



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

**December 2000**

**Product T2**

**User Requirement Specification**

### AMENDMENT HISTORY

Version	Date Issued	Brief Summary of Change	Author
0.1	13/11/2000	Draft for comment	Philip Goldacre
0.2	14/11/2000	New Introduction	Martin Budden
0.3	21/11/2000	Stage Meeting Updates	Trina Loram
0.4	5/12/2000	General Revisions	Martin Budden
0.5	5/12/2000	General Revisions and updated information flow diagram	Philip Goldacre
1.0	7/12/00	Merged to one document and finishing	Martin Budden

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## 1 Introduction

As the Central Hampshire EHR development focuses on the support for 24 hour emergency health and social care a series of workshops and meetings to determine user requirements was undertaken with representatives from the following groups: (Appendix E – Interview List)

- Consultants
- GP's
- Senior Nurses
- Therapists
- Paramedics
- Social Services Staff

The main purpose of the 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 CHEHR will be created by extraction of specific data items from feeder Electronic Patient Records, held by the various organisations providing care to the individuals.

This User Requirement although a standalone document is complemented by the T3 Clinical Governance document and where possible documents should be read in conjunction.

The objectives of the User Requirement Specification are to:

1. Identify existing feeder systems
2. Identify the data items to be extracted from within these systems
3. Identify the data requirements for presentation from the EHR
4. Identify means of providing the data feeds in a timely and consistent manner whilst ensuring that these comply with National Data Standards.

The primary aim of the EHR is to have available 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 EPR's feeding into the EHR.

The EHR is considered a birth to death record and therefore no deletions or overriding of previous data items should normally occur. The source (which EPR) of data will need to be displayed and this raises issues in regards to conflicting information (eg which address should take precedence). This may also raise issues in relation to data protection and data security and all of these issues will be considered in further documents.

This user requirement will provide answers to and raise some questions in regard to the objectives. It will also provide Data Flow Diagrams (Appendix A), Logical Data Structure Diagrams (Appendix B) and Process Descriptions (Appendix C) to support these objectives.

Stage 2 of the project will translate the user requirement into the technical specification of the EHR and during this stage decisions will be made about

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architecture and interfaces taking into account the issues surrounding security, confidentiality and patient consent.

## 2 Project Boundaries

The need to define, agree and maintain the boundaries of the project are paramount to the ability to deliver the objectives of this demonstrator. To facilitate this the project team agreed the following as representative of emergency care:

1. Patient or carer initiated request for emergency use of GP, A&E, Social Services or NHS Direct. (This can be either direct or via the Ambulance.)
2. GP facilitated access to Inpatient unit (ICU, Ward) A&E or Social Services.
3. Social Service or CPN facilitated access to Mental Health or other acute systems.

The EHR will be available to practitioners within their normal place of work and it will also provide 24 hour support to GPs' Co-operatives, A&E, Ambulance Trust, NHS Direct and Social Services Central Hampshire covering the Winchester, Andover and Eastleigh areas in the following circumstances:

1. When treating a patient at their home, place of work, roadside, etc.
2. When the patient is not known to them.

This is a demonstrator project with very tight deadlines. To ensure the deadlines are met, outputs will be standardised wherever possible. For the longer term feedback loops to update individual EPRs might be desirable but it is unlikely that these will be possible within the timescales.

## 3 Strategic Requirements

### 3.1 Limited functionality

The Electronic Health Record will not be replacing any existing functionality in any of the feeder systems. Whilst there might be arguments for reviewing this decision after the demonstrator has finished, for the time being the Electronic Health Record will offer additional information to clinicians to supplement existing information sources.

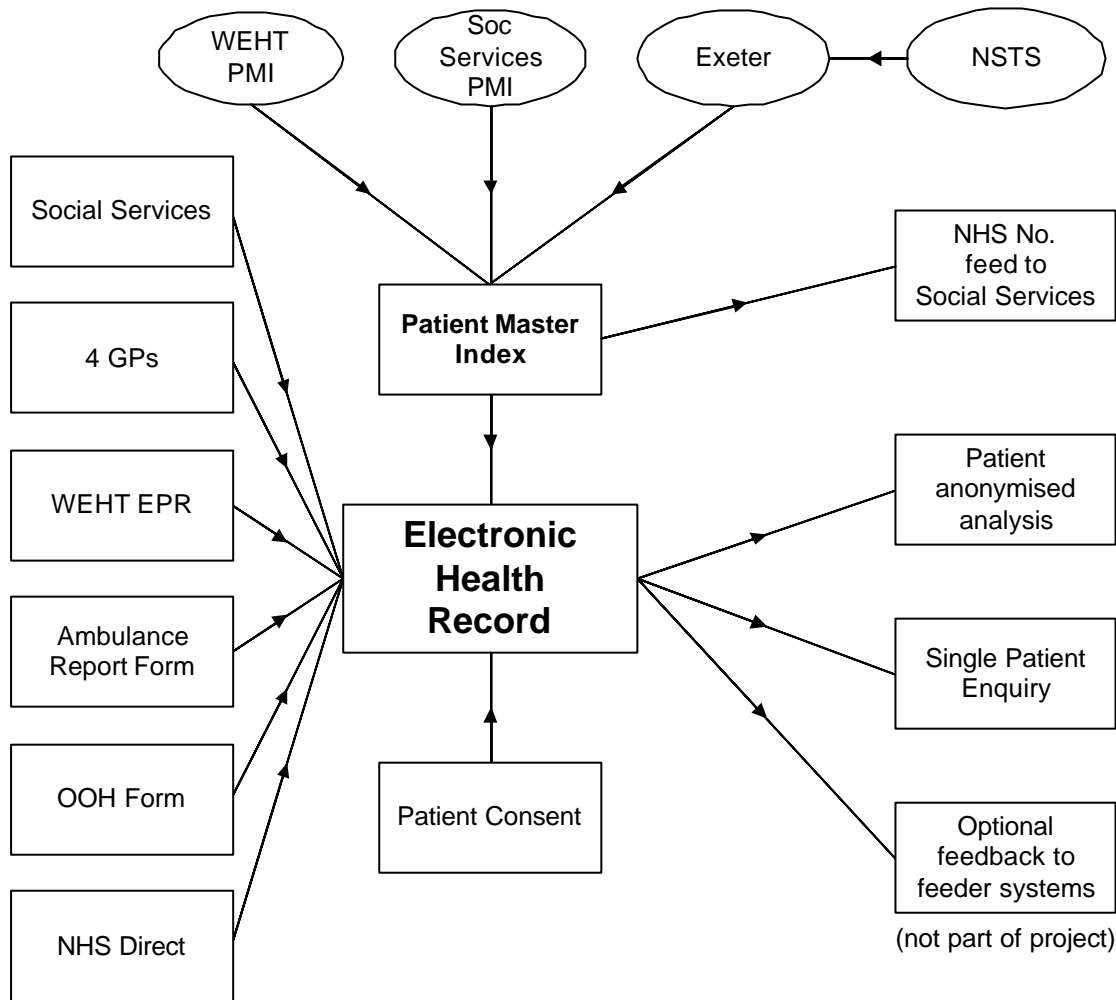
### 3.2 NHS Standards

It is intended that the CHEHR system will comply with NHS Standards, in particular those regarding:

- Security and Confidentiality
- Patient Consent
- Data Protection
- Data Sharing
- Performance Requirements, e.g. resilience, response times, etc.

### 3.3 Data 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. The investigation into the technical specification in Stage 2 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. However the EHR might enable new information flows to be created. This will be explored in Stage 2.

### 3.4 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.

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### **3.5 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.

### **3.6 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.

### **3.7 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.

### **3.8 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.

### **3.9 Volumetrics**

This demonstrator covers a potential population of 225,000. Whilst attention will focus particularly on the catchments of four GP practices, to avoid undue frustrating problems not being able to be found on the system, Electronic Patient Record information for the full 225,000 will be loaded. There might be issue about available time for improving data quality and reconciling patient identifiers. If this becomes the case efforts will be focussed on the pilot four areas so that the demonstrator can proceed. That relates particularly to a population of approximately 46,000.

More detail about the size of individual extracts and therefore about the overall size of the database will be presented during Stage 2 of the Project.

### 3.10 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.

### 3.11 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.

## 4 Information Requirements

### 4.1 Existing Information (Feeder) Systems

There are a number of computerised and paper information systems already existing within the various agencies (Healthcare Trust, GPs, Social Services, Ambulance Trust and NHS Direct) which are involved in the pilot Electronic Health Record and these are detailed below:

System Name	Agency/Department
Access PHA (other NHS Direct suppliers use Centromax & TAS)	NHS Direct. Due to be replaced Mid-June 2001 by AXA Clinical Assessment System common to all NHS Direct centres. Provides triage facilities for calls from public.
ACMS2	Hants CC. Assessment and Care Management System Social Services system.
Ambulance Command and Control	Fortek Medic v1.10. This is the most comprehensive and up-to-date computerised Ambulance Command and Control system in the UK. System live date Mar 2000. Includes Calling Line ID (CLID) with confirmation of address, text transmission to mobile units, Geographical Information System (GIS) and incident tracking and monitoring software.
Casemix	WEHT – management information system delivering reports on anonymised data derived from HIS.
ClinicPro	WEHT – records GUM information. Not connected to HIS. Required to be standalone after implementation of CHEHR (Act of Parliament)



System Name	Agency/Department
Datagate	WEHT – means of interfacing HIS with other applications, especially Casemix.
EMIS, In Practice	Systems used to record and manage clinical information within GP practices.  EMIS used in Stockbridge, Stokewood and Watercress practices, In Practice used in Charlton Hill practice.
Hospital Information System (HIS)	WEHT – hospital-wide operational information system.
Medical Imaging System	WEHT – computerised system for storing and transmitting medical images of all kinds, X-ray plates, endoscopies, MRI images, DECS retinography, etc to relevant specialists. Not connected to HIS.
Pathology System	WEHT - Standalone System which records results of test carried out by laboratory staff.  Result input currently duplicated to HIS to enable transmission to GPs, etc.

#### 4.2 Data Items Needed

From these systems the data items available for extraction to the EHR are as follows:

Source	Data Items														
Ambulance	<table border="0"> <tr> <td><b>Demographic Information</b></td> <td><b>History</b></td> </tr> <tr> <td>NHS Number</td> <td>Contacts (times/dates)</td> </tr> <tr> <td>Name</td> <td>Problem lists</td> </tr> <tr> <td>Alias/es</td> <td>Diagnoses</td> </tr> <tr> <td>Address</td> <td>Treatments (including drugs)</td> </tr> <tr> <td>Date of Birth</td> <td></td> </tr> <tr> <td>Gender etc</td> <td></td> </tr> </table>	<b>Demographic Information</b>	<b>History</b>	NHS Number	Contacts (times/dates)	Name	Problem lists	Alias/es	Diagnoses	Address	Treatments (including drugs)	Date of Birth		Gender etc	
<b>Demographic Information</b>	<b>History</b>														
NHS Number	Contacts (times/dates)														
Name	Problem lists														
Alias/es	Diagnoses														
Address	Treatments (including drugs)														
Date of Birth															
Gender etc															

Source	Data Items	
Social Services	<p><b>Demographic Information</b></p> <p>Name                      Alias/es                      Address                      Date of Birth                      Gender                      Office of Registration                      Main Carer Contact Details                      Next of Kin Contact Details</p>	<p><b>History</b></p> <p>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</p>
Out-of-Hours Co-operative	<p><b>Demographic Information</b></p> <p>NHS Number                      Name                      Alias/es                      Address                      Date of Birth                      Gender, etc</p>	<p><b>History</b></p> <p>Contacts (times/dates)                      Problem lists                      Diagnoses                      Treatments (including drugs)</p>
GP systems	<p><b>Demographic Information</b></p> <p>NHS Number (System Key)                      Name                      Alias/es                      Address                      Date of Birth                      Date of Death                      Gender, etc</p> <p><b>History</b></p> <p>Dates of visits                      Practitioner Name                      Confirmed diagnoses                      Blood Group<sup>1</sup>                      Intervention details                      Outcome details, etc.</p> <p><b>Medication</b></p> <p>Practitioner Name                      Prescription Date                      Medication Name                      Medication Dosage, etc                      Date Prescription supplied</p>	<p><b>Allergies/Alerts</b></p> <p>Name of Allergen                      Reaction to Allergen                      Medication Required                      Name of Confirming Practitioner                      Previous Alerts</p> <p><b>Other</b></p> <p>Referrals (including letters)</p>

<sup>1</sup> The need to capture this information may be unnecessary due to cross-matching

Source	Data Items	
WEHT  Hospital/ community systems (including medical imaging, laboratory, clinical systems, (endoscopy, diabetes, rheumatology, colorectal cancer, maternity, breast cancer, ICU) networked word processors	<p><b>Demographic Information</b>                      NHS Number (System Key)                      Name                      Alias/es                      Address                      Date of Birth                      Date of Death                      Gender, etc</p> <p><b>History</b>                      Dates of visits                      Practitioner Name                      Confirmed diagnoses                      Blood Group                      Intervention details                      Outcome details, 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</p> <p>Results of Test                      Date Result Sent                      Date Result Received</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>
NHS Direct	<p><b>Demographic Information</b>                      NHS Number (System Key)                      Name                      Alias                      Address                      Date of Birth, etc</p>	<p><b>History</b>                      Contacts (times/dates)                      Problem lists                      Advice given                      Agency referred to</p>

### 4.3 EHR Information

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

<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>
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<b>Clinical Record</b>	<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, 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>
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#### 4.4 Information required by users of the EHR

Following the interviews the information required from the EHR to each of the agencies is shown below. This identifies the business process/function and the agencies requiring access, this is further described in Appendix D – Process Descriptions.

These will be interpreted in Stage 2 as the definitions of restricted views of the information held in the Electronic Health Record. That is, whilst there will be a great deal of information held, and there will be standardised methods of presentation, the information actually displayed might be restricted to only the information needed. This restriction might in turn be controlled by the patient consent to sharing information.

PROCESS/ REQUIREMENT	Ambulance Command & Control	Social Services	Out of Hours GP	GP Systems	A&E	WEHT Trust Departments	NHS Direct	Paramedic	Community Nurses	OT/Physios
View Tests Ordered			?	?	?	?			?	
View Test Results			?	?	?	?	?		?	?
Access to Pharmacy Records			?	?	?	?	?		?	
Allergy Information	?	?	?	?	?	?		?	?	?
DNR Information			?	?	?	?		?	?	?
GUM Contact		?	?	?	?	?			?	?
Mental Health Contact	?	?	?	?	?	?	?	?	?	?
Social Services Contact	?	?	?	?	?	?			?	?
Past Medical History	?	?	?	?	?	?	?	?	?	?
Current Medication	?	?	?	?	?	?		?	?	?
Access to Social Service Records	?	?	?	?	?	?	?	?	?	?
View Appointment Booking		?	?	?	?	?			?	?
Waiting List Management				?	?	?				
Mobile Access to Information		?	?	?				?	?	?
Access to Paramedic Records	?		?	?	?	?		?	?	?

## 5 Output Requirements

The three types of data views are required in support of the primary and secondary aims of the EHR, that is to provide patient/client specific data available at time of treatment for emergency care and patient anonymised data for analysis and clinical governance requirements.

### 5.1 Patient Specific Outputs

It is intended that 'relevant views' will be accessed by practitioners and others 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 comprehensively 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, eg 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.

## 5.2 Anonymised Analysis

This form of output will be required initially to support the analysis for Clinical Governance. However, later, outside the scope of this project, additional analyses might be required to support other forms of clinical and management information.

This analysis will require the facilities of a sophisticated data analysis package. The types of enquiry and presentation required are expanded in Product T3.

## 5.3 Feedback to existing EPRs

There is the possibility for the Electronic Health Record to feed information back to the feeder EPRs and this is particularly important in the case of Social Services if they are to receive details of the NHS number. At the moment this form of output is likely to be very limited, possibly just identifying that a person is known to other agencies. However this will be reviewed in Stage 2.

This could be a facility that will prove useful in the period before the Electronic Health Record is fully operational and accessible for all relevant local care professionals.

# 6 Outline EHR Processes

## 6.1 Patient Master Index Management

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.

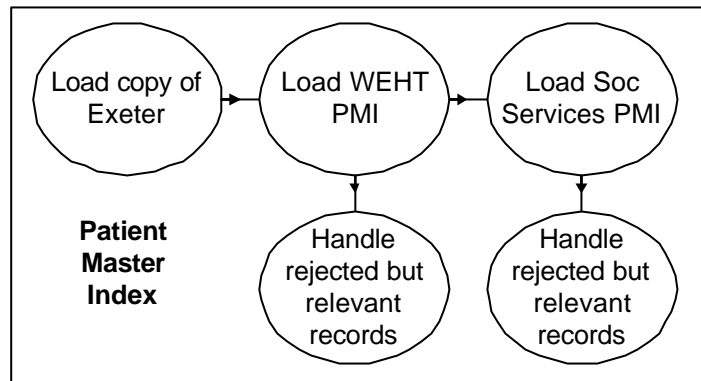
Therefore, it is important that management of the PMI enables as much automatic error correction as possible with the appropriate system checks in place for individual data validation between those systems feeding into the PMI. (See Diagram below)

Populating the PMI is expected to start with a copy of the registration data in the Exeter System. The patient identification data from WEHT and Social Services will then be loaded and compared.

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

1. Only residents of the three PCG areas will be loaded (based on postcode)
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.

## 6.2 Data Uploads

For emergency care updates from feeder systems will need to be timely, ideally at the time of updating the Electronic Patient Record or shortly afterwards. For reasons of practicality this might need to be interpreted as a regular update of changes at a fixed, frequent time interval.

In principle, the Electronic Health Record will not be validating records. It is assumed that the records will have been validated in the feeder systems. However there will be process to deal with the patient identifiers, particularly where the NHS Number is not passed across and therefore it will be necessary that all feeder systems include an attribute to hold the NHS number. Cross reference tables will be created as part of the PMI to allow these records to be attached to the appropriate Electronic Health Record.

Only data for patients positively identified within the PMI will be accepted and loaded.

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The format will need to be determined at Stage 2. For the moment the project will look to the simplest, most expeditious method of transferring information. Where possible this will mean tapping into existing data flows rather than creating new ones. The emerging standard for transferring information, XML, will be used where this is practical although within the timescales of this project other solutions might be more appropriate.

### **6.3 Database Management**

General purpose facilities will be required to manage the integrity of the database. Whilst generally information will be accumulated, there will need to be facilities to remove/change erroneous information and, possibly to summarise or remove information that is out of date or no longer relevant.

There is a possibility that physically we may end up with two databases for reasons of performance, system access and security. The management of which is to be further investigated in Phase 2.

### **6.4 Single Patient Database Enquiry**

Access to a patient's clinical record will only be allowed following a robust process to deal with access authority, patient consent and patient identification.

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.

The initial display of the patient record is likely to be of agreed key data items or flags for each of the main areas of data item.

Facilities will then be available to "scroll" down through the information in each area to display the underlying records.

Initially, it is not anticipated that this display mechanism will offer any sophisticated cross-referencing facilities.

### **6.5 Data Quality Review**

Prior to the initial population of the EHR, data cleansing operations should be undertaken on the local feeder systems to ensure that the interface between them and the EHR will work efficiently.

### **6.6 Patient Consent Management**

The Data Protection Act and GMC Guidelines require that patients' permission is obtained to share clinical information with other practitioners each time they consult with a clinician. Clinical information may only be shared if the patient has given express permission orally, in writing or by some other practical means if these methods are not suitable for the patient.



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There are currently two exceptions to this rule:

1. Where a patient's condition is life-threatening, either to him/herself or others.
2. Where a patient is incapable of granting permission, either because of age or impairment, and the clinician judges that it is necessary to share information – there are special conditions covering this.

To meet these requirements first thoughts are that this might be achieved by having a 'Patient Consent' check box on each record in the local EPR's which would have a default of 'No' (off). This would have to be checked 'Yes' (on) to move into the EHR. Database auditing functionality would ensure an audit trail exists to identify those people checking the click box.

This outline summarises the current national guidance, "The Protection And Use of Patient Information, Guidance from the Department of Health", available at [www.doh.gov.uk/confiden/pguide.htm](http://www.doh.gov.uk/confiden/pguide.htm) and "Confidentiality: Protecting and Providing Information" June 2000, available at [www.gmc-uk.org/n\\_hance/good/secret.htm](http://www.gmc-uk.org/n_hance/good/secret.htm).

It is acknowledged however, that this is a complex issue and therefore will be more formally covered in the Security and Confidentiality Policy (T8) and the Information Sharing Policy (T9) documents.

## 6.7 Data Audit

Again this will be covered comprehensively in subsequent documentation, however the system should provide the facility to monitor authorised access which provides a transaction audit trail that captures:

- ID of person entering data
- ID of person viewing data
- Date of entry
- Time of entry
- Terminal ID and location of where user was logged on
- Print log with user and patient identification, date and time of access
- Provide exception reports for security violations

## 7 Conclusion

As identified in the scope of this document the objectives of the User Requirement Specification were to:

1. Identify existing feeder systems
2. Identify the data items to be extracted from within these systems
3. Identify the data requirements for presentation from the EHR
4. Identify means of providing the data feeds in a timely and consistent manner whilst ensuring that these comply with National Data Standards.

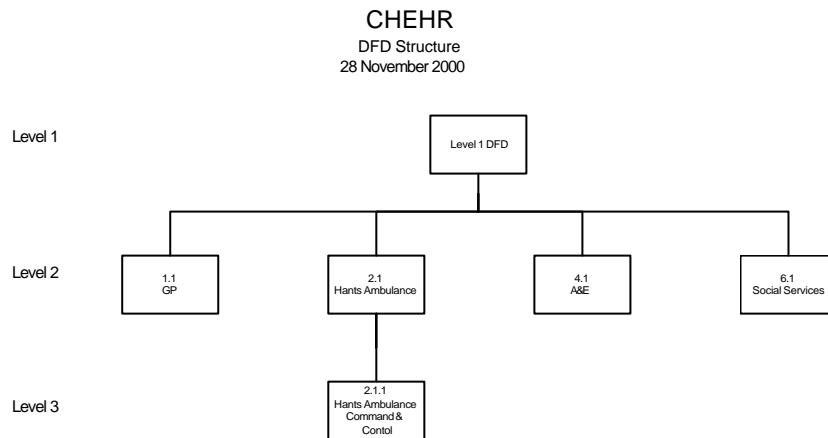
This document whilst meeting these objectives has also raised issues which will be investigated further and answered in subsequent documentation.

## Appendix A – Data Flow Diagrams

Data Flow Diagrams (DFDs) are a means of showing graphically how information enters a business, function or system and how it is processed, stored and output from that system. The view of each DFD is “top down” and each process (see below) may, where necessary be expanded upon (or, technically, “decomposed”) by another DFD.

A collection of DFDs is called a set and each successive diagram decomposes the process it relates to in a diagram at the previous level. It is unusual for a DFD set to require decomposition of processes beyond level 3.

The arrangement of DFDs in this set is shown below:

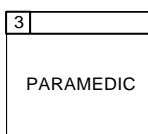


Symbols used in DFDs are as follows:



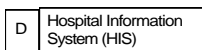
### Source/Destination

An entity outside the system or process being described to which or from which information passes.



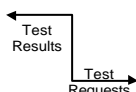
### Process

A position or process within the system or process where information is collected, modified, arranged, stored or communicated to another process or source.



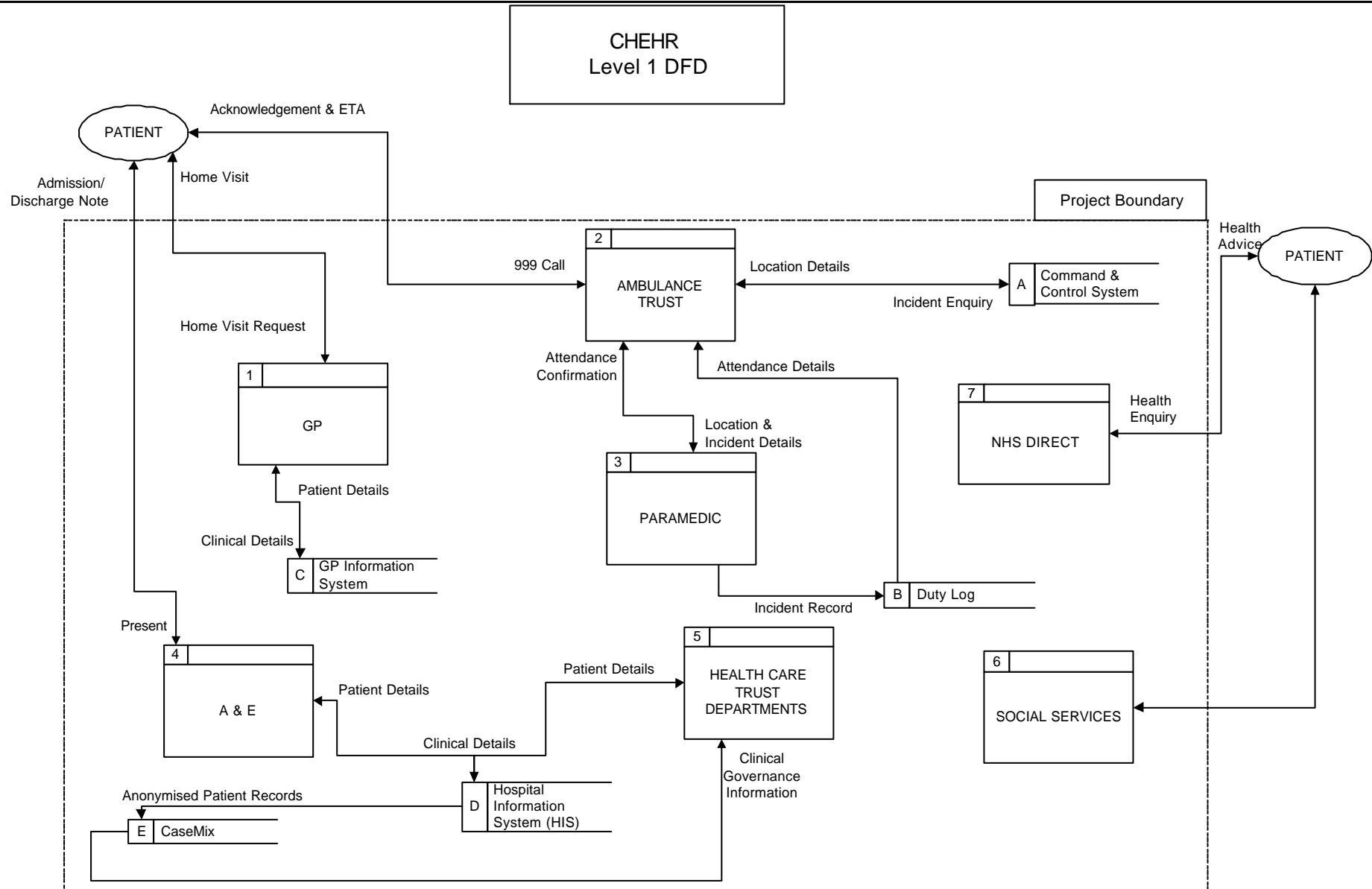
### Data Store

A file, for system of files where information is stored within a system or process for later reference, communication or reporting.

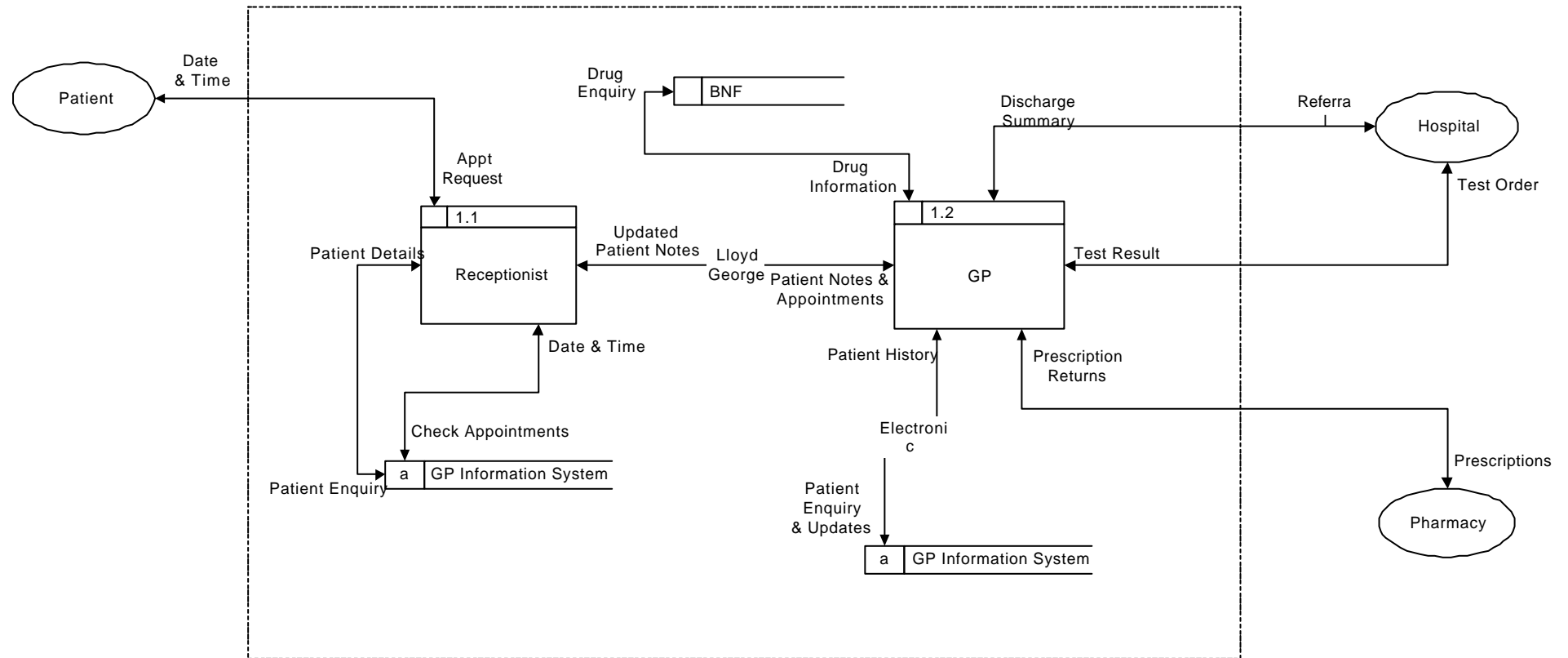


### Data Flow

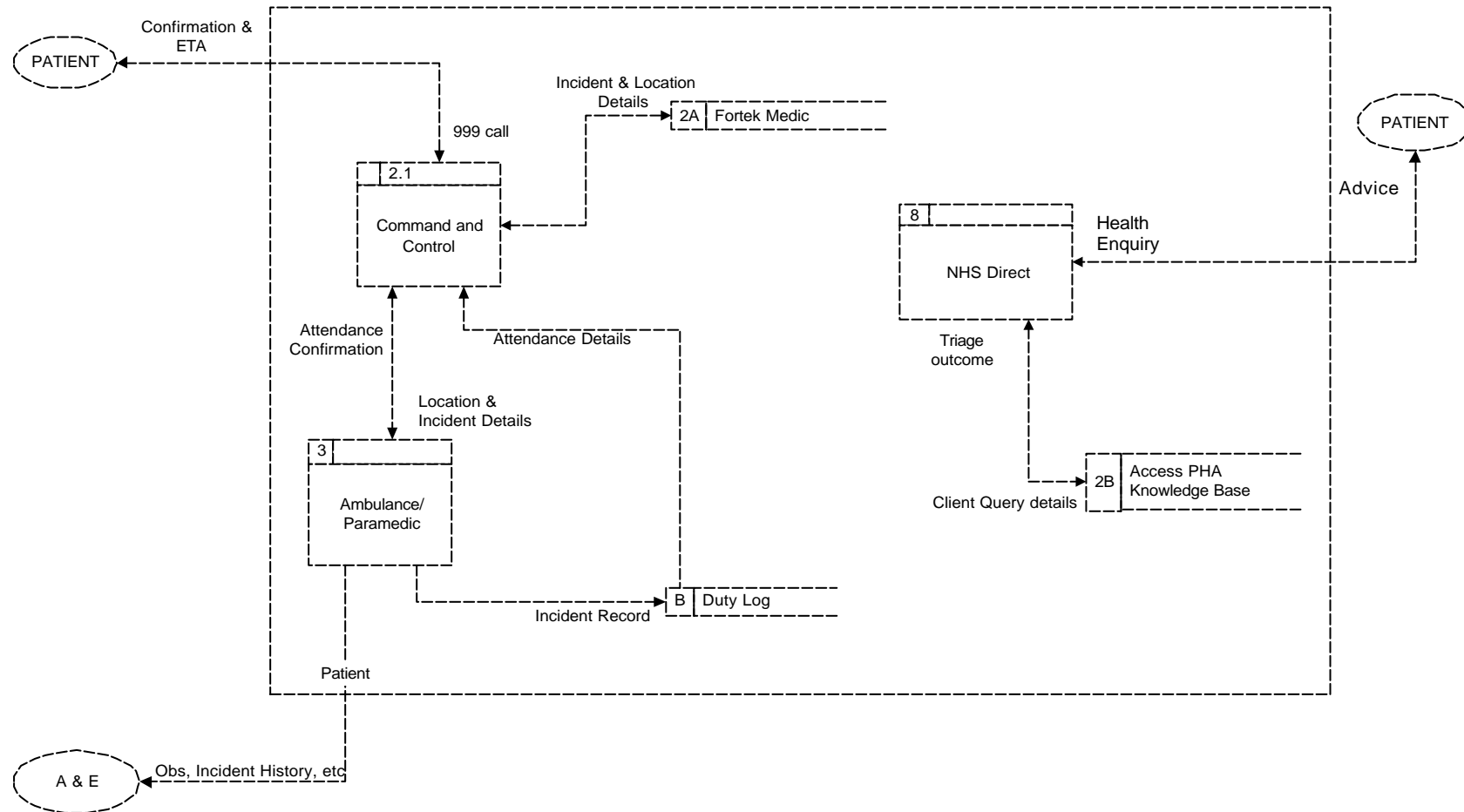
This shows the information which is transferred between sources, processes or data stores. The label closest to the arrowhead describes the information flowing in the direction of that arrowhead. Here, “test requests” flow to the right, “test results” flow to the left.



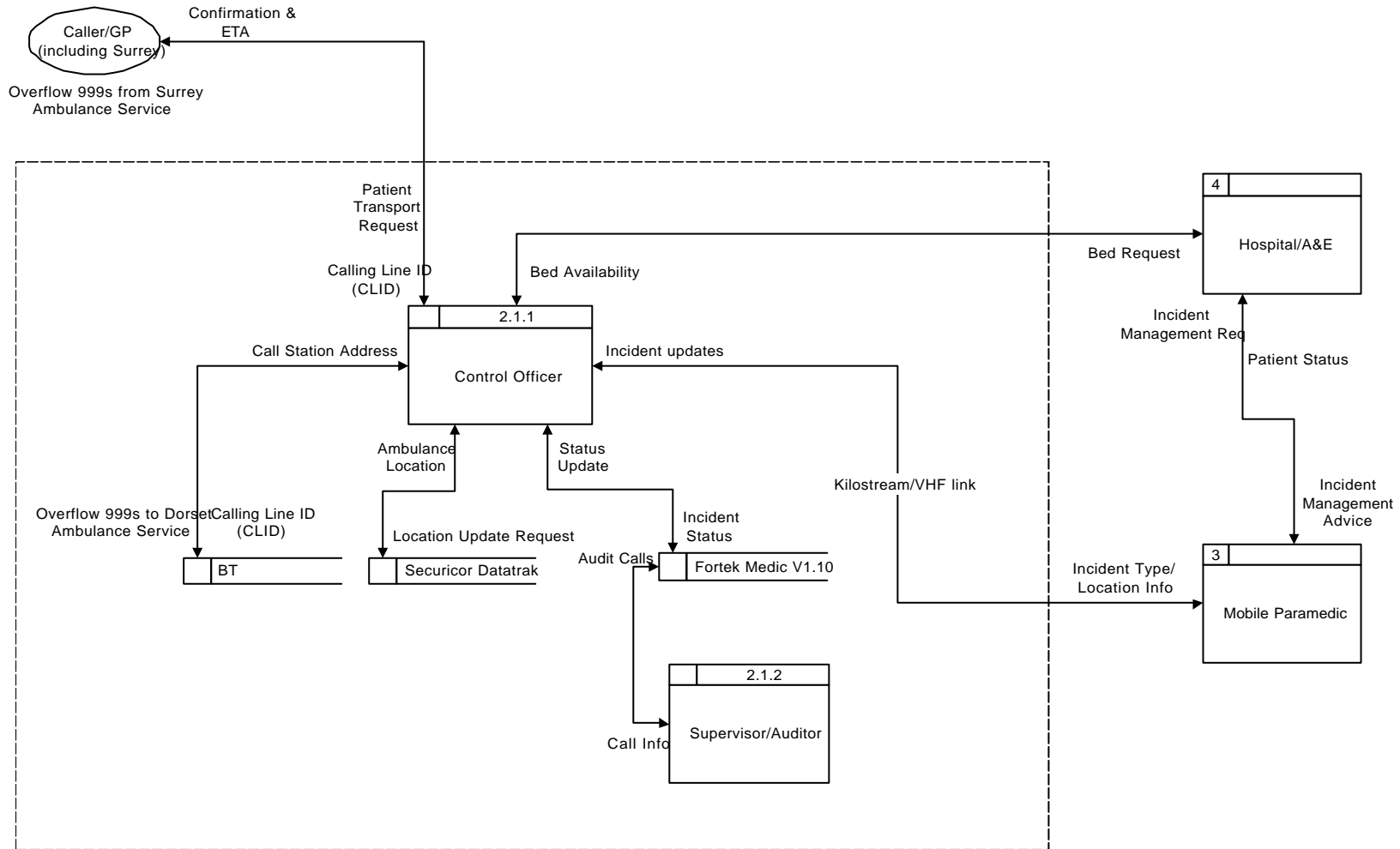
CHEHR  
 Level 2 DFD  
 1.1 GP

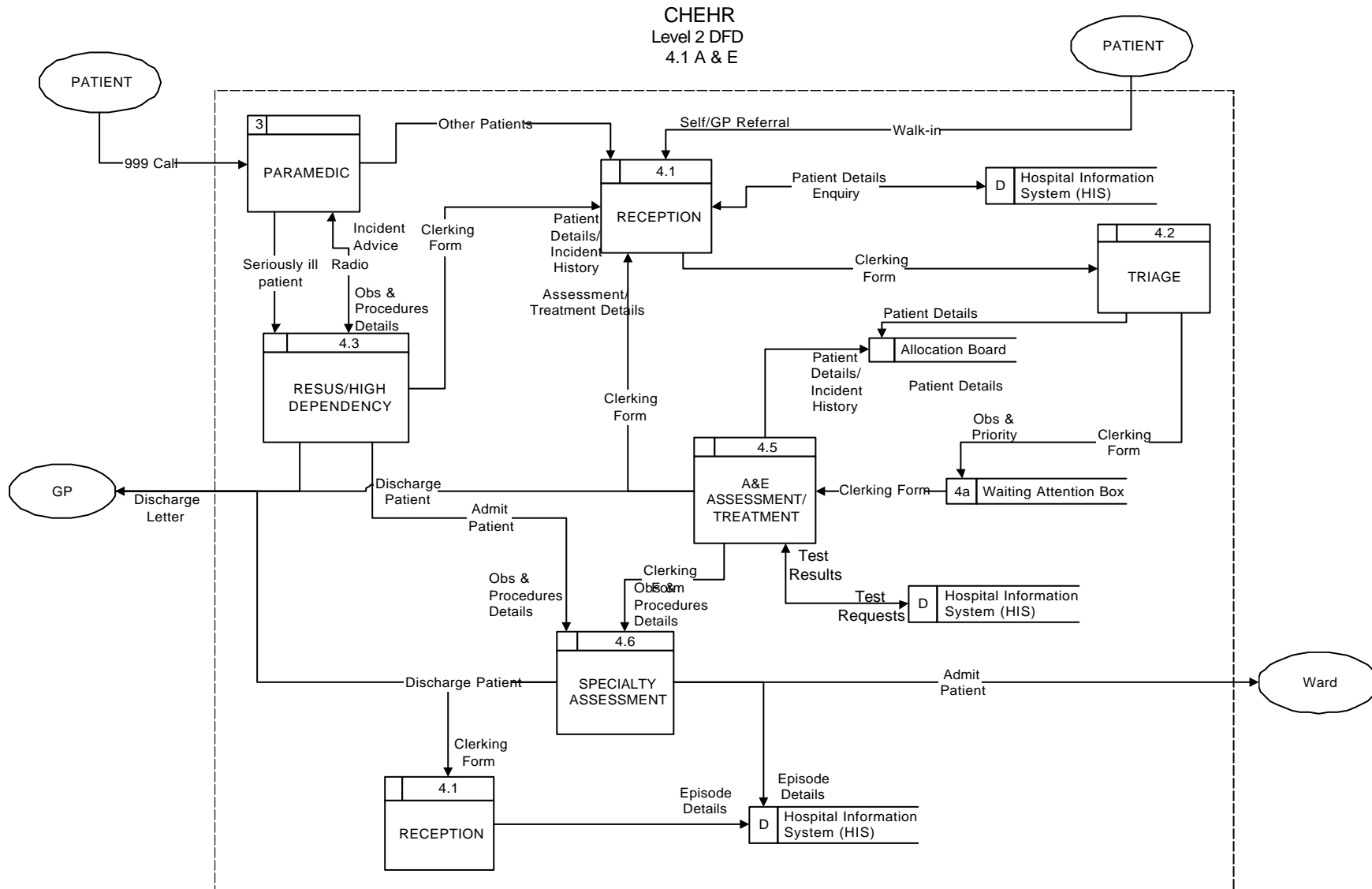


CHEHR  
 Hampshire Ambulance Service Trust  
 Level 2 DFD 2.1

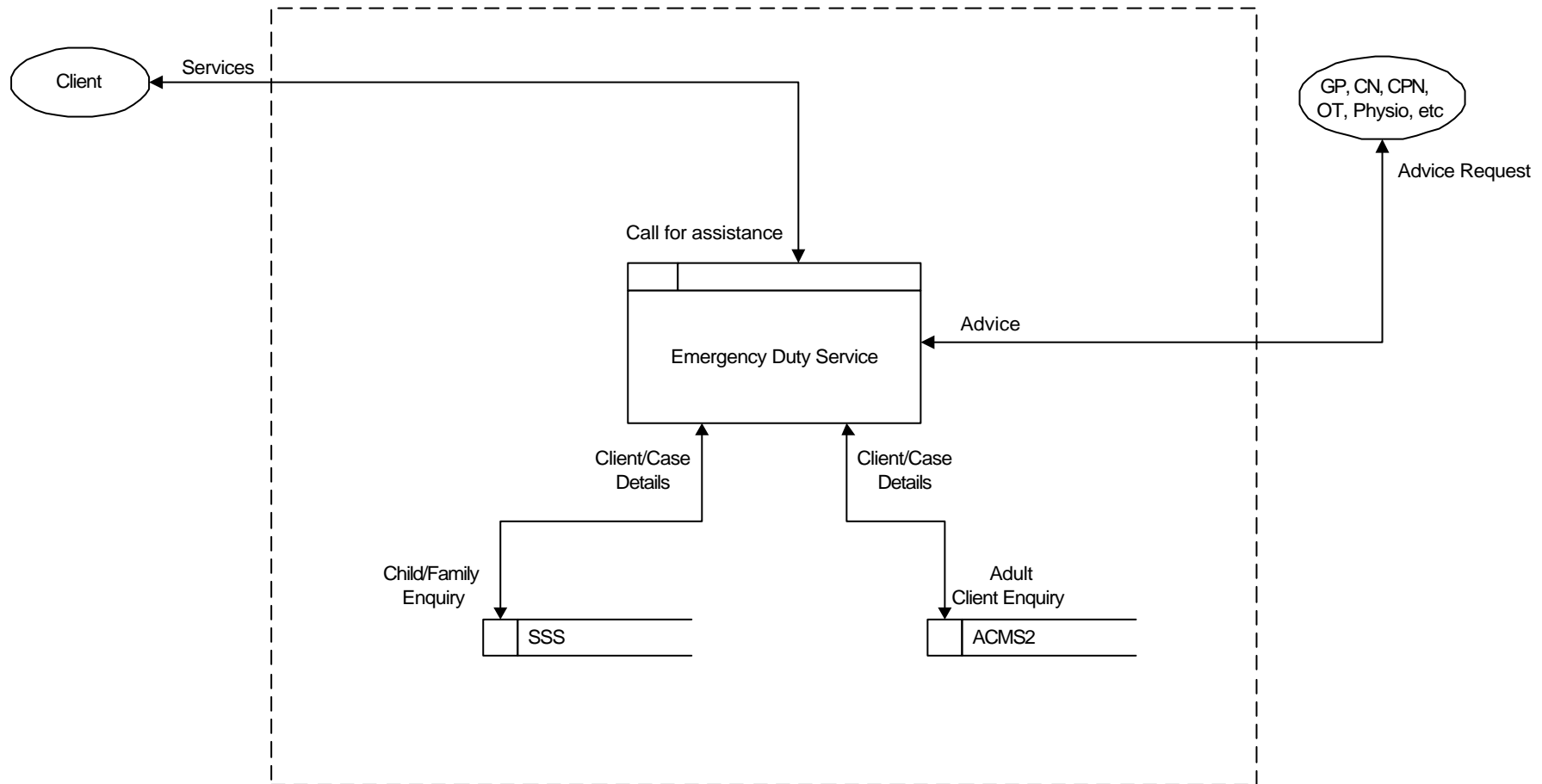


CHEHR  
 Hampshire Ambulance Service Trust  
 Command & Control  
 Level 3 DFD 2.1.1





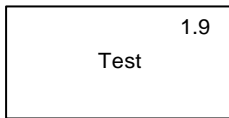
CHEHR  
Level 2 DFD  
7.1 Social Services





## Appendix B – Logical Data Structure

A Logical Data Structure shows the entities in which data are stored and the relationships between them.



### Entity

Shows the entity reference and the entity name. Entities are physical or logical things about which the system being mapped needs to store information. Each entity contains data items which will be documented in the Data Item List.

### Relationship

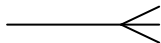
Shows the type of relationship each entity has with the other entities around it.

Relationships which can occur are:



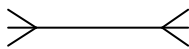
#### One-to-one

Quite rare, but a good example is that a person may have only one Next of Kin at any time



#### One-to-many

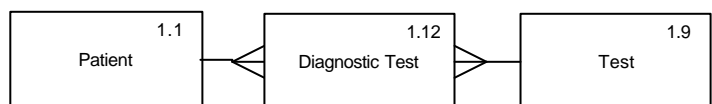
The most common. This symbol shows a relationship where there is one occurrence of one entity and many occurrences of another entity, shown by the "crow's foot", e.g. one patient has many social service records.

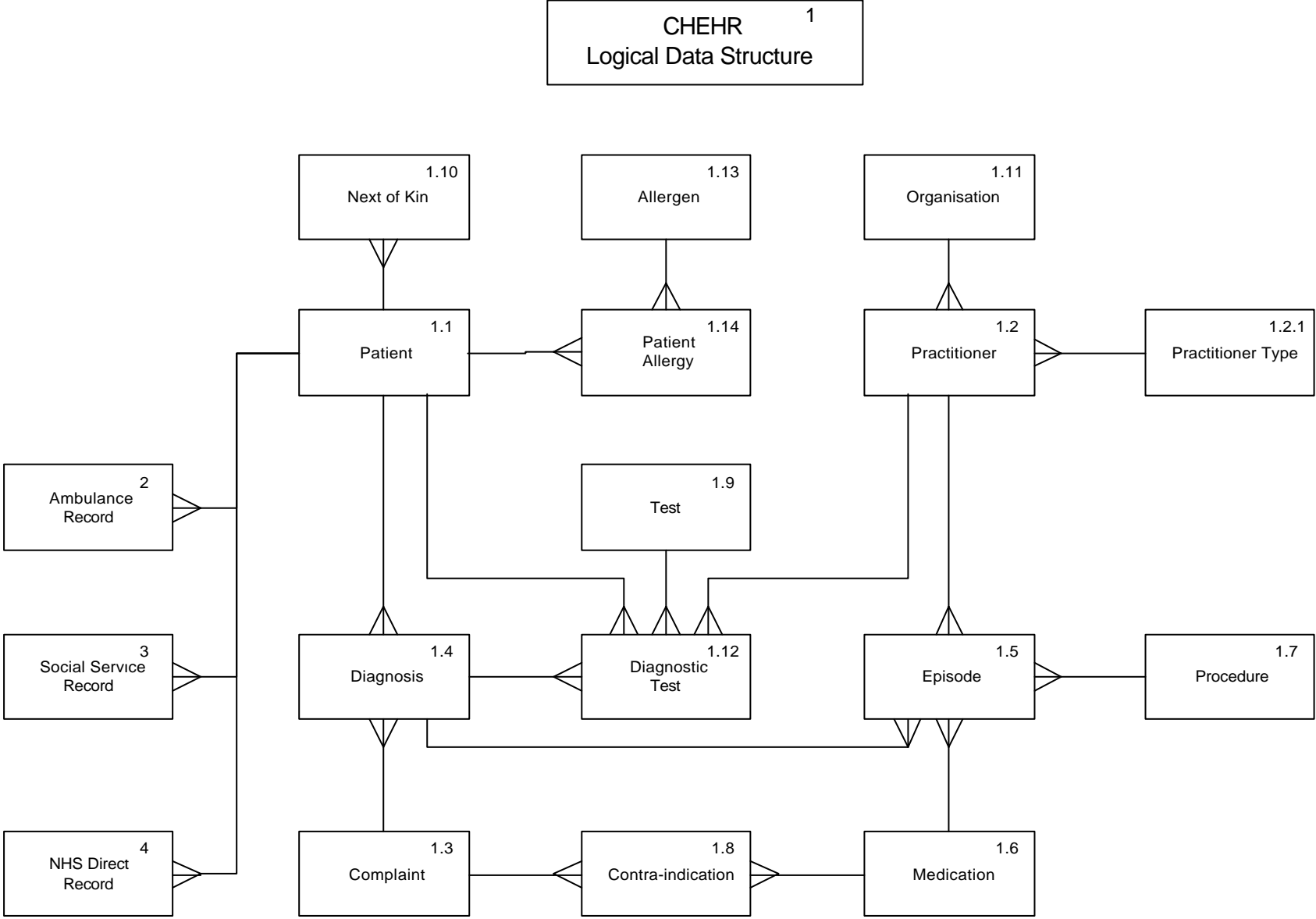


#### Many-to-many

This shows a relationship where there are many occurrences of one entity and many occurrences of another entity, e.g. many patients have many tests, i.e. each patient takes many tests and each test is taken by many patients. It is impossible here to determine which tests have been carried out on which patients.

This relationship needs to be resolved into two one-to-many relationships by the addition of another entity between the two in question, called a link entity. In this case, the many-to-many relationship is resolved by the addition of the link entity "Diagnostic Test" as shown:





## Appendix C – Data Item List

<p><b>Entity ID:</b> 1.1</p> <p><b>Entity Name:</b> Patient</p> <p>NHS #                  Title                  First Name                  Second Name                  Third Name                  Surname                  Date of Birth                  Age (derived)                  Address 1                  Address 2                  Address 3                  Address 4                  Post Code                  Phone #</p>	<p><b>Entity ID:</b> 1.2</p> <p><b>Entity Name:</b> Practitioner</p> <p>Practitioner ID                  Title                  First Name                  Second Name                  Third Name                  Surname                  Appointment                  Job Title                  Organisation ID                  Phone #                  Fax                  E-mail</p>
<p><b>Entity ID:</b> 1.2.1</p> <p><b>Entity Name:</b> Practitioner Type</p> <p>Practitioner Type ID                  Practitioner Type Name</p>	<p><b>Entity ID:</b> 1.3</p> <p><b>Entity Name:</b> Complaint</p> <p>Complaint ID                  Complaint Name                  Signs                  Symptoms</p>
<p><b>Entity ID:</b> 1.4</p> <p><b>Entity Name:</b> Diagnosis</p> <p>Diagnosis ID                  NHS # (Patient ID)                  Practitioner ID                  Complaint ID                  Diagnosis Date                  Provisional/Confirmed</p>	<p><b>Entity ID:</b> 1.5</p> <p><b>Entity Name:</b> Episode</p> <p>Episode ID                  NHS # (Patient ID)                  Practitioner ID                  Final Diagnosis ID                  Medication ID                  Procedure ID                  Episode Start Date                  Episode End Date                  Outcome details                  Remarks</p>
<p><b>Entity ID:</b> 1.6</p> <p><b>Entity Name:</b> Medication</p> <p>Medication ID                  Medication Name</p>	<p><b>Entity ID:</b> 1.7</p> <p><b>Entity Name:</b> Procedure</p> <p>Procedure ID                  Procedure Name</p>

<p><b>Entity ID:</b> 1.8</p> <p><b>Entity Name:</b> <b>Contra-indication</b></p> <p>Contra-indication ID                  Complaint ID (Many)                  Medication ID (Many)</p>	<p><b>Entity ID:</b> 1.9</p> <p><b>Entity Name:</b> <b>Test</b></p> <p>Test ID                  Test Name                  Test Description</p>
<p><b>Entity ID:</b> 1.10</p> <p><b>Entity Name:</b> <b>Next of Kin</b></p> <p>NHS # (Patient ID)                  Title                  First Name                  Second Name                  Third Name                  Surname                  Address 1                  Address 2                  Address 3                  Address 4                  Post Code                  Phone #                  Relationship</p>	<p><b>Entity ID:</b> 1.11</p> <p><b>Entity Name:</b> <b>Organisation</b></p> <p>Organisation ID                  Organisation Name                  Address 1                  Address 2                  Address 3                  Address 4                  Post Code                  Phone #</p>
<p><b>Entity ID:</b> 1.12</p> <p><b>Entity Name:</b> <b>Diagnostic Test</b></p> <p>Diagnosis ID                  Test ID                  NHS # (Patient ID)                  Practitioner ID                  Test Date                  Test Result                  Remarks</p>	<p><b>Entity ID:</b> 1.13</p> <p><b>Entity Name:</b> <b>Allergen</b></p> <p>Allergen ID                  Allergen Name                  Allergen Details</p>
<p><b>Entity ID:</b> 1.14</p> <p><b>Entity Name:</b> <b>Patient Allergy</b></p> <p>NHS # (Patient ID)                  Allergen ID                  Patient reaction                  Intervention Required                  Date of last incident</p>	<p><b>Entity ID:</b> 2</p> <p><b>Entity Name:</b> <b>Ambulance Record</b></p> <p>NHS # (Patient ID)                  Ambulance Data – to be confirmed with HAST</p>

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<b>Entity ID:</b> <b>3</b>	<b>Entity ID:</b> <b>4</b>
<b>Entity Name:</b> <b>Social Service Record</b>	<b>Entity Name:</b> <b>NHS Direct Record</b>
NHS # (Patient ID) Social Service Data – to be confirmed with Hants SS	NHS # (Patient ID) NHS Direct Data – to be confirmed with NHS Direct

## Appendix D – Process Descriptions

<b>Process Name:</b>	GP						
<b>Interviewee:</b>	Dr Paul Manchett, GP, Stockbridge Roger Greenwood, Practice Manager, Stokewood						
<b>Business Processes</b>							
<p>Searches are enabled on NHS No., and/or Name, and/or Address, and/or Post Code, and/or Gender, and/or Date of Birth.</p> <p>This results in a “pick list” display from which the correct patient can be chosen. This shows only sufficient demographic information to enable a choice to be made. This level of security may be insufficient in the context of an EHR as all patients on this system are registered with the practice – not so in EHR.</p> <p>Maintains patient records including personal details, clinical record of each visit, diagnoses, prescriptions.</p> <p>Tests carried out with results, e.g. haematology, biochemistry, etc. Images of x-rays, endoscopies, etc are not required. Text report from consultant sufficient.</p> <p>ECGs carried out and stored in-practice.</p> <p>Referral letters, discharge reports required in text form. Currently, some are sent and received electronically, but these have to be confirmed by arrival of paper report sent via Royal Mail. Scanned and stored as images, not filed in paper form.</p> <p>Stockbridge practice connected to NHSNet for 2 years. Other practices in Central Hampshire are being connected by end 2000/1.</p> <p>Some decision support functionality in EMIS LV2 for prescribing, but purely drug interaction based and advisory.</p> <p>Medication compliance tracked automatically from prescription dosage information.</p> <p>Read 3 coding used in Stockbridge. Read 2 5-bit used in Stokewood.</p> <p>Doctors enter codes used during consultations. Coding Clerk enters codes for all other information, e.g. test results, discharge summaries, etc.</p> <p>Patient permission required for all data sharing between health care professionals. If patient withholds information, then records can’t be shared except in defined circumstances.</p> <p>EMIS holds its own key. NHS No held as foreign key attribute.</p> <p>No method of recording death available. Only source of reliable death records is the registrar.</p> <p>Software in use in practices:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 20%;">EMIS</td> <td>Stockbridge</td> </tr> <tr> <td></td> <td>Stokewood</td> </tr> <tr> <td></td> <td>Andover</td> </tr> </table>		EMIS	Stockbridge		Stokewood		Andover
EMIS	Stockbridge						
	Stokewood						
	Andover						

TOREX                      Friarsgate  Vision                      Charlton Hill  Stockbridge practice part of Rural Out of Hours Co-op for 3 years, since inception. Co-op currently evaluating AD ASTRA and NIGHTOWL software. Records currently maintained on paper. City Co-op using TAS (Telephone Advisory System).	
<b>Information Required</b>	
Person Details Active Problems Past Medical History (PMH) Current Medication Medication History Allergies/Alerts Due Diary Entries – Cervical Smears, inoculations, etc. Test Order Details Confirmed Test Results – x-rays, haematology, biochemistry, microbiology, spirometry, etc. Referral letters                      ) need to be Discharge reports                      ) linked	Up to date drug information including contra- indications Height Weight BMI BP Peak Flow Smoking Alcohol Family History Date of Death Cause of Death (Read Code)

<b>Process Name:</b>	Hampshire Ambulance Service Trust	
<b>Interviewee:</b>	Frances Griffiths, Information Manager Mark Rowell, Clinical Governance Lead & Operational Officer Paul Anfield, Senior Duty Officer, Control Centre Control Centre Officers	
<b>Business Processes</b>		
<p>Use Fortek Medic V1.10 in Control Centre, linked to BT for Calling Line ID and call station location information and to Securicor Datatrak for ambulance location information.</p> <p>There is currently difficulty in locating calls from mobile phones, but work is being done with BT, Orange and Vodaphone to enable cell location to be reported.</p> <p>Obtain and record incident location and nature from callers</p> <p>Select and initiate appropriate response to incident</p> <p>Log incidents including location, chief complaint, call and response times</p> <p>Update incident status and communicate between members of the public, ambulances, A&amp;E, Hospital Wards, <b>GPs(?)</b></p> <p>Manage demand on service with 14 available Control Officers</p> <p>Train and develop Control Officers</p> <p>Maintain geographical information in association with Ordnance Survey</p> <p>Report on effectiveness and efficiency of service to senior Ambulance Trust management</p> <p>Estimated cost of mobile information units on emergency vehicles = £6.5 – 7k x 70 vehs.</p>		
<b>Information Required</b>		
Incident location	Projected journey times for 6 ambulances	
Call location	Actual journey time and progress reports on	
Time of call	Geographical Information System (GIS)	
Response times	Chief complaint	
Call to answer	Crew Skills	
Call to locate	Crew allocations to ambulances	
Call to chief complaint	Crew Shift start, finish and break	
Call to notify ambulance	Ambulance current status	
Call to ambulance mobile	Patient Observations and Life Signs	
Ambulance location	Bed Availability	



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<b>Process Name:</b>	Hospital Information System (HIS), WEHT
<b>Interviewee:</b>	Jack Long, HIS Manager
<b>Business Processes</b>	
<p>HIS records information on patients, their contacts with the hospital including:</p> <ul style="list-style-type: none"><li>General Patient Information</li><li>Drug Orders (Prescriptions)</li><li>Drug Allergies</li><li>7 day medication summary</li><li>Laboratory Orders and results – results sent to GPs via EDI link</li><li>Cardio/Respiratory/ECG/Pulmonary</li><li>Referrals</li><li>Discharge Information</li><li>A&amp;E attendance. A&amp;E don't order drugs on HIS</li><li>Nursing Notes</li><li>CVA (Stroke) details</li><li>Therapist assessments</li><li>Out patient and day surgery cases treated the same as in patient records</li></ul> <p>90 classes of user within Winchester and Eastleigh Healthcare Trust</p> <p>Waiting list management</p> <p>Supplies records to Casemix via Datagate interface – updates sent daily</p>	

<b>Process Name:</b>	Mental Health Services	
<b>Interviewee:</b>	Ken Gordon Pearl Hettiaratchy	PAM Psychology Consultant Psychiatrist
<b>Business Processes</b>		
<p>24/7/ access to information required (Duty Psychiatrist, CPN, etc)                  Full assessment recording on new cases – linked to PMH                  Lots of psych information available in SS records – link required                  GPs currently informed by phone if decision is to discharge to home. Needs to be backed up in writing (via e-mail?)                  Audit treatment after suicide                  Medication records including pharmacy records to check supply                  Need GP appointment/prescription records                  Missed/cancelled appointments log                  Letter generation to result in EPR entry                  Working (informal) notes need to be distinguished from formal records                      Formal records need to be professionally stored/processed/communicated                      Informal notes serve as Aide Memoire for practitioner                  Need to be able to access Social Service records when carrying out assessments. MH obligations are different to SS, but there is likely to be much mutually useful information.                  Elderly people                  Children                  As much information as possible needs to be provided from NHS Direct records                  Need to assess if mental health status adversely affects treatment for physical conditions                  2/3 of mental health information is held on a standalone spreadsheet system. 1/3 held on HIS                  Need to measure outcomes objectively – currently difficult in psych                  Standards -                      Comprehensive                    Clinically relevant                    Cost Effective                    Collectable                  Suicide/homicide rates – targets for reduction                  Occupied bed days reports                  Re-admission rates – relapses common, often chronic, esp in elderly. Record visits without re-admission in this                  Drug records – cost effectiveness                  GP follow-up monitoring reports – assist in improving clinical judgements                  CPN – typical simultaneous case load 45 – too high                  Justify Psych Day Hospital – an expensive service at the moment                  Long Term Day Patients       -       Entries every 2 months        )                  Medium Term                   -       Every 2-3 weeks            )       Day Hospital                  Acute                               -       1 entry per week            )</p>		

<b>Process Name:</b>	Microbiology
<b>Interviewee:</b>	Matthew Dryden – Consultant in Communicable Disease Control (CCDC)
<b>Business Processes</b>	
<p>Surveillance and Epidemiological</p> <p>Hospital Acquired Infection E.g. Post Op ward infection – report to CCDC Pathology Records for swab results</p>	
<p>Public Health</p> <p>CCDC responsibility to look for and count notifiable diseases – EHR could automatically notify disease occurrences to CCDC. E.g. diarrhoea outbreaks could be monitored by organism/postcode</p> <p>Use of antibiotics by GPs – guidelines produced by GPs, monitor compliance</p> <p>Access to information needs to be restricted to Drs and Nurses</p> <p>SS records could be access to check for occurrences of, e.g. MRSA in Nursing Homes</p>	

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<b>Process Name:</b>	Casemix
<b>Interviewee:</b>	Alan Barcroft          Casemix Manager
<b>Business Processes</b>	
<p>Receive daily updates of information from HIS via Datagate. Batch interface commences midnight, completes c 0900 each morning.</p> <p>Uses Business Objects to create reports on separate databases containing information on Winchester and Andover.</p> <p>Patient types:          In patient                                  Out patient                                  A&amp;E</p> <p>Target is real time reporting, although limited by the fact that all data transfer will be in batch. Reduce the batch time frame, increase the frequency to establish optimum balance.</p>	

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<b>Process Name:</b>	Pharmacy
<b>Interviewee:</b>	Nick Hubbard
<b>Business Processes</b>	
<p>Needs drug records from community pharmacies (could be arranged via GP systems?)</p> <p>Diagnoses Current Biochemistry Haematology Contra-indications PMH from GP records to validate and qualify prescriptions Record and communicate significant changes to therapy with explanations for doing so.</p> <p>Drug supply information is recorded on another, standalone system. Supply monitoring and ordering takes place on this standalone and hospital prescriptions are recorded using HIS.</p> <p>Need early reports of lack of availability of drugs to support treatment. Not just for peaks in occurrence of common diseases, but for specialised treatment too.</p>	

<b>Process Name:</b>	Hampshire Social Services
<b>Interviewee:</b>	Alison Coulter Deborah Abrahams Manda Joyce – Project Manager SS Direct
<b>Business Processes</b>	
<p>3 Social Service providers in Hampshire:      Hants County Council                     Portsmouth Unitary Authority                     Southampton Unitary Authority</p> <p>Unitary Authority records were split off from Hants County Council (formerly sole provider)</p> <p>Data cleansing operation carried out before the split in 1998. Appropriate records copied to UAs, so all Hants SS records before that date retained.</p> <p>Steve Witheyman manages Emergency Duty Service which will be the function involved in CHEHR for emergency care.</p> <p>Workshops to be arranged with social workers to discover their information needs and processes.</p> <p>SS need to become a recipient of Exeter system.</p> <p>Clients and employees all have unique identifier which need to be matched to NHS numbers. No record of NHS number currently available on SS systems.</p> <p>Social Service System (SSS) holds information on children and families. Information available not as extensive as for adults. 2 years for information on children and families to reach the same level as for adults. SSS is being redesigned to become Case Management System (CMS).</p> <p>Assessment and Care Management System 2 (ACMS2), Oracle on mainframe, holds information on adult clients and their cases. HCI very inflexible, needs to be re-designed.</p> <p>Potential vendors – Unisys and SAP. SAP are existing contractors for the HantsNet ERM contract (replacing mainframes with a more responsive architecture). Plan is to lose mainframes by 2005.</p> <p><b>Timescales</b></p> <p><b>April 01</b>                                      ‘Soft Launch’, or pre-pilot of new service. Slightly increasing functionality of existing systems, but running in parallel with them. Geographically restricted to Fareham and Gosport (mainframe based).</p> <p><b>August 01</b>                                      Introduction of new IT to support system development.</p> <p><b>November 01</b>                                      Progress report to Social Service Dept management team to inform their decision on further funding for the project.</p> <p><b>April 02</b>    Project End. Decision taken on funding to continue project.</p> <p><b>Project North</b>                                      is also running to enhance the effectiveness of staff allocated to</p>	

emergency duties from 1800 to 2200 in the evenings, but this is outside the terms of reference of CHEHR.

**Next progress**

Manda will invite CHEHR team to meetings with the Practitioner and Technical groups where the new system requirements will be discussed and documented.

Particular areas to be investigated include:

1. Information used now by SS staff to support their activities in providing emergency service
2. Information not currently available which is necessary to providing emergency service
3. Information useful to be provided by NHS systems  
Information which can be shared with NHS professionals

<b>Process Name:</b>	Accident and Emergency (A&E)
<b>Interviewee:</b>	Mr Singh, A&E Consultant Simon Tilley, A&E SHO Ian Rentell, A&E Charge Nurse Carla Massey, A&E Sister Sue ?, A&E Receptionist
<p><b>Business Processes</b></p> <p>Self or GP referral, receptionist checks HIS for previous records on patient, checks ID, updates information if necessary, creates A&amp;E clerking form, sends patient to triage nurse.</p> <p>Triage nurse takes incident history, checks vital signs and seriousness, prioritises. Clerking form goes into Waiting Box.</p> <p>A&amp;E doctor assesses patient, orders tests, e.g. x-ray, bloods, etc. Diagnoses condition, orders drugs, other treatment. Either discharges with discharge summary to GP or refers to specialty for further assessment/treatment.</p> <p>Specialty doctor assesses and will either treat and discharge with summary to GP or admit to ward.</p> <p>Ambulance referral will either go through above procedure or serious cases will go into Resuscitation bed, High Dependency bed or straight to ward. In these cases, triage will be bypassed and receptionist or ward staff will clerk later.</p> <p>Patients reviewed in after-care clinics. Patients book into clinics via A&amp;E receptionist</p> <p>Potentially non-accidental injuries, esp to children, need to be checked against SS records.</p> <p>SS records need to be checked prior to discharge to inform decisions.</p> <p>Access to GP records v important to check PMH, current medication, allergies, etc.</p> <p>Need information to check for potential Munchhausen's Syndrome.</p> <p>SHOs' diagnosis opinions referred to consultants for confirmation</p> <p>Need to de-stress information recording as much as poss to avoid errors</p> <p><u>Confidentiality</u></p> <p>Consent required to share information except for GPs                  Consent can be over-riden in case of ?NAI or life-saving situations</p> <p>Performance Measurement – Effective outcomes</p> <p>Transfers, e.g. Wessex Neuro Unit</p> <p>District Nurse follow-up – Healthcare Assistance</p> <p>Triage accuracy reports – Missed fractures, unnecessary investigations, etc.</p>	



<b>Information Required</b>	<u>Information Partners</u>
A&E clerking form GP records Social Service records Reactions to Anaesthetics, Allergy Information Next of Kin information Ambulance records – inc in audit	Fire Police Poison Centre – Guy's (self harm advice) Hyperbaric Chamber – CO <sub>2</sub> inhalation in fires (Portsmouth) Cardio-Thoracic Centre, Southampton Burns Unit

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<b>Process Name:</b>	Genito-Urinary Medicine (GUM)
<b>Interviewee:</b>	Kevin Woodcock, GUM Consultant
<b>Business Processes</b>	
<p>Total confidentiality, unless express permission obtained, required by Venereal Diseases Regulations 1917 (amended 1977).</p> <p>1/3 of patients referred by GPs – these patients not so sensitive to confidentiality</p> <p>Other 2/3 self-referred. Can be very sensitive to confidentiality, will often use aliases. These must be kept confidential.</p> <p>Record 1<sup>st</sup> contact as patient gives history. Sexual history and record of contacts taken (patient given).</p> <p>Clinicpro generates its own patient ID – completely separate from NHS number.</p> <p>Legislation would be needed to enable access by any non-GUM person.</p> <p>Uses ICD 9/10 International Classification of Disease codes.</p> <p>KC60 diagnostic codes used in previous system</p> <p>Records subsequent visits and treatment programmes. No attempt to contact if patient doesn't show for appointments.</p>	

<b>Process Name:</b>	Obstetrics & Gynaecology
<b>Interviewee:</b>	Mike Buckingham, Obs & Gynae consultant
<b>Business Processes</b>	
<p>GP referral – patient record printed out from HIS.</p> <p>Current medication v important</p> <p>PMH v important</p> <p>Lab tests, esp cervical smear results v important</p> <p>Paediatricians occasionally need Social Service records, esp in cases of drug abuse</p> <p>Access needed to all GP records. GP access to O&amp;G records sensitive, e.g. termination information not communicated to partners. GP confidentiality requirements, though, should cover this.</p> <p>Community Nurses and Health Visitors need to know that birth has taken place</p> <p>Notes currently handwritten by consultant, typed by secretary.</p> <p>Letter to GP currently a very good record of incident</p> <p>3 different case/patient codes, therefore stats difficult to gather. E.g. birth of twins currently generates a count of 2 mothers.</p> <p>Avoid use of checkboxes in a new system. Over categorisation can have tragic consequences.</p>	
<b>Information Required</b>	
<p>Same as other Winchester and Eastleigh Healthcare Trust departments.</p>	



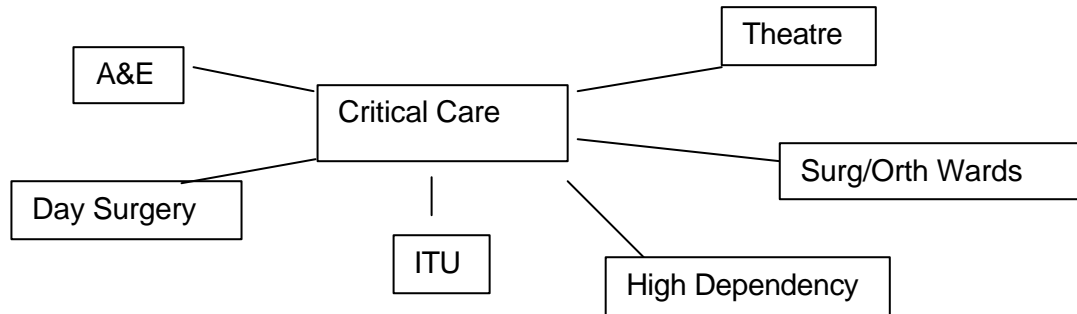
<b>Process Name:</b>	Elderly Patient Care
<b>Interviewee:</b>	John Duffy, consultant Jayne Turnbull, DGM
<b>Business Processes</b>	
<p>Urgently require access to GP records, PMH, current medication. Lack of info very frustrating</p> <p>Rehabilitation information.</p> <p>Much of the same information generated and processed as other medical/surgical departments, but there tends to more of it concentrated over a shorter period.</p> <p>Degenerative conditions, oncology, dementia, etc</p> <p>Therapists, SS, Care management teams for discharge information/management. Community Nurses, physios.</p> <p>Ambulance Service – Call times – call to needle time important for MI – need to find out what info useful/necessary to HAST paramedics</p> <p>Stroke Care Pathway –       A&amp;E attendance records   GP History   Monitor follow-up care</p> <p>Emergency Medical Assessment Unit – Older People   Social Services/Financial Assessments   Physio/OT/Nursing/Medical Assessments</p> <p>Clinic Letters are a very good source of information in emergencies</p> <p>Data cleansing exercise required before download of information from HIS to EHR</p> <p>Patient details don't get recorded when moved between departments, e.g. Orthopaedics to Medical</p>	

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<b>Process Name:</b>	CADS (Clinical And Diagnostic Services)
<b>Interviewee:</b>	Roger Farrow, DGM, CADS
<b>Business Processes</b>  Emergency information Access to Social Security information, SS assessment records Recent radiology records to assess desirability of procedures Pathologists – PMs Cellular Pathology records required to track event subsequent to +ve smears for 6-12 months SE(West) Cervical Screening QA Team – Dr Monica Roche Post Discharge infections information Problems with pharmacists and radiographers need to be identified	

<b>Process Name:</b>	Surgery and Anaesthetics
<b>Interviewee:</b>	Jayne Roberts, DGM

**Business Processes**



Emergency and Elective Surgical Procedures

Medical Secretariat

Centralised management of waiting lists required – currently a problem

Monitoring of clinicians' schedules – currently none

Booked admission programme required

Currently, Same clinical need = different waiting times = different surgeons

Do Not Resuscitate (DNR) information required

Waiting List Management

Discharge Management – insufficient resources currently prevent pro-activity

<b>Process Name:</b>	Medical Imaging
<b>Interviewee:</b>	Diane Blanchard
<b>Business Processes</b>	
<p>Standalone Radiology System                  Bi-directional link available to HIS, only used in one direction                  Link to Casemix?                  Need following flow:</p> <pre>                 Medical Imaging → HIS → GPs                 </pre> <p>Capable of overnight download                  Patient Booking &amp; waiting times                  Procedure operator information                  Radiation exposure/protection info                  Diagnostic coding – Clinical Governance                  Workload analysis – facilities/rooms/people                  Location tracking of images – currently no tracking available in wards. Only location not tracked</p> <pre>                 Psion organisers → System → PAC                 </pre> <p>Leicester General (greenfield site) completely PACSed                  New system needs proven kilo/megastream link                  Keyed on NHS number                  Link to Southampton via NHSNet                  Web browser technology to provide wider access                  Notts – specialist mammography images available to practitioners at home</p> <p><b>Require</b></p> <ul style="list-style-type: none"> <li>Pathology reports</li> <li>Biochemistry results</li> <li>In-patient, GP records</li> <li>DNR flags</li> <li>Sectioned patient details</li> <li>Feedback from surgical notes</li> <li>Prioritisation – Urgent/Soon/Routine</li> <li>Updates of Ionising Regulations and other Regulations/Requirements</li> </ul>	



<b>Process Name:</b>	Orthopaedics
<b>Interviewee:</b>	Bill Hook, Orthopaedics Consultant
<b>Business Processes</b>	
Appointment Booking	
Ambulance crew records – incident history details, timings	
PMH – Medical, Surgery, Orthopaedics, Allergies, Reactions to anaesthetics, current medication, e.g. hip fractures	
Discharge information – GP needs to know what’s happening with in- patients	
Ward Rounds	
Nursing records	
Therapists’ records	
Insufficient information in computerised records – handwritten GP records more informative	
?NAIs – Social Service records	
Incident logging – statistical analysis	
Complication recording/auditing	
Drugs records, e.g. analgesia – post-operative audit	
HCI needs to be targeted appropriately at user to support their work	
Legal assessment work requires access to <u>all</u> information (computerised and handwritten) in all cases.	

<b>Process Name:</b>	PRHOs – various departments
<b>Interviewee:</b>	Julia Snyder, Surgery
<b>Business Processes</b>	
<p>PMH Current Medication, esp elderly Contra-indications, esp allergies Histology – access to consultant opinions PRHO actually orders test on behalf of senior medical staff – need accurate, quick way of doing so. Need to prioritise test – currently too many ordered for system to handle. Results need to be sequenced by date, ideally on one page Calendar type presentation of test orders would be very helpful Ward round notes entry – sometimes 13 hour delay in writing up notes as often 70 patients/day to be written up. E.g. blood results to be record often 60/day BP pattern last 24 hrs Summary of events for each patient on one page E.g. In-patient transferred from orthopaedics after 2 months – acres of paper, took a long time to establish a summary Patient handover standards vary from poor to quite good Rehab summary – Post Op – Therapists On screen access to information, e.g. nurses' notes Obs – charts for quants on date (BP/Pulse/Temp/Respiration) Simple text entry will enable increase in quality of data available to practitioners</p>	

<b>Process Name:</b>	Therapists – Physio, OT, Community Physios
<b>Interviewee:</b>	Peggy Ogilvie, Mary Gardner, Trevor Graham
<b>Business Processes</b>	
<p>Majority of records are on paper – patient held, free text Patient ID and care planning</p> <p>Emergency Care Information When seen What done SS records % dependency Equipment required Abbreviated Mini Mental Test input/results PMH from GP systems Drug History – current medication schedule and details Discharge time – only am/pm available at Falls project. Need actual time of discharge In time info – record once on site (means of doing so needed and then available to all who need GP referrals – community physio Operation notes – UTIs (Urinary Tract Infections) Extra Info flag? E.g. SS, GUM, Mental Health – contacts would be very helpful</p> <p>Reports Waiting lists Number of visits/time spent per visit by therapist Outcome groups – to assist in prioritisation of service provision ADL – Activities of Daily Living Palliative Care – show extended independence Audit performance against guidelines, targets, national/local Referrals to therapist for patient assessment are not inappropriate referrals</p>	

<b>Process Name:</b>	ITU
<b>Interviewee:</b>	Martin Nancekievill, ITC Consultant, Anaesthetist (No managerial responsibility as anaesthetist), Medical Director Winchester and Eastleigh Healthcare Trust
<b>Business Processes</b>	
<p>HIS very limited use – only shows admission data. Patient progress needs to be logged                  PMH, Current Medication invaluable                  Discharge letter, pathology, x-ray results                  Active problems useful – negative reactions to anaesthetics very useful indeed                  Previous investigation records could be invaluable – even normal results can be significant – at least show investigation made                  Previous anaesthetics records most useful combined with medication details                  Practitioner based anaesthetic record useful                  Warning signs of bad doctors are anecdotal rather than data based</p> <p><u>Confidentiality</u>                  Audit trail with access logging required                  Users to be sorted by class – user classes need to be defined                  Security need to be improved over current HIS standards if multi-user access to be allowed.                  7 total cases of inappropriate access over last 7 years on HIS                  Keyboard skills create a problem with standard HCIs. Need to provide simple methods of entering accurate data                  Amount of time required to enter data can be critical, esp in Out Patients – are GPs better at this as they have more practice/better systems?                  Death in the community of recent Healthcare Trust patients – unexpected deaths are reported to Trust by Coroner’s Officer</p> <p><u>Queries</u>                  Interactive – practitioner with information system                  How many deaths? (standard query)                  Anaesthetic record – use per anaesthetic by practitioner                  Recovery information                  Post Op analgesia</p> <p>The more clinical information the system collects, the better</p> <p>Data quality problems                  Coding – system and entry errors need to be eliminated as far as possible                  Data quality improves with better education about the value of information and the need for accuracy                  Data quality deteriorates with increases in workplace stress/volume of work</p>	

<b>Process Name:</b>	GP Out of Hours Co-op, Winchester City
<b>Interviewee:</b>	Linda Cooper, Practice Manager, Friarsgate Surgery Tim Stannard, GP, Friarsgate Surgery

**Business Processes**

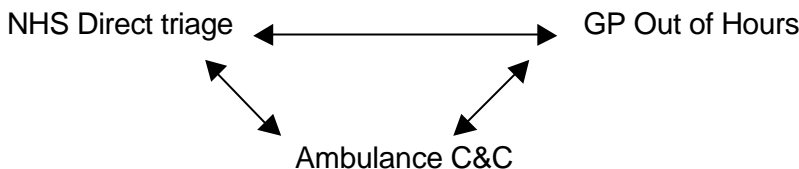
Hardware outdated – possibly not upgradeable?  
 Patient contact – details need to be available on screen  
 Co-op system based at Sarum Road Hospital, also GP out of hours surgery – Director of Nursing, Jane Whitney-Smith, manages. Vikki Bartlett is the Out of Hours Service manager.  
 Standalone PC system running TAS (Telephone Advice System) one of the systems used by NHS Direct, although not the same one as Winchester NHS Direct uses. Helps to provide decision on whether call-out necessary.  
 Download PMH, etc from GP systems?  
 TAS holds Minimum Data Set only for patients  
 Need information availability in patients' homes – not always available before visit  
     Elderly are a particular problem  
 Pathology tests not keyed on NHS number  
 Discharge summary letters from hospitals not keyed on NHS number  
 Difficulty using locums for emergency care – access issues.  
 Test results – some currently online  
 Need to order tests online – currently on paper  
 Results come back in both forms – even with electronically communicated results, need to wait for paper record to confirm result

2 x GP – City  
 2 x GP – Rural  
 Phone calls redirected from GP surgeries to Sarum Road  
 Nursing staff triage calls until midnight  
     Monday – Friday      1900 – 2359  
     Saturday              1200 – 2359  
     Sunday                 0800 – 2359

Cost prevents overnight cover. Call handling service passes message to on call doctor via bleep. No triage 0001 – 0800

Responses

1. Give advice
2. Advise patient to attend emergency clinic at Sarum Road hospital
3. Dr visits, DN, SS, Ambulance response



These are the first points of contact for the public. Would be very useful to be able to pass call information between them.

SS records link. Friarsgate surgery (uses Meditel software) has SS Care Manager so links quite good.

Would be useful to have as a first step:

- SS Carer name for patient
- Mental Health contact name

Rural Co-op contacts:

David Firebrace	Sutton Scotney	01962 760394
Paul Manchett	Stockbridge	

Emergency Service development funding. Out of Hours Development Fund finance is currently supplemented from GPs' own resources at £20k per year. Thus no funds immediately available to implement new system. Central funding required.

<b>Process Name:</b>	Emergency Duty Service, Hants SS
<b>Interviewee:</b>	John Purves
<b>Business Processes</b>	
<p>Reception and Assessment Team                  Use SSS – Social Service System (children and families)                  ACMS2 (Adults)</p> <p>Both mainframe based systems with dated and inflexible HCIs                  Local Mental Health Teams bridge gap between SS and Mental Health services                  Records demographic, assessment and actions details                  7 stages of care management                  Choose care package                  Care package has to be costed and “bought” from providing agencies                  Care contract drawn up and reviewed periodically                      Initial review after 4-6 wks = Social Security check that benefits have been sorted                      Domiciliary care = 2 reviews per year                      Residential Home care = 1 review per year. Rarely happens due to lack of resources</p> <p>No outcomes reported on individual clients and areas.</p> <p>Health and Social Care have a dispute over boundaries. E.g. Personal care overlapping with nursing care.                  Daily living ability information. ADL assessment reports                  Medication info. Regime, reason and effects on patient                  Infirmity and dementia information required</p> <p>Professional standards assessment criteria not easy to identify in Social Services                  Performance Development Reviews resisted by practitioners as they’re not appreciated as beneficial to either side.</p> <p>Social Services hours of service 9 – 5 Monday to Friday                  Emergency Duty Service at all other times (1700 – 0830 weekdays, 1630 Friday – 0830 Monday)                  1<sup>st</sup> priority for EDS is child protection. “Bandaid” response.  <u>Mental Health</u> Approved Social Workers (ASWs) link SS, CPNs and Psych                  11 regular staff, 3 support staff, 12 “bank” staff.  <u>Carer and GP helpline</u> w/e GPs ring for advice and help to prevent unnecessary hospital admissions.                  Access required to GP emergency service                  A&amp;E – prevent unnecessary hospital admissions and/or facilitate discharges.                  Access required to information at sites outside SS offices                  GP helpline need to be PR’d to GPs to enable them to use it when necessary</p> <p><u>Problems</u>                  Input is prescriptive, laborious and slow                  Difficulty in extracting information and reports                  Keyboard skills training would be required to improve speed and quality of input                  System implemented in 1997</p>	

## Appendix E – List of Interviews

No	Name:	Title:
1	Alan Barcroft	Casemix Manager, WEHT
2	Alison Coulter	SS Direct, IT Dept, Hants CC
3	Angela Watwood	OT, Physio, Community Therapists, WEHT
4	Anne Hobbs	Learning Disability Consultant, WEHT
5	Bill Hook	Orthopaedics Consultant, WEHT
6	Bob Eames	Operational Officer, HAST
7	Bryan Green	Pathology Consultant, WEHT
8	Carla Massey	Nurse, A&E, WEHT
9	David Hewett	Risk Management, WEHT
10	Deborah Abrahams	IT Dept, Hants CC
11	Diane Blanchard	Medical Imaging Manager, WEHT
12	Frances Griffiths	Information Manager, HAST
13	Hugh Sanderson	Assistant Medical Director (Clinical Governance), WEHT
14	Ian Rentell	Charge Nurse, A&E, WEHT
15	Jayne Roberts	DGM Surgery and Anaesthetics, WEHT
16	Jayne Turnbull	Medicine & Elderly, WEHT
17	Jim Rose	Clinical Governance Lead, Mid Hants, PCG
18	John Attwood	Head of IM&T, WEHT
19	John Criswell	ITU Consultant, WEHT
20	John Duffy	Elderly Care Consultant, WEHT
21	John Purves	Emergency Duty Service, Hants Social Services
22	Julia Snyder	PRHO, WEHT
23	Ken Gordon	PAM Psychology, WEHT
24	Kevin Stewart	Consultant, Elderly, WEHT
25	Kevin Woodcock	GUM Consultant, WEHT
26	Linda Cooper	Winchester GP Out of Hours Co-op
27	Malcolm Stone	Clinical Governance Lead, Andover
28	Manda Joyce	Project Manager, SS Direct, Hants CC
29	Mark Rowell	Clinical Governance Lead, HAST
30	Martin Nancekievill	Medical Director, WEHT
31	Mary Gardner	OT, Physio, Community Therapists, WEHT
32	Matthew Dryden	Microbiology Consultant, WEHT
33	Mike Buckingham	O&G Consultant, WEHT
34	Mike Sadler	Medical Director, NHS Direct
35	Mr Singh	A&E Consultant, WEHT
36	Nick Hubbard	Chief Pharmacist, WEHT
37	Nursing Staff x 15	Various departments and community, WEHT
38	Pearl Hettiaratchy	Psychiatry/Geriatrics Consultant, WEHT
39	Peggy Ogilvie	OT, Physio, Community Therapists, WEHT
40	Roger Farrow	DGM CADS, WEHT
41	Senior Duty Officer x 2	Command and Control, HAST
42	Simon Tilley	SHO, A&E, WEHT
43	Tim Frances	Clinical Governance Lead, North Eastleigh
44	Tim Stannard	Winchester GP Out of Hours Co-op
45	Trevor Graham	OT, Physio, Community Therapists, WEHT