

SECTION C

OPERATIONAL REQUIREMENT

**DEPARTMENT OF CARDIOLOGY/CARDIAC SURGERY
ROYAL HOSPITALS FOR SICK CHILDREN
GLASGOW AND EDINBURGH**

OUTPUT - BASED SPECIFICATION

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PART A - SETTING THE SCENE**1. INTRODUCTION**

- 1.1. This Output Based Specification (OBS) sets out the requirements of a clinical information system for the Departments of Cardiology and Cardiac Surgery, Royal Hospitals for Sick Children, Glasgow and Edinburgh.

2. BACKGROUND TO THE REQUIREMENT

Project Objective

The PROJECT OBJECTIVE is - To produce a cardiac clinical information system which will provide the Cardiac Services with all of the functionality of the existing 'Clicks' system on platform which is windows based, 2000 compliant and will allow secure remote access.

The system will be required to be implemented in both the Royal Hospital for Sick Children, Glasgow and Edinburgh to provide all clinical and management information returns of the units.

3. SUMMARY OF THE REQUIREMENT

This section is presented under the following broad headings:

- IM&T Investment Objectives
- Key Benefits
- Scope of the Project

IM&T Investment Objectives

The Cardiac Services investment in I.T is intrinsically linked with meeting the following objectives:

- Provide the best patient care.
- Deliver contracts agreed with purchasers of health services.
- Help staff achieve their potential.
- Communicate openly.
- Comply with Clinical Governance
- Provide an appropriate, pleasant and safe environment.

In combination aiming to create a centre of excellence in the provision of healthcare and information.

Key Benefits

- Strategic Partnership.
- Improved availability of information particularly for Clinicians.
- Operational, business and quality gains from use of systems
- Improved availability of information particularly for Clinicians inside and outwith the Trust.

Scope Of The Project

Core Requirements

The scope of the project covers the requirements of the Departments of Cardiology and Cardiac Surgery in the Royal Hospital for Sick Children, Glasgow and Edinburgh.

PART B: REQUIREMENTS

4. CORE REQUIREMENTS - GENERAL

CURRENT SITUATION

The Cardiology Department, Royal Hospital for Sick Children, Glasgow currently has an integrated clinical information and management system which has been in place within the unit since 1993. In terms of functionally, this system serves the needs of a highly specialised, multi-specialty unit however it has become apparent that this DOS based system is not Y2K compliant and is beginning to show limitations in terms of capacity.

There is a requirement to design and implement a new cardiac clinical information system which will be Y2K compliant, using commercial software to provide and fully integrated and expandable patient information and management system which will be implemented in Glasgow and Edinburgh Sick Children's Hospitals.

MAJOR BENEFITS

4.1. The main additional benefits expected as a result of investing in a new system include the following :

Enhanced functionality	1 ^{ry}
A speedy and consistent response from internal and external locations.	1 ^{ry}
A fully integrated paediatric cardiac patient information and management system.	1 ^{ry}
A system which will automatically generate returns for national and international audit initiatives.	1 ^{ry}
A system which will collect real-time data on each patient encounter thus providing accurate and timely information on all aspects of patients care.	1 ^{ry}
Flexibility for system generated reports and documentation with user input for variables.	1 ^{ry}
A system which may be integrated with other applications within the unit.	2 ^{ry}

Overall the system will enhance the efficient and effective communication within and between 2 multi-specialty units and will collect and validate clinical information as a by-product of the working practice of each staff discipline within the unit resulting in improved efficiency gains.

Core Requirements

Design

- 4.2 The system WILL be easy to use by staff with no or limited keyboard/computer or I.T. skills and require minimum training. 1^{ry}
- 4.3 The system WILL guarantee that data and referential integrity is maintained at all times. Failed processes will leave the system in a known defined state. 1^{ry}
- 4.4 Data integrity will be defined at the database level not the client.
- 4.5 The system WILL provide a consistent user interface across all of its functions. 1^{ry}
- 4.7 It is regarded as of the utmost importance to provide user friendly and speedy data entry screens, so that all staff in all disciplines will be able to use all relevant functions given appropriate training. 1^{ry}
- 4.8 Significant importance is placed on integration and users being able to access (move) across applications speedily in line with workflow and with ease. 1^{ry}
- 4.9 Information held in the Master Patient Index of HISS WILL be available to the Cardiac system. 1^{ry}
- 4.10 The system WILL be able to provide data for interfaced financial information to any patient event. 1^{ry}
- 4.11 The National Standards in respect of coding systems WILL be used including those codings currently employed on current Trust systems. 1^{ry}
- 4.12 The system WILL meet all National and Local Minimum Data Set Standards and permit locally defined codes to be linked to national MDS classification codes. 1^{ry}
- 4.13 Data WILL only be entered once and feed to and from all interfaced systems. 1^{ry}
- 4.15 The system WILL return and accept user defined codes for address unknown and no fixed abode. 1^{ry}
- 4.17 The system WILL not display any other numbers to the user apart from the local Hospital Number when registering or working with a patient throughout the system and WILL have the ability to display the NHS Number and local hospital numbers. 1^{ry}
- 4.19 The system WILL be available as far as possible to the users 24 hours per day 365 days per year. 1^{ry}
- 4.20 The search and select facility WILL be available on data fields. 1^{ry}
- 4.21 The system WILL allow user defined codes to be mapped to recognised National Reporting standard codes. 1^{ry}
- 4.22 The field sizes WILL support all aspects of Data Collection. 1^{ry}
- 4.23 All documentation / labels WILL print at any location as defined by the user and from any PC as defined by the user. 1^{ry}
- 4.24 There WILL be a reprinting facility for all documentation /labels at any location and PC as defined by the user. 1^{ry}
- 4.26 The system WILL hold standard on-line reports within the application and have an industry standard report generator e.g. MS ACCESS. 1^{ry}
- 4.27 All letters within the system WILL be user defined and details provided from its database and other applications. 1^{ry}
- 4.28 The system WILL have the facility to meet all mandatory national requirements and the capability of additional locally defined mandatory fields. 1^{ry}
- 4.29 The system WILL provide user defined reports and parameterised reports. 1^{ry}
- 4.30 The system WILL have on-line validation using standard criteria and user defined validation. 1^{ry}
- 4.33 The system WILL have user defined levels of access. 1^{ry}

- 4.34 The system WILL support the use of the Single Patient Record. 1^{ry}
- 4.36 The system WILL record comments, personalised to the hospital records either in a free text mode or supported by a table option. 1^{ry}
- 4.37 The system WILL not allow the use of existing Patient Identifier Numbers when registering a patient who is new to the Trust. 1^{ry}
- 4.38 The system WILL allow changes to and from British Summer Time. 1^{ry}
- 4.39 All screens WILL require a confirmation step on completion. 1^{ry}
- 4.40 The system WILL ensure additions, amalgamations, updates, changes and deletions will show in an Audit Trail. 1^{ry}
- 4.41 The system WILL present the user with appropriate warning messages when file deletions are performed. 1^{ry}
- 4.42 The system WILL identify the impact of amalgamations, changes or deletions and provide appropriate help text. 1^{ry}
- 4.43 The system WILL permit locally defined short and long description codes. 1^{ry}
- 4.44 The system WILL automatically identify any patient with the same surname, forename, sex, and date of birth prior to accepting the entry. 1^{ry}
- 4.46 The system WILL provide an on-line facility for all staff to track the hospital site and location of any inpatient. 1^{ry}
- 4.47 The system WILL facilitate the selection and entry of data associated with all In and Outpatient episodes. 1^{ry}

User Interface

- 4.48 The system WILL be menu driven with a structure that is clear and simple for occasional users, but WILL allow the more experienced user to define fast routes through the system.
- 4.49 The system WILL provide look up menus for entry of standard terms to minimise data entry requirements by users 1^{ry}
- 4.49 The look up menu structures WILL be capable of customisation 1^{ry}
- 4.50 The system WILL provide standard search facilities available across all applications. 1^{ry}
- 4.51 The system WILL provide on-screen help facilities. 1^{ry}
- 4.52 The system WILL operate on colour hardware and allow local customisation of background and foreground colours. 1^{ry}
- 4.53 All output WILL be capable of being available on hard copy, screen or file at the users' discretion. The users WILL be able to direct the hard copy to a printer at any site within the Trust 1^{ry}
- 4.54 Function keys and application access via the menu WILL be consistent throughout the module (e.g. save; exit; help.). 1^{ry}
- 4.55 Multiple users WILL have access to the same record simultaneously in read, updating and reporting mode. 1^{ry}
- 4.57 The system WILL hold all data in a form that WILL allow ease and flexibility in establishing data relationships. 1^{ry}
- 4.58 The system WILL permit any one user access to other applications (e.g. HISS, Clinical Letters) required to perform his or her job, from a single workstation, i.e. in general, screens will not be dedicated to a single specific host. High availability is a major requirement, so that failure of a single host WILL not impede the user's ability to access other hosts; fast recovery in the event of any failure WILL be essential. 1^{ry}
- 4.59 The Trust network WILL be the primary mechanism for all communications; all systems and all hardware WILL communicate via this network. 1^{ry}

- 4.60 The system WILL ensure that information is made available to all authorised parties in an easily accessed, manageable and timely manner. 1^{ry}
- 4.61 Searches to identify patient information WILL offer maximum flexibility, using appropriate techniques such as partial matching or phonetic searches with existing and new registrations. 1^{ry}
- 4.62 The system WILL facilitate a common approach to the use of screen design, layouts and keyboard functionality. 1^{ry}
- 4.63 The user's interface with the system WILL be controlled by a series of structured access methods, including menus, function keys and fastpath techniques including quick access to all interfaced applications from all key screens e.g. demographics. 1^{ry}
- 4.64 Where a user is asked to make selections, invalid choices WILL return a clear error message and corrective action displayed. 1^{ry}
- 4.65 Unexpected or invalid key depressions when using screens WILL not lead to system failures. 1^{ry}
- 4.66 The system WILL NOT write invalid or incomplete data to file. 1^{ry}
- 4.67 The system WILL be capable of capturing all data currently captured as a minimum. 1^{ry}

Data Capture

- 4.68 The system WILL facilitate the specification of default values that may be overwritten as necessary. 1^{ry}
- 4.69 The system WILL offer system date and time in relevant user defined fields as a default value that may be overwritten as necessary. The system will synchronise P.C. Host or Client Server. 1^{ry}
- 4.70 The system WILL allow clinical coding functionality to accept a textual input, or partial textual input. 1^{ry}
- 4.71 The system WILL propose matching codes by use of an Encoder. 2^{ry}
- 4.72 The application software WILL allow tailoring of data capture screens to meet locally defined requirements. 1^{ry}

Data Validation

- 4.74 Data Validation is of key importance; the following facilities WILL be available: 1^{ry}
- Basic data validation (mismatching data types; illogical dates etc.) validation against user maintained reference files e.g.
 - Name and Hopital Number
 - Procedure or Investigation Dates
 - Validation of any data item against user defined parameters
- 4.75 The system WILL be able to accept information as a code for validation purposes and display the validated result as decoded text or other data. 1^{ry}
- 4.76 Where data is entered the system WILL display sufficient patient details for the user to confirm the entry before the user 'submits' the data entry for input to the system. 1^{ry}
- 4.77 Data entered which requires validation WILL be validated on-line. 1^{ry}

Reporting

- 4.78 Reports WILL be capable of being viewed on screen with full scrolling and panning facilities available. 1^{ry}

- 4.79 The system WILL permit user defined Report Groups. User reports will be capable of being saved. 1^{ry}
- 4.80 It WILL be possible to download selected data to personal computers for subsequent manipulation and customisation and printing at specified locations, subject to security. 1^{ry}
- 4.81 The system WILL permit partial printing of reports, amendments to print quality e.g. draft or courier and enable reports to be directed to any printer connected to the system across the Trust. 1^{ry}
- 4.84 The system WILL permit user-defined reports to be introduced to a standard menu structure. 1^{ry}
- 4.85 The facility to create user defined report formats WILL be provided. 1^{ry}
- 4.86 The system WILL be able to generate summary workload reports, for instance by month; such reports WILL include waiting lists, actual procedures, analysis by referring clinician, nature of intervention, and referring department. 1^{ry}
- 4.87 The system WILL provide flexible reporting facilities using common tools in all modules of the total system. The reporting tools available WILL combine ease of use with comprehensive facilities, so as to be appropriate for use by the widest possible spectrum of staff. 1^{ry}
- 4.88 If reporting and analysis facilities are provided using different software products in different hardware environments, the user WILL be faced with a clearly understood 'seamless' interface with the software delivering appropriately formatted files for transfer. 1^{ry}
- 4.89 The system WILL also be designed such that industry standard reporting tools can be used e.g. MS ACCESS. 1^{ry}

Central & Business Requirements

- 4.90 The system WILL support use of OPCS, ICD, and clinical terms. 1^{ry}
- 4.91 The system WILL be adaptable to facilitate new developments within both ICD and OPCS applications and any future developments. 1^{ry}
- 4.92 The system WILL be user friendly to support the required number of diagnosis with the ability to record and identify co-morbidities. 1^{ry}
- 4.93 The system WILL be able to generate on-line reports to support the validation of accurate clinical coding. 1^{ry}
- 4.94 There WILL be a read and retrieve facility to the Trust's Master GP file. 1^{ry}
- 4.95 The system WILL enable downloads to be run. 1^{ry}
- 4.96 The system WILL: - 1^{ry}
- Provide downloads in the required formats.
 - Be flexible to allow for data items that are introduced or altered. 1^{ry}
- 4.97 The system WILL provide outputs to meet statistical reporting requirements for the NHS Regional office and the Department of Health, specifically: 1^{ry}
- National Minimum Data Set summary reports appropriate to those functional areas served by the system. in the correct format to be sent to the clearing service.
 - Our reports currently supported by the existing Clicks System.
 - National and International Audit Initiatives. 1^{ry}
- 4.98 The system WILL enable users to produce standard reports through the use of standard, parameterised transactions which produce output in the format required without a need to understand database structure or query language syntax 1^{ry}
- 4.99 The system WILL enable the user to choose whether activity reports will be produced on screen, hard copy or to disk. 1^{ry}

- 4.100 The system WILL provide for ad hoc queries to be made through the use of an easy to use query interface and inquiries and reports so written WILL be capable of being stored for future reference. 1^{ry}
- 4.101 The system WILL provide basic user defined facilities for statistical manipulation or graphical display of data retrieved. 1^{ry}
- 4.102 Output from standard or ad hoc queries WILL be capable of being downloaded into microcomputer packages for further statistical or graphical manipulation. 1^{ry}

Central Returns

- 4.107 The system WILL provide on-line central returns to meet National Standards. 1^{ry}

Security And Confidentiality

- 4.117 The software WILL provide the ability to configure any terminal without affecting the service at any other terminal and independently of the application software 1^{ry}
- 4.118 The system WILL satisfy all relevant requirements of the Data Protection Act. 1^{ry}
- 4.119 Access to the system WILL be carefully controlled with the ability to restrict access and all maintenance and software options to individual users and / or groups of users. 1^{ry}
- 4.121 Menu screens presented to users WILL only show the options which have been allocated to that user via system security. 1^{ry}
- 4.122 It will be easy for individual users to change their password. 1^{ry}
- 4.123 There will be forced changes of passwords on a regular basis. Passwords will be used once only by individual users. 1^{ry}
- 4.125 There WILL be a timed, automatic log-off facility. 1^{ry}
- 4.126 The time to trigger the log-off facility WILL be definable. 1^{ry}
- 4.127 Access to Reports WILL be user definable both for running the report and modifying it. 1^{ry}
- 4.128 The system WILL have full audit trails available for all entries to the system and WILL identify date and time of processing, files and programs used, user IDs and terminals used. 1^{ry}
- 4.129 The audit trail WILL hold chronological entries such that a full history of user access/ data entry WILL be provided. 1^{ry}
- 4.130 Users WILL be able to enquire against the audit trail without necessarily having to produce a report.

Resilience and System Operation

- 4.134 The system WILL have effective change control to permit enhancements without compromising local customisation. 1^{ry}
- 4.136 The system WILL provide usage, availability and performance statistics. 1^{ry}

Compliance With Standards

- 4.137 The following indicates broadly those applicable:
- Relevant Trust policies, for example those that relate to National classification codes, office automation, PCs, printers, networks etc.
 - National Data manual (Minimum data sets)
 - Audit Commission recommendations.

- Professional Bodies.
- N.H.S. Executive.
- National Classification Codes
- Data Protection Act

Audit

Patient Event Trail

- 4.138 The system WILL provide a facility for end users of the system to review the patient's Event / Audit trail contained within one file. 1^{ry}
- 4.139 Contained within one file the Patient Audit trail of the new system WILL contain the following data relating to all Patient Administration e.g.: -
- Date and time transaction performed.
 - Type of transaction performed
 - The user ID of the member of staff performing the transaction. 1^{ry}
- 4.140 The system WILL provide a facility to search within a patient's audit trail using the following criteria: - 1^{ry}
- Search by date and default in chronological date order.
 - Search by name (users name).
 - Search by type (application transaction)
- 4.141 There will be an ability to review details regarding patient's future outpatient appointments, planned in- patient stays or entries or waiting lists in a summary format both on line and as a hard copy report. These details will also be recorded in the patient's audit trail. 1^{ry}
- 4.142 The system WILL provide as a minimum patient event functionality to include e.g. patient name, date of birth and hospital number. 1^{ry}

Patient Administration History Summary

- 4.143 The system WILL provide a detailed summary of a patient's previous and current cardiac episodes with the Trust. 1^{ry}

Change Of Century

- 4.144 The system WILL be 2000 compliant. 1^{ry}

Interfaces

- 4.154 The system WILL provide export facilities to industry standard IBM compatible PC software packages, such as MS Office 97. 1^{ry}
- 4.155 The system WILL provide import / export facilities to permit update of reference files and documents. 1^{ry}

Specific System Functions

The following sections describe the functions required from the system.

5. CORE REQUIREMENTS – DEPARTMENTS OF CARDIOLOGY & CARDIAC SURGERY

CURRENT SITUATION

- 5.1 A replacement Cardiac Information System will perform in an integrated fashion across the Royal Hospitals for Sick Children, Glasgow and Edinburgh Cardiology sites and be configurable to deal with the different operational process across each of these sites. It will allow all disciplines within these units to make optimal use of information technology to deliver high quality medical and surgical care.

Major Benefits

- 5.2 A replacement system WILL be expected to help us deliver improved patient care by:-
- Improved use of clinical and management information to provide better and safer patient care.
 - Improving patient safety and quality of care by providing the ability to track patients from initial referral to final discharge from care.
 - The ability to record information with minimal resource implications.

CORE REQUIREMENTS

General Requirements

- 5.3 The system WILL provide information for the management of the Cardiac Services, 24 hours a day, 7 days a week, throughout the year. 1^{ry}
- 5.5 The system WILL be easy to use by staff with limited or no keyboard/mouse/IT skills and will require minimum training. 1^{ry}
- 5.6 The department places significant importance on integration and users being able to access or move across applications speedily in line with workflow and with ease. 1^{ry}
- 5.7 The system WILL provide access for update, retrieval and addition to full personal and demographic information, as retained within the Trust HISS (MPI). 1^{ry}
- 5.9 The system WILL allow minimal data entry and feed this information to and from all integrated and interfaced components and systems, e.g. entering the patient's name, date of birth, diagnosis etc. will be displayed throughout the different aspects of the screens, but should only have to be entered once. 1^{ry}
- 5.11 The search and select facility will be consistent throughout the module using user-defined fields e.g. name, date of birth, hospital number, address, etc. 1^{ry}
- 5.12 The system WILL provide a further facility to search for patients by displaying the second line of the address. 1^{ry}
- 5.14 The system WILL have user-defined levels of access to each of the system's applications. 1^{ry}
- 5.15 On termination of a transaction no data will be lost without the user being alerted. No confirmed data will be lost. 1^{ry}
- 5.16 The system WILL allow changes to and from British Summer Time. 1^{ry}
- 5.18 The system WILL provide the user with a simple "mask" facility to reduce the area of search within the National GP file to locally defined areas. 1^{ry}
- 5.19 When searching the Master Patient Index, the system WILL provide a quick scrolling mechanism which allows the user to review and select the record with which they wish to work. 1^{ry}
- 5.20 As part of the search and select process, the system WILL display a minimum of ten patients on one screen and the following information as a minimum to enable users speedily identify patients with which they wish to work: - 1^{ry}

- Surname
 - First and second names
 - Date of Birth
 - Patient identifier
- 5.21 The system WILL permit interrogation of the MPI using one or more of the following: -
- Patient identifier
 - Surname
 - Aliases
 - Initial of first name
 - Previous surname
 - Phonetic surname
 - A secondary patient identifier WILL be a search criteria
- It will be possible to search for a patient without having exact details. 1^{ry}
- 5.22 When searching the Master Patient Index, the system WILL provide the user with an ability to determine and select the search criteria they wish to use. 1^{ry}
- 5.23 The system WILL be shown to be reliable and robust in practice. 1^{ry}

Patient Registration

- 5.24 Patient registration activities WILL be recorded in compliance with National and local Minimum Data Set definitions and Local Data requirements. All registration data fields WILL be capable of being user defined as mandatory. 1^{ry}
- 5.25 The system will provide multiple search facilities to match core requirements. 1^{ry}
- 5.26 The system WILL provide a facility to search and select G.Ps with multiple addresses. 1^{ry}
- 5.27 Patients who come into contact with the department WILL be issued with a unique patient identifier (PID). The specific ranges and format of numbers to be allocated WILL be capable of definition by the department. The system WILL provide for manual assignment of patient identifiers with an ability to override PID.
- 5.28 The system WILL provide authorised users a facility to correct incorrect PID numbers and will update all areas of the system. 1^{ry}
- 5.29 Where a patient identifier is entered, it WILL always be validated by the system and WILL show sufficient patient details to confirm the entry before the user "submits" the data entry for input to the system. 1^{ry}
- 5.30 The system WILL automatically generate an episode or spell number when recording an cardiac attendance. 1^{ry}
- 5.31 The system WILL provide within the registration screen a facility to record unlimited free text comments which may be saved, overwritten or reported on. The user should be alerted that comments exist when accessing the patient's registration record. 1^{ry}
- 5.36 The system WILL conduct internal validations to ensure that no duplicate numbers exist. Where a duplicate PID number is identified, the system WILL identify to the user, the patient's record containing the duplicate. 1^{ry}
- 5.37 The system WILL permit authorised on-line and / or retrospective correction or entry of any data item associated with any of the following transactions:-
- Registration
 - Admissions
 - Procedures
 - Investigations
 - Drug Therapies
 - Appointments

- Transfers
 - Discharges / Deaths
- 5.38 The system WILL record the source of referral of the patient. 1^{ry}
- 5.39 The system WILL be able to calculate time elapsed since the incident based on the data input. 1^{ry}
- 5.42 The system WILL automatically identify any patient with the same PID, surname, forename, and date of birth, prior to accepting the entry in any application. i.e. This will prevent a patient being registered more than once. 1^{ry}
- 5.44 The system WILL be able to recall on line and display details of patients' previous attendances. 1^{ry}
- 5.47 The system will allow access to patient documentation by appropriately authorised users from any PC. 1^{ry}
- 5.49 The system will be able to print pre-designed forms or cards and all user defined patient details on plain paper. 1^{ry}
- 5.52 The system WILL provide an ability to produce SMR20s on demand. In selecting SMR20s to be reprinted the user WILL be given the option to choose the appropriate patient episode and direct the print to any printer within the unit. 1^{ry}
- 5.55 The system WILL be able to hold hazard information, e.g. allergy, and to display at the earliest entry to patient details. 1^{ry}
- 5.56 The system WILL record details of patients' allergies, sensitivities, alerts e.g., Blind, Deaf 1^{ry}
- 5.59 The system WILL display current Consultant in charge, speciality, date with ability to over-ride. 1^{ry}

Recording Demographic Information

- 5.65 The system WILL provide a means of recording a patient's next of kin and their relationship to the patient. 1^{ry}
- 5.66 The system WILL provide a means of looking up abbreviated lists of GP Practices and entering details from a menu. 1^{ry}
- 5.67 The system WILL store details of the patient's local hospital including address. Data entry to this field should be made by selection from a menu. 1^{ry}
- 5.68 The system WILL record details of initial referral to the unit and details of actual consultation. 1^{ry}

Recording Diagnosis

- 5.68 The system WILL provide a facility to record both coded or free text diagnoses.
- 5.69 The system WILL provide menus of pre-defined conditions for all coded diagnosis with an option to display one or more coding systems on screen. 1^{ry}
- 5.68 The system WILL provide a means of classifying diagnosis in terms of importance. 1^{ry}
- 5.68 The system WILL provide a means of recording non cardiac diagnoses. 1^{ry}
- 5.68 The system WILL provide a means of archiving and retrieving diagnosis. 1^{ry}
- 5.68 The system WILL display on screen the name of user entering the diagnosis. 1^{ry}
- 5.68 The system WILL display diagnosis details to users on specified screens throughout the system. 1^{ry}

Outpatient Appointments

- 5.28 The system WILL provide a facility to enter details of past and future appointments at outpatient clinics.
- 5.29 The system WILL provide a facility to archive past appointments.

Inpatient Details

- 5.30 The system WILL provide a facility to track patients care during ward stays under the cardiac services.

The inpatient module WILL record as a minimum, the following data fields :-

- Admission Date
 - Admitting Consultant
 - Named Nurse
 - Admission Type
 - Transfers to other wards
 - Dependency Levels
 - Procedures during admission
 - Problems during admission
 - Drug Therapy
 - Recommendations for care
 - Discharge Details
- 5.31 The system WILL calculate length of stay for each admission and WILL be capable of producing reports to analyse care by specialty, consultant, ward etc.
- 5.32 The system WILL provide a facility to generate an automated discharge summary in a locally specified format which can be modified if required.
- 5.33 The system WILL provide a report on the number of ward attendees within any given date range, which WILL include all/any data items entered as part of the Ward attendance process.

Investigations

- 5.34 The system WILL provide a facility to record and store details and produce reports for any investigations undertaken including routine, transoesophageal, intraoperative and fetal ultrasound scans, electrocardiograms and monitoring equipment.
- 5.35 The system WILL provide a facility to order and schedule investigations.
- 5.36 The system WILL provide a facility to record the following data fields for Echocardiographic Investigations :-

Echocardiography

- Referral Source
- Consultant
- Location of test
- Operators
- Echo Type
- Reason
- Storage details

- M-mode data including normal ranges
 - Doppler data with automated calculation of mmg
 - Space to record a free text report on the test
- 5.37 The system WILL display the current diagnosis within this screen and WILL provide the user with the facility to modify or update as required.
- 5.38 The system WILL provide a facility to generate an automated report on completion of the test which will be stored within the patients record
- 5.39 The system WILL generate one of two types of report depending on the purpose of the echocardiographic investigation
- 5.40 The system WILL display all echocardiographic tests in chronological order to the user.

Electrocardiography

- 5.41 The system WILL provide a facility to record the following data fields for electrocardiographic investigations :-
- Referral Source
 - Consultant
 - Location of test
 - Operator(s)
 - Type of test
 - Space to record a free text report

The system WILL display the current diagnosis within this screen which may be updated by users as required.

Monitoring Equipment

- 5.42 The system WILL provide a facility to record the following data fields for monitoring equipment issued to patients :-
- Referral Date
 - Referral Source
 - Consultant
 - Date of Issue
 - Type of monitor
 - Date and details of events
 - Expected Date of Return
 - Actual Date of Return
- 5.43 The system WILL provide a facility for users to retrieve lists of all patients issued with or awaiting a monitor.
- 5.44 The system will produce standard letters or reports relating to the issuing of monitors

Catheterisation Procedures

- 5.45 The system WILL provide a facility to schedule and record catheterisation referrals and procedures.
- 5.46 The system WILL provide a separate schedule of catheterisation procedures for each consultant which will be ordered by day, date and time of procedure.
- 5.47 Waiting List data fields will include :-
- Referral Date
 - Referring Consultant
 - Catheterisation type
 - Planned intervention
 - Urgency including a facility to revise urgency
 - Appointment details
 - Removal details
- 5.47 The system WILL automatically generate standard letters regarding admission for catheterisation.
- 5.48 The system WILL display the waiting list status clearly within the patient's record.
- 5.49 The system WILL append all waiting list entries to a central list which can be viewed or printed by any system user. The list will include details of consultant, urgency, planned date and planned procedure.
- 5.50 The system WILL not allow the user to enter catheterisation procedures unless waiting list details have been completed.
- 5.51 The system WILL provide a facility whereby users can modify the planned date of procedure without removing the patient from the waiting list.

Catherisation Details

- 5.52 The system WILL provide a facility to record the following data fields :-
- Date of procedure
 - Type of catheterisation
 - Height, Weight and Haemoglobin
 - Staff involved in procedure
 - Start and end time
 - Purpose(s) of catheter
 - Planned Procedure
 - Procedures Performed
 - Related complications
 - Gradient Details
 - Angiography Details
 - Pressure and saturation data including a facility to add user configurable sites
 - Space to record notes and follow up details
- 5.53 The system WILL provide a facility to generate a user definable report on the procedure which WILL be stored within the patients file.
- 5.54 The system WILL provide a facility to perform calculations on the Pressure and Saturation Data
- 5.55 The system will allow users to enter minimum data only including date and procedure

- 5.55 The system WILL display the latest chest x-ray details and echo findings within the Catheterisation screen

Surgical Details

- 5.56 The system WILL provide a facility to record surgical Waiting List details for patients including the following fields :-
- Referral Date
 - Referring Consultant
 - Surgeon
 - Planned procedure
 - Date of operation
 - Blood Grouping
 - Units Required
 - Teeth Inspection
 - Urgency
 - Number and type of previous procedures
 - Antibodies
 - Appointment details
 - Removal date
 - Reason for removal
 - Date of discharge from surgical care
- 5.57 The system WILL provide a facility to generate an automated letters relating to admission or attendance at pre-admission clinics.
- 5.58 The system WILL provide a facility for users to view on screen or on print out latest waiting list details.
- 5.59 The system WILL provide a facility to generate automated forms and summaries relating to surgical care.
- 5.60 The system WILL provide a facility to view the patients CCAD dataset on screen or on print out.
- 5.61 The system WILL provide a facility allow specified users to add patients CCAD dataset to a central file.
- 5.62 The system WILL not allow the user to enter routine surgery details without completing a corresponding waiting list entry.
- 5.63 The system WILL provide a facility whereby users can modify the planned date of procedure without removing the patient from the waiting list.
- 5.64 The system WILL provide a facility to enter emergency surgical procedures for patients not on a waiting list.

Operation Details

- 5.65 The system WILL provide a facility to record operation details for patients which will include the following data fields :-
- Procedure Date
 - Height, Weight and Haemoglobin
 - Surgeon and assistants
 - Procedure(s)
 - Complications during and after surgery

- Bypass time
 - Cross Clamp time
 - Ventilation Time
 - Free text area to accommodate free text operation report
- 5.66 The screen MUST display the current diagnosis to users and provide a facility to update if required.
- 5.67 The system WILL provide a locally defined menu listing all possible operations from which users will enter procedures carried out.
- 5.56 The system WILL provide a facility to generate an operation summary which will be stored within the patient's record.
- 5.57 The system WILL provide a facility to generate other locally defined reports and summaries as required.
- 5.70 The system WILL display a list of all operations recorded in chronological order.

Procedure Summary

- 5.71 The system WILL provide a procedure summary within the patient record.
- 5.72 Procedures entered to the Catheterisation and Surgery Sections will be automatically added to the procedure summary
- 5.73 The system WILL provide the facility to enter procedures directly to the procedure summary screen if required
- 5.74 The system WILL provide a facility to enter all cardiac procedures from locally defined menus with all corresponding coding systems being tied to individual procedures

Drug Therapy

- 5.75 The system WILL provide a facility to enter drug therapy for patients to include the following fields :-
- Date
 - Drug Type
 - Dose
 - Units
 - Frequency
 - Duration
 - Form
 - Route
- 5.76 The system WILL provide a facility to archive drug therapies with an archive date and provide a facility to display a list of all past and present therapies.
- 5.77 The system WILL provide a facility to distinguish between past and present therapies
- 5.78 The system WILL provide a facility to prompt users to check or update drug therapy on discharge from a ward admission.

Discharge From Cardiac Care

- 5.79 The system WILL provide a facility to record details on final discharge from cardiac care to include the following fields :-
- Date of last consultation
 - Discharging Consultant

- Recommendations for care
- Transfer details (if applicable)
- Section to allow free text notes to be added

Deceased Records

- 5.80 The system WILL provide a facility to record a patient death and WILL display details prominently within the record. Data fields WILL include :-
- Date of death
 - Location
 - Death Conference Details
 - Cause of Death
 - Post Mortem Number
 - Post Mortem Report Details
- 5.81 The system WILL provide a facility to flag the patient's death on opening of the record by any user.

Clinical Examination

- 5.82 The system WILL provide a facility to record details related to outpatient clinic visits including the following data fields :-
- Date of consultation
 - Start and End Time of consultation
 - Consultant
 - Source
 - Blood Pressure
 - Saturations
 - Height and Weight
 - Symptoms and History
- 5.83 The system WILL provide a facility order patient investigations from the Clinical Examination screen which will create a worklist for technical and other related staff.

Clinical Patient Management

- 5.81 The basis of the system will be an individual patient record. Individual records WILL be groupable by any data item and/or combination of data items deemed to be clinically meaningful. 1^{ry}
- 5.88 The system WILL enable staff to track the patient's progress within the Department and allied Departments in real time and retrospectively locally and remotely. 1^{ry}
- 5.90 The system WILL be able to record Nationally recognised scoring systems e.g. NYHA. This information WILL be exportable and printable on user defined templates and or paper. 1^{ry}
- 5.91 The system WILL allow clinical information to be recorded against the patient. This will include discharge, diagnosis and destination as well as investigations performed. There will be flexibility to record further data if required. 1^{ry}
- 5.92 The system WILL be able to record additional data as separate fields under user control for subsequent analysis and audit. This will be user defined and flexible following installation. 1^{ry}

- 5.93 The system WILL be able to maintain access to an event history of all services provided to the patient including drugs prescribed. 1^{ry}
- 5.95 The system WILL be able to record and retain medical dependency classifications. 1^{ry}

Discharges & Coding

- 5.103 The system WILL generate locally defined discharge summaries at the point of discharge. The system WILL generate a basic summary for completion by discharging doctor. 1^{ry}
- 5.104 The system WILL be able to generate a range of user defined discharge letters, comprising information extracted from the system and free text information to process and print on any printer e.g. G.P.s name & address, patient demographics, diagnosis and treatment. 1^{ry}
- 5.106 The system WILL be able to structure and provide patient demographic details, summary of patient's problems/assessment details and an evaluation of hospital treatment for community teams upon discharge. 1^{ry}
- 5.107 The system WILL be able to record a referral to an outside agency and WILL have the ability to print the referral details in a user defined document e.g. letter. 2^{ry}
- 5.109 Coding facilities for CCAD, OPCS4, ICD10, WILL be provided, and WILL be operable with minimum effort and advance training. 1^{ry}
- 5.110 The system WILL be able to record problem categorisation, including the ability for free text entry. 1^{ry}
- 5.111 The system WILL be able to record working and coded diagnoses to 1 primary and 4 secondary conditions. 1^{ry}
- 5.112 The system WILL be capable of employing any coding system agreed nationally or regionally for the recording of cardiac diagnoses and procedures. 1^{ry}
- 5.117 The system WILL allow local extensions to standard coding systems and where appropriate provide for their mapping to national standards. 1^{ry}
- 5.118 The system WILL provide a facility to record the destination of a patient on discharge e.g. home, other hospital etc. 1^{ry}
- 5.120 The system WILL enable staff to access clinical information, for information extraction, audit and reporting purposes. 1^{ry}
- 5.121 The system WILL flag patients with waiting list entries. 1^{ry}
- 5.123 Reports and letters WILL be locally definable and permit the user to amend the sort criteria i.e. site, date, time etc. The system WILL provide on-line reports e.g. as a minimum.
- Investigation Activity
 - Catheter Waiting List Reports
 - Surgical Waiting List Reports
 - Procedure Reports
 - Ward Activity