	Text	6	V	O	
PSP_AliasFName_9	Text	30	V	O	
PSP_AliasSName_9	Text	30	V	O	
<b>CHILD PROTECTION FLAG</b>					
PSP_Regrisk	Text	1	F	O	'Y/'
<b>NON-RESIDENTIAL SERVICES</b>					
NRE_Service_Category	Text	30	V	M	'Domiciliary Care'/'Day Care'
NRE_Service_Type	Text	30	V	M	Specific Service

<b>Data Item Name</b>	<b>Data Type</b>	<b>Length</b>	<b>F/V</b>	<b>M/O</b>	<b>Format</b>
NRE_Supplier	Text	30	V	M	Supplier Name
NRE_Start_Date	Date	8	F	M	YYYYMMDD
NRE_End_Date	Date	8	F	M	YYYYMMDD
<b>RESIDENTIAL AND COMMUNITY PLACEMENTS</b>					
PLC_Service_Category	Text	30	V	M	'Residential'/ 'Community Placement'
PLC_Service_TYPE	Text	30	V	M	Specific Service
PLC_Supplier	Text	66	V	M	Supplier Name
PLC_Start_Date	Text	8	F	M	YYYYMMDD
PLC_End_Date	Text	8	F	O	YYYYMMDD

## Appendix 5 - NHS Direct

### Excel

Data Item Name	Data Type	Length	F/V	M/O	Format
Patient_ID	Number	7	V	M	
Interaction_ID	Number	7	V	M	
Date_of_Interaction	Date	8	F	O	
Patient_Name	Text		V	O	
Algorithm	Text		V	O	
Endpoint	Text		V	O	
Endpoint_Desc	Text		V	O	
Nurse_ID	Text		V	O	
Outcome_Pre	Text		V	O	
Birth_Date	Date	8	F	O	
Sex	Text	1	V	O	
Address	Text		V	O	
Address2	Text		V	O	
City	Text		V	O	
County	Text		V	O	
Postal_Code	Text	8	F	O	
Phone_No	Text		V	O	
X_Coord	Number	7.1	F	O	6 numerical characters, a decimal point and one decimal place
Y_Coord	Number	7.1	F	O	6 numerical characters, a decimal point and one decimal place
Match_LVL	Number	1	F	O	

Excel text field lengths are practically limitless therefore, unless a specific field format is implied, there is no field length shown.

The field Outcome\_Pre shows the intended action of the caller before the call took place.

Algorithm shows the complaint reported by care path based on Read 2 Coding. Mike Sadler needs to confirm coding system used.

Patient\_ID and Interaction\_ID are both system generated. Patient Histories can be built using other identifying data.

## Appendix 6 - Hospital Information System (HIS)

### Patient Type Legend

- P - Patient Demographic
- E - Accident and Emergency
- I - Inpatient/Daycase
- O - Outpatient
- T/C - Therapy/Community Patient
- W - Waiting List Information

Data Item Name	Data Type	Length	F/V	M/O	Pt Type	HIS Field Code
<b>PATIENT</b>						
NHS Number	Text	12	F	M	P	APB
Name	Text	30	V	O	P	AA&
Title	Text	4	V	O	P	AAM
Address Line 1	Text	30	V	O	P	AAH
Address Line 2	Text	30	V	O	P	AAI
Address Line 3	Text	30	V	O	P	AAJ
Address Line 4	Text	30	V	O	P	AAO
Sex	Text	1	V	O	P	AAB
Date of Birth	Date	8	F	O	P	AX3
Postcode	Text	8	F	O	P	AAK
Registered GP	Text	8	F	O	P	AFF
Registered GP Practice	Text	6	F	O	P	AF4
Telephone Number	Text	20	V	O	P	AAG
Deceased	Text	1	V	O	P	APL
Date of Death	Date	8	F	O	P	ANZ
<b>EMERGENCY</b>						
1 <sup>st</sup> Attendance Date	Date	8	F	O	E	A6K
Follow-up attendance date (unplanned)	Date	8	F	O	E	A7C
Follow-up attendance date (planned)	Date	8	F	O	E	A7M
1 <sup>st</sup> Attendance Arrival Time	Time	5	F	O	E	A6O
Follow-up arrival time (unplanned)	Time	5	F	O	E	A7D
Follow-up arrival time (planned)	Time	5	F	O	E	A7L
Mode of Arrival	Text	1	F	O	E	AFV
Attendance Category	Text	2	F	O	E	n/a
Referral Source	Text	1	F	O	E	AFP
Incident Date	Date	8	F	O	E	AMW

Data Item Name	Data Type	Length	F/V	M/O	Pt Type	HIS Field Code
A&E Cause	Text	35	V	O	E	A9Text
Referring GP	Text	8	F	O	E	A2I
Referring GP Practice	Text	6	F	O	E	A2K
Discharge Date	Date	8	F	O	E	A9C
Discharge Time	Time	5	F	O	E	A9B
Attendance Disposal	Text	2	F	O	E	A7V
Discharge Destination	Text	2	F	O	E	A2W
Triage Category	Text	1	F	O	E	ADD
Intervention Code	Text	10	F	O	E	???
Intervention	Text	10	F	O	E	???
<b>IN-PATIENT</b>						
Admission Date	Date	8	F	M	I	AEB
Admission Source	Text	2	F	O	I	A1R
Registered GP	Text	8	V	O	I	AFF
Consultant	Text	4	F	M	I	ABG
Specialty	Text	3	F	M	I	ABK
Ward	Text	6	F	M	I	AC&
Discharge Date	Date	8	F	M	I	ANF
Discharge Destination	Text	2	F	M	I	A2W
Primary Procedure Code	Text	6			I	ZA2
<b>OUT-PATIENT</b>						
Referral Source	Text	2			O	ABX
Mental Category	Text				O	A4G
Referral Date	Date	8			O	ABV
Referring GP	Text	8			O	A2I
Registered GP Practice	Text	8			O	AF4
Consultant	Text	4			O	ABG
Specialty	Text	3			O	N0&
Priority	Text				O	AE1
Intervention Date	Date	8			O	Z1A
Intervention Type	Text	1			O	Procedure
<b>THERAPIST/COMMUNITY</b>						
Therapy Profession	Text	1			T/C	
Acceptance Date	Date	8			T/C	Date Stamp
Accepting Lead Professional	Text	4			T/C	PDEza1
Care Aim Code	Text	4			T/C	PDS
Care Aim	Text	30			T/C	ZA4

Data Item Name	Data Type	Length	F/V	M/O	Pt Type	HIS Field Code
Discharge Date	Date Stamp	8			T/C	
Date Added to List	Date Stamp	8			W	
Urgency	Text	1			W	A0E
Specialty	Text	3			W	ABK
Consultant	Text	4			W	ABG
Proposed Procedure	Text	6			W	A09
Removal Date	Date	8			W	A4L
Removal Reason	Text	1			W	A3U

DRUG GIVEN MESSAGE				
No	Description	Size	Catcode	Comments
1	Drug name		PA	
2	Drug code	x(5)	PA	item Number of drug name
3	Dose		ZKA	from order
4	Route		ZF	from order
5	Schedule		W	from order
6	Actual route		ZNA	only on given if different from above
7	Actual dose		ZA	only on given if different from above
8	Actual time		ZIC	only on given if different from above
9	comments/reason		ZA	on both given and not given

LABORATORY MESSAGE				
No	Description	Size	Catcode	Comments
1	Specimen Number	x(6)	UTC	
2	Specimen date & time		UTB	date & time of collection
3	Test name		L	can be multiple tests per specimen
4	Result Name		L	can be multiple results per test
5	Result value		ZJ	
6	Result units		ZB	not present on text results
7	Result range		Z3	not present on test results

XRAY MESSAGE				
No	Description	Size	Catcode	Comments
1	Requisition Number	x(10)	UF	
2	order Number	x(5)		
3	Status date & time		UTB	
4	Test name		L	
5	Result text		ZJ	can be multiple results per test

## HES General Episode Record (Finished Consultant Episode)

Data Item Name	Data Type	Length	F/V	M/O	Format/HES ITEM
<b>PATIENT</b>					
Record Type	Number	2	F	M	
Organisation Code (Provider)	Text	5			PROCODE
Organisation Code (Commissioner)	Text	5			PURCODE
Sex	Number	1	F	O	SEX 0 Not known 1 Male 2 Female 9 Not specified
Marital Status*	Number	1	F	O	MARSTAT 1 Single 2 Married/Separated 3 Divorced 4 Widowed 8 <i>Not applicable, i.e. not a psychiatric episode</i> 9 Not known *Psychiatric patients only
Postcode (of usual address)	Text	8	F	O	HOMEADD
Birth Date	Date	8	F	O	DOB ccyymmdd
Ethnic Group	Text	2	F	O	ETHNOS 0 White 1 Black - Caribbean 2 Black - African 3 Black - Other 4 Indian 5 Pakistani 6 Bangladeshi 7 Chinese 8 Any other ethnic group 9 Not given
Start Date (Hospital Provider Spell)	Date	8	F	O	ACPSTAR ccyymmdd
Admission Method (Hospital Provider Spell)	Number	2	F	O	ADMIMETH
Source of Admission (Hospital Provider Spell)					ADMISORC
Decided To Admit Date	Number	8	F	O	ELECDATE
Category Of Patient	Number	2	F	O	CATEGORY
Duration of Elective Wait	Number	4	F	O	nnnn 0000 - 8887 in days 9998 Not applicable 9999 Not known: a validation error

Data Item Name	Data Type	Length	F/V	M/O	Format/HES ITEM
Start Date (Consultant/Midwife Episode)	Date	8	F	O	ACPSTAR ccyymmdd
Age At Start Of Episode	Number	3	V	O	
Speciality Function Code	Number	3			MAINSPEF
Consultant Speciality Function Code	Number	3			TRETSPEF
<b>PATIENT DIAGNOSIS</b>					
Primary (ICD-10)	Text	6			
Subsidiary (ICD-10)	Text	6			
First Secondary (ICD-10)	Text	6			
Second Secondary (ICD-10)	Text	6			
Third Secondary (ICD-10)	Text	6			
Fourth Secondary (ICD-10)	Text	6			
Fifth Secondary (ICD-10)	Text	6			
<b>PATIENT OPERATIVE PROCEDURE</b>					
Primary Operation (OPCS-4)					
Procedure Date	Date	8	F	O	OPERDATE
Second Operation (OPCS-4)					
Procedure Date	Date	8	F	O	OPERDATE
Third Operation (OPCS-4)					
Procedure Date	Date	8	F	O	OPERDATE
Fourth Operation (OPCS-4)					
Procedure Date	Date	8	F	O	OPERDATE
<b>PATIENT DISCHARGE</b>					
Episode Number	Number	2	F	O	EPIORDER nnnn = order number (01 - 87) 98 Not applicable 99 Not known: a validation error
Duration of Episode					
End Date (Consultant/Midwife Episode)	Date	8	F	O	EPIEND ccyymmdd
Discharge Date	Date	8	F	O	DISDATE ccyymmdd
Discharge Method	Number	1	F	O	DISMETH 1 Patient discharged on clinical advice or with clinical consent 2 Patient discharged him/herself

Data Item Name	Data Type	Length	F/V	M/O	Format/HES ITEM
					or was discharged by a relative or advocate 3 Patient discharged by mental health review tribunal, Home Secretary or court 4 Patient died 5 Stillbirth 8 <i>Not applicable</i> 9 <i>Not known: a validation error</i>
Discharge Destination	Number	2	F	O	DISDEST
Patient Classification	Number	1	F	O	CLASSPAT 1 Ordinary admission 2 Day case admission 3 Regular day admission 4 Regular night admission 5 Mother and baby using delivery facilities only 8 <i>Not applicable</i>
Neonatal Level Of Care	Number	1	F	M	NEOCARE
Psychiatric Patient Status	Number	1	F	O	ADMISTAT
Last Episode in Spell Indicator	Number	1	F	O	SPELEND
Administrative Category (on admission)	Number	2	F	O	ADMINCAT
Legal Status Classification Code (on admission)	Number	2	F	O	LEGLCAT
Referrer Code	Text	8			REFERRER
Intended Management	Number	1	F	O	INTMANIG
Hospital Provider Spell Number	Text	12	V	O	PROVSPNO
Ward Type At Start Of Episode	Number	7	V	O	WARDSTRT
Carer Support Indicator					
NHS Number	Number	10	F	M	NEWNHSNO
Local Patient Identifier	Text	2	F	O	CARERSI 01 Yes 02 No
Consultant Code	Text	8	V	O	CONSULT C9999998 Consultant code not known D9999998 Dentist code not known M9999998 Not applicable - Midwife
General Medical Practitioner (Code of Registered GP)	Text	8	F	O	REGGMP G9999998 GP code is unknown G9999981

Data Item Name	Data Type	Length	F/V	M/O	Format/HES ITEM
					No registered GP R9999981 No referring GP A9999998 MOD doctor refers P9999981 Prison doctor
Code Of GP Practice (Registered GP Practice)	Text	6	F	O	GPPRAC V81998 Practice code of MOD doctor V81998 No referring doctor, therefore no practice code V81999 Practice code is unknown
Site Code (Of Treatment) (at start of episode)	Text	5	F	O	SITETRET R9998 Not a hospital site

## Appendix 7 – Out of Hours System

Data Item Name	Data Type	Length	F/V	M/O	Format
<b>PATIENT</b>					
<b>Patient Table</b>					
Patient No.	Autokey		V	O	
First Name	Text	30	V	O	
Initials	Text	10	V	O	
Surname	Text	30	V	O	
Age	Integer	3	V	O	999
DOB	Date	8	F	O	YYYYMMDD
Surgery	Nullkey		V	O	
Doctor	Nullkey		V	O	
<b>Log Address Table</b>					
Address 1	Text	30	V	O	
Address 2	Text	30	V	O	
Address 3	Text	30	V	O	
Address 4	Text	30	V	O	
Post Code	Text	10	F	O	AA99 9AA
<b>Log Contact Table</b>					
Telephone	Text	30	V	O	
Area Code	Text	5	F	O	
Number	Text	15	F	O	
<b>PRACTICE</b>					
<b>Organisation Table</b>					
Practice ID	Mainkey		V	O	
Practice Name	Text	50	V	O	
<b>Address Table</b>					
Address 1	Text	30	V	O	
Address 2	Text	30	V	O	
Address 3	Text	30	V	O	
Address 4	Text	30	V	O	
Post Code	Text	10	F	O	
<b>Contact Table</b>					
Work Tel No.	Text	30	V	O	
<b>PRACTITIONER</b>					
<b>Employee</b>					
Practitioner ID	Mainkey		V	O	
First Name	Text	30	V	O	
Second Name	Text	30	V	O	
Surname	Text	30	V	O	
Title	Text	7	V	O	
<b>Address</b>					
Address 1	Text	30	V	O	
Address 2	Text	30	V	O	
Address 3	Text	30	V	O	
Address 4	Text	30	V	O	
Post Code	Text	10	F	O	
<b>Contact</b>					
Home Tel No	Text	30	V	O	
Work Tel No	Text	30	V	O	

Data Item Name	Data Type	Length	F/V	M/O	Format
Mobile	Text	30	V	O	
<b>PROBLEMS</b>					
<b>Coded Symptoms Table</b>					
Problem ID	Mainkey		V	O	
Problem Name	Text	30	V	O	
<b>CONSULTATION</b>					
<b>Patient Table</b>					
Cons Start	Date	8	F	O	
Cons Finish	Date	8	F	O	
Last Cons By (Practitioner ID)	Nullkey		V	O	
Diagnosis Code	Nullkey		V	O	
Diagnosis	Text	2048	V	O	
Symptoms	Text	2048	V	O	
Notes	Text	2048	V	O	
Remarks	Text	2048	V	O	

## Appendix 8 – System Functionality Catalogue

General Requirements	Provide an Emergency Care Electronic Health Record through a clinical workstation. Interface requirements will be dependent on existing and future systems. Communication with key modules/systems could be through a real-time interface or through regular updates.
Patient Master Index	Provide the functionality required to support the processes of creating a single patient master index as defined in section 4 including the facilities to provide NHS Numbers to feeder systems.
Database load	Provide a facility for the one-off load of historical patient clinical information from all feeder systems
Database update	Provide a facility to accept and load regular updates from feeder systems in the formats defined.
Patient Care Modules	Provide an on-line, interactive, modular system to provide information on patient care activities planned and delivered by a multi-disciplinary team of health professionals.
Patient Selection	Enable the authorised user to select the patient by available identifiers. (e.g. NHS No, Name, Date of Birth)
Episode Access	Enable access to all current, previous and future episodes of care
Patient History and Examination	Provide a template/screen to display the patient history and physical examination on admission.
Alerts Screen	Provide user customisable alerts screen (template), enabling capture of alerts details
Clinical Protocols	Support best practice by providing an on-line facility for displaying and printing clinical protocols.
Print Functions	To provide authorised clinicians with hard copy information at the destination of choice.
System Maintenance	Provide a facility for the systems administration team, or user with the appropriate authority/knowledge, to add/update the databases, tables and screens.
Security	Protect the privacy and confidentiality of patient information by assigning users appropriate security access on a 'need to know' basis.  Meet regulatory requirements as mandated by the Data Protection Act, Disability Discrimination Act, Venereal Diseases Regulations, Mental Health Act, etc.
Audit	From a clinician's perspective, ensure that clinical practice standards are aligned with audit requirements.  Provide a facility to monitor authorised access.

Patient Consent	Provide functionality to record and manage patient permissions for data sharing
Complex analysis	Provide facilities, probably through a standard package, to meet the requirements for analysis to support clinical governance.

## Appendix 9 – System Functionality Requirements

Function Requirement 1	GENERAL REQUIREMENTS	
Process	Task	Detail
Patient Administration		
Order Management/Results Reporting		
Diagnostic Systems (Pathology, Medical Imaging)		
Pharmacy		
Emergency Department		
Clinical Costing		
Ambulance Service		
Department of Health Systems		
Other Systems		
Provide practical and intuitive access features	Clinical Workstation (Graphical User Interface)	
	Input technology (mouse, lightpen, touch screen, barcode reader, voice recognition)	
	One action bridge to other systems depending on security level	
	User definable logical screen flow based on workflow / minimum number of screens	
	User customisable menu bar to inform user on available functionality and screen flows	

Function Requirement 1	GENERAL REQUIREMENTS	
Process	Task	Detail
	User customisable icons to depict available functionality	Colour Size help descriptions location on screen
	Option (e.g. icons, pull-down & pop-up menus, keyboard equivalent) on screens for each system that is interfaced to CCM to enable the user immediate and seamless access to authorised systems	
	Scroll up / down / left / right capability	
	Enable split screens to access more than one application/function	
	Easily customisable screen and field naming ability at no additional cost to users	

Function Requirement 1	GENERAL REQUIREMENTS	
Process	Task	Detail
	Confirm product growth path to new technology trends	voice recognition image scanning swipe cards wireless systems (inc. Paging link) hand held devices (e.g. Personal Digital Assistant) patient tracking within a hospital/ward/department/clinic etc. via barcode reader patient tracking within a hospital/department/clinic etc. via inbuilt sensors
	Ability to open unlimited number of windows independently of hardware requirements	

Function Requirement 2	PATIENT MASTER INDEX	
Process	Task	Detail
Create Patient Master Index	Key on NHS Number	
	Match feeder system records to imported records from Organisational Links download on the following fields (6 or more matching fields to designate perfect match)	Surname Forename Date of Birth Gender GP Name or Practice First Line of the address Postcode
	Populate matched feeder system records with NHS Number where this is absent	
	Re-examine unmatched records to determine matches to existing patient records. For example:	Produce report of records where less than 6 matched fields exist in order of number of matches  Return to record originator for confirmation of match to existing patient  Produce report of records where less than 6 matched fields exist in order of number of matches
Maintain Patient Master Index	Match feeder system records to imported records from Organisational Links on upload to EHR	Surname Forename Date of Birth Gender GP Name or Practice First Line of the address Postcode

Function Requirement 2	PATIENT MASTER INDEX	
Process	Task	Detail
	Populate matched feeder system records with NHS Number where this is absent	
	Re-examine unmatched records to determine matches to existing patient records	<p>Produce report of records where less than 6 matched fields exist in order of number of matches</p> <p>Return to record originator for confirmation of match to existing patient</p> <p>Where record is definitely unmatched, create new EHR patient record or reject</p>

Function Requirement 3	DATABASE LOAD	
Process	Task	Detail
Upload full record set from feeder systems	Organisational Links (PMI Check)	
	GP Systems	
	GP Out of Hours systems	
	WEHT HIS	
	Ambulance Trust	
	NHS Direct	
	Social Services	
Match records from feeder systems, as described in (2) above to create integrated EHR database		

Function Requirement 4	DATABASE UPDATE	
Process	Task	Detail
Create record upload schedule from feeder systems below		
Create differential upload of records from:	Organisational Links (PMI Check)	
	GP Systems	
	GP Out of Hours systems	
	WEHT HIS	
	Ambulance Trust	
	NHS Direct	
	Social Services	
Match records from feeder systems, as described in (2) above to maintain completeness and accuracy of EHR database		
Monitor integrity and performance of feeder systems during upload to ensure that service to users is maintained at acceptable levels	Create performance log and exception reports where performance varies from prescribed limits	

Function Requirement 5	PATIENT CARE MODULES	
Process	Task	Detail
Patient Care Modules must include:	Patient history	
	Patient physical examination/assessment	
	Diagnoses, Provisional and Confirmed	
	Discharge summaries	
	Drugs Given	
	Pathology Test Result	
	Radiology Test Result	

Function Requirement 6	PATIENT SELECTION	
Process	Task	Detail
Enable authorised users to select patient episode of care (present and past episodes of care clearly identified) using or more patient identifiers	Unique Patient Identifier	
	NHS Number	
	Episode Number	
	Patient surname (and part first name)	
	Alpha Search by part or full surname	
	Soundex (Phonetic Search)	
	Alias	
	Specialty / Specialist	
	Unit / Patient List	
	Operating List	
	Consultant / Consultant Team	
	Outpatient Clinic	
	Health / Medical / Community Centre	
	Specified date range on longitudinal record	
	Date of Birth	
	Gender	
	Age range	
	Admission Diagnosis	
	DRG	
	Read 2 Code	

Function Requirement 7	EPISODE ACCESS	
	Benefits:	
	Improved access to and legibility of current, past and future patient data.	
	Improved inter-disciplinary and peer to peer communication	
Process	Task	Detail
Enable authorised users to access current and all previous episodes of care using intuitive options to access the following functionality	Patient history/demographic data (PAS)	
	Care maps / Clinical Pathways	
	Integrated notes	general practitioners notes pre-admission notes admission notes progress notes Assessment
	Orders	
	Pathology/Radiology results	
	Discharge summary/encounter summary	
	Clinic/Health Centre/Home visit/Nursing Home attendance/visit	
	General practice	
Capture demographic data on the first screen of all patient care charts /documents with subsequent screens displaying detailed clinical information	Unique patient identifier	
	NHS Number	
	Surname	

Function Requirement 7	EPISODE ACCESS	
	Benefits:	
	Improved access to and legibility of current, past and future patient data.	
	Improved inter-disciplinary and peer to peer communication	
	First names	
	Age	
	Sex	
	Consultant	
	Attending doctor(s)	
	Ward/Community Health facility	
	Length of stay/expected date of discharge	
	Flag if the expected date of discharge falls on a weekend	
	Admission date	
	Allergies/Alerts	'not known' as the default selection of Yes/No/Not known  yes - drill down to menu of allergies customisable to institution  Operation date  Next of kin  Person for notification

Function Requirement 8	PATIENT HISTORY AND EXAMINATION	
Process	Task	Detail
Provide a flexible system that will encompass a number of methodologies for recording patient history and examination, e.g. Emergency Department Triage Screen		
Provide templates/screens for the clinician's assessment capturing demographic data as recorded in 2		
Provide user customisable screens (templates), enabling capture of clinical data using:	Check boxes (e.g. in system review template)	
	Pick lists	
	Pull down lists with standard phrases	
	Drill down technique (e.g. for capturing diagnosis)	
Clinical data to be captured includes:	History	
	Examination	
	Triage category (A&E)	
	Provisional, differential and other diagnoses	
	Treatment ordered	
Ability to generate a user customisable A&E Triage template		
Enable multidisciplinary history to be recorded on templates		
Ability to create a diagnosis hierarchy according to diagnostic certainty (i.e. diagnosis of coronary heart disease by cardiologist is of high certainty)		
Option to link diagnoses with one or more coding systems (e.g. Read 2)		
Capture the electronic signature and designation of the person recording the patient assessment		

Function Requirement 8	PATIENT HISTORY AND EXAMINATION	
Process	Task	Detail
Automatically capture system date and time when patient history is recorded/edited		
Enable results and orders (past or future) to be accessed from the patient history screen		
Enable orders to be generated from the patient history screen		
Ensure minimal number of screens for system review by providing optional template for detailed history if findings abnormal. e.g. lungs clear - no need to access respiratory history template.		
Provide the facility to update patient history and examination while maintaining the original entry		
Enable other doctor's history and examination to be recorded using a second template		
Provide the ability to track patient history and examination data		
Current encounter/episode		
Past encounter/episodes of care		
Capture the date, time, name and designation of the person entering and updating patient history and examination		
Enable the multidisciplinary integrated history to be displayed	By all disciplines chronologically  By selected discipline (e.g. doctor, nurse)	
Enable clinical pathways and clinical protocols to be accessed from patient assessment screens		
Provide the facility to access and review the past history from the longitudinal record by episode		

Function Requirement 8	PATIENT HISTORY AND EXAMINATION	
Process	Task	Detail
Provide the facility to drill down into each function of the episode of care, for example:	Orders	
	Results	
	Assessment	
	Clinical pathways/care plans	
	Discharge/Encounter summary	
	Outcomes	

<b>Function Requirement 9</b>	<b>ALERTS SCREEN</b>	
<b>Process</b>	<b>Task</b>	<b>Detail</b>
Provide user customisable alerts screen (template), enabling capture of alerts details, for example:	Alert type	
	Alert code	
	Date and time alert posted	
	Free text field for description of alert	
	Name or code of person recording alert	
	Previous alerts	
	Ability to print alerts on request	
	Alarm for special, user defined alerts	
	Ability to define mandatory responses to alerts	
	Ability to audit alert occurrences	

<b>Function Requirement 10</b>	<b>CLINICAL PROTOCOLS</b>	
<b>Process</b>	<b>Task</b>	<b>Detail</b>
Provide a template to design clinical protocols for an infinite number of specialties or treatments		
Provide a facility to link a clinical protocol to an order or clinical pathway		
Enable clinical protocols to be printed from any print destination		
Restrict updating of clinical protocols to system administration team or delegated person		
Display authorising specialty /specialist on clinical protocol		
Display name of authorising person on clinical protocol		
Display date of last update on clinical protocol		
Display expected outcome on clinical protocol		

Function Requirement 11	PRINT FUNCTIONS	
Process	Task	Detail
Customise printed forms and charts to the organisation's specifications		
Default the print destination to the unit/department specifications		
Provide a table for the user to select any alternate print destination, for example:	Patient's ward	
	Patient's ward and department	
	Department	
	Alternate ward location	
	Operating theatre	
	Consultant's office	
	GP's office	
	Community Health Centre	
Enable multiple print destinations to be selected from a table of print destinations		
Print barcodes on forms		
Print labels with user/health facility defined parameters (for example: demographics, barcode, ward, bed, location, order, reason for test, clinical data etc).		
Print patient charts and forms on demand		
Print policies, procedures, protocols and patient instructions on demand		
Enable a body map to be printed		
Enable forms to be printed with alternately selected fonts/colours		
Print worklists on demand		
Print patient charts and forms automatically		

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<b>Function Requirement 11</b>	<b>PRINT FUNCTIONS</b>	
<b>Process</b>	<b>Task</b>	<b>Detail</b>
Enable date to be specified for output to be printed		
Enable print schedule to be determined according to requirements		
Enable printers to be dedicated to labels or forms		
Enable tables, databases etc. to be printed on request		

Function Requirement 12	SYSTEM MAINTENANCE	
Process	Task	Detail
Tables	Maintain the system via a table-driven menu	
	Update tables on-line	
	Update related tables automatically when the primary table is updated	
	Ability to provide mapping for code table values to be mapped to a higher level code table value	
	Provide the facility to change code values if necessary	
Menus/Screen Display	Provide a facility to customise user menus/icons to display only the functions required by specific groups of users	
	Provide the facility to update user menu/icons functions as needs change	
Help Facility	Provide on-line Help facilities that are customisable to the institution	
	Intuitive access to field help that is context sensitive	
	Intuitive access to screen help	
	Customisable help fields	
	Provide key word search facility on help	

Function Requirement 12	SYSTEM MAINTENANCE	
Process	Task	Detail
	Provide Alpha search facility on help	
Templates/Screens	Provide a master menu to search for templates/screens	
	Enable default templates/screens to be determined	
	Enable template/screen layout to be determined by user organisation	
	Enable critical events to be highlighted on screen	
	Enable templates/screens to be added	
	Enable templates/screens to be removed from active use	
	Enable templates/screens to be updated without altering the original	
	Enable templates/screens to be copied and modified to save time creating a new template	
	Provide the facility to add fields	
	Provide code tables behind fields	
	Provide look up tables for templates	

Function Requirement 13	SECURITY	
Process	Task	Detail
Provide a multi-level security access system for various designations for the Security/Systems Administrator to create and edit:	Systems Administrator	
	Security Administrator	
	Management	
	Supervisor	
	Computer Operator	
	Clinicians (doctors, nurses, therapists, etc)	
	Health Information Manager	
	Clerical staff	
	General Practitioner	
	Community Health Agency	
Provide multiple levels of access to each functional module of the system that contains patient specific information, for example:	Patient history	
	Patient assessments	
	Care plans and clinical paths	
	Casemix data	
	Discharge summaries	
	Clinical reports	
	Other systems e.g. order entry, results reporting, PAS	
Enable system/security administrator to update fields in the user security profile. Fields may include, but are not limited to:	Designation	

Function Requirement 13	SECURITY	
Process	Task	Detail
	Division	
	Department	
	Employee number	
	Provider number (user)	
	Provider number (service)	
	Medical categories/group	
	Page number	
	e-mail	
Automatically populate user profile information from other relevant systems, for example: Human Resources and Patient Administration Systems		
Unique ID for all users of the system		
Password can be encrypted and suppressed from view		
System prompts user to change password within a timeframe that can be set according to hospital policy (e.g monthly)		
Message that violation of access suspends user after specified number of attempts		
Automatic logoff after a pre-determined period of inactivity which can be set according to the users requirements.		
Encrypt VIP/Security risk patients from view		
After the user has initially logged on at the beginning of the day, enable the user to logon with a short ID for subsequent occasions within that 24 hour timeframe.		
Quick logoff from system using icon/menu/keystroke		

Function Requirement 13	SECURITY	
Process	Task	Detail
Provide quick exit from system (patient emergency) using a function key/icon that saves data entry in progress (e.g. order)		
Enable read only access for specified users		
Provide access to other authorised systems (PAS, Clinic Scheduling, Diagnostic Systems) using icon/menu/keystroke (seamless interface)		

Function Requirement 14	AUDIT	
Process	Task	Detail
Provide a transaction audit trail that captures:	ID of person entering data	
	ID of person viewing data	
	Date of data entry	
	Time of data entry	
	Terminal ID and location where user was logged on	
	Print log with user and patient identification, date and time of access	
Provide exception report for security violations		
Provide optional reporting facility		
Enable exception report to print out automatically		

<b>Function Requirement 15</b>	<b>PATIENT CONSENT</b>	
<b>Process</b>	<b>Task</b>	<b>Detail</b>
Provide a means of managing patient consent for sharing clinical information between healthcare providers both within the same agency and between agencies.		

Function Requirement 16	COMPLEX ANALYSIS	
Process	Task	Detail
Provide standard reports that can be customised to individual organisations		
Enable selected reports to be run in real-time on request according to organisation's policy/environment		
Enable selected reports to be scheduled to run automatically according to organisation's policy/environment		
Provide a menu for selection of reports according to organisation's policy/environment		
Provide access to reports according to user security		
Enable Systems Administration team to determine on-line and batch reports		
Provide a flexible report writing facility to design ad hoc/SQL reports, for example:	Clinical indicators	
	Patient incident/accident reports by category, for example:	Falls medication errors unplanned return to OT
	Enable all reports to be viewed to screen with a scrolling facility	
	Optimise report performance to minimise adverse effects on system operation	
	Ability to export reports to other applications	