Department of Health

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To: SHA Choice Leads, SHA CHD Leads, Cardiac Network Leads, Patient Care Advisors and other stakeholders

With thanks to all those who have contributed to the development of this note.

CHD Choice at the Point of Referral by the Cardiologist

The *Choose and Book Framework – Patient's Choice of Hospital and Booked Appointment* was published in August 2004. The framework makes reference to CHD Choice highlighting two differences from the Choose and Book guidance. This note provides further details.

CHD Choice at the point of referral by the cardiologist

In addition to Choose and Book and building on the success of the CHD Choice pilot, from April 2005, CHD Choice will be extended to offer all patients requiring a coronary artery bypass graft, angioplasty, or heart valve operation, a choice of hospital at the point of referral by the cardiologist. The choice of hospitals offered to patients will be decided locally. This includes decisions about whether independent providers are included in the menu of choices. From April 2005, at least one alternative to the patient's local hospital should be provided, increasing to a choice of 4-5 alternatives by December 2005.

The original CHD Choice pilot was established in July 2002. Patients waiting over six months for heart surgery have been able to choose to have faster treatment elsewhere – be that at another NHS hospital or in the private sector. During the pilot phase of the scheme (July 2002 – November 2003) 51% of those eligible for choice (3,034) opted for treatment elsewhere. Independent evaluation of the scheme showed that almost 90% of patients who took part would definitely recommend the Heart Choice initiative to others waiting for the same operation.

The Heart Choice scheme helped to facilitate the reduction of waiting times by using spare surgical capacity in the NHS and the private sector. Since April 2004, no one waits more than six months for a heart operation and by March 2005 or sooner, no one will wait more than three months. In many hospitals, choice is already being offered to patients who have been waiting less than six months.

Patient Care Advisor role

Patients are supported by Patient Care Advisors (PCAs) who provide advice and information to patients to enable them to make a decision on whether they wish to travel elsewhere for their operation. PCAs are experienced cardiac nurses and in addition to supporting patients in making a choice, PCAs provide advice and support to patients at a number of points along their care 'pathway'.

Patients will continue to be supported by PCAs in their decision making. PCAs will have access to information on providers offered. The lessons from the evaluation of the CHD Choice at six months pilot were that for high-risk procedures, senior clinical support enabled patients to best make informed choices about their treatment. PCAs also perform valuable roles in case managing patients throughout their treatment, and in the redesign of services.

Details about the role and location of PCAs are for local decision in accordance with local circumstances. It will be necessary to develop communications between those centres undertaking angiography and those undertaking revascularisation in order to ensure timely and appropriate PCA support.

Information

Information will need to be made available to patients and PCAs in order to enable them to make informed choices. National sources include waiting times at www.dh.gov.uk and www.nhs.uk ; information about location, facilities and patient services at www.nhs.uk; performance ratings of providers at www.nhs.uk; and data on providers and clinicians from the Society of Cardiothoracic Surgeons of Great Britain and Ireland *Fifth National Adult Cardiac Surgical Database Report 2003*. Local providers will need to consider what additional information patients and their clinicians will need in order to be able to make an informed choice.

A revised patient booklet about CHD Choice at the point of referral from the cardiologist will be developed over the next few months in conjunction with PCAs, patients, PCTs, Trusts and SHAs. This will include an optional template for additional local information.

Funding

In April 2002, £117 million recurrent revenue was allocated to support the CHD Choice scheme including patient care advisors and any administrative support which they need. This funding is included in PCT baselines. There will be no additional funding.

"Query proceeds" and emergency procedures

"Query proceeds" and emergency procedures may be excluded from CHD Choice at the point of referral from the cardiologist. However, consideration

may be given to the use of capacity commissioned at alternative providers to tackle issues surrounding interhospital transfer waiting times for emergency patients. Patients may also be excluded due to clinical ineligibility. Criteria for clinical eligibility should be drawn up locally, informed by Parsonnet and Euroscores (Annex A).

Follow-up treatment

In line with the Choose and Book Policy Framework, patients should expect to be able to choose the same provider for their first outpatient consultation and any related follow-up treatment (i.e. their whole elective care episode). Aftercare and rehabilitation should be delivered locally.

Transport

Also in line with the Choose and Book Policy Framework, patients currently eligible for free transport will continue to be eligible. This applies to patients under the Hospital Travel Costs Scheme (for patients on low incomes); and through Patient Transport Services (for patients requiring transport on the basis of a medical assessment).

Assuring delivery and monitoring uptake

While the Choose and Book Framework asked for state of readiness returns to be submitted on the delivery of choice at GP referral, a lighter touch is proposed for CHD Choice at referral from the cardiologist. SHAs are responsible for performance managing local delivery to ensure successful implementation. This will include performance monitoring and management arrangements. SHAs (via the Choice lead), will be asked to confirm to the CHD policy team, that in April 2005, at least two choices of provider are offered and that from December 2005, at least 4-5 choices of provider are offered. These confirmations should reach the CHD policy team (kate.bowe@dh.gsi.gov.uk) by 1 April 2005 and by 1 January 2006.

Performance management by the Department, via the Recovery and Support Unit to Directors of Performance would only take place if there were a problem.

Formal information collection will not take place at this stage. It is expected that SHAs will need to have access to information about the numbers of patients offered choice, the numbers of patients clinically ineligible for choice, and the numbers of patients choosing an alternative to their local provider, in order to ensure policy delivery and evaluate impact. We would not ask for sight of this on a regular basis, rather, that on request information could be made available to DH to inform central policy decisions.

Exceptions to Choice at GP referral (at the point of referral by the GP or primary care professional)

As cited in the Choose and Book Policy Framework, Choice of Hospital may not be appropriate for all services, including services where speed of access to diagnostics and treatment are particularly important. Patients attending a Rapid Access Chest Pain Clinic under the 2-week maximum waiting time fall under this exception.

Rapid Access Chest Pain Clinics offer patients a 2-week maximum waiting time for the investigation of sudden onset chest pain. Speed of access to diagnosis at this stage of the patient pathway is considered the highest priority. Due to the speed of access, it is not appropriate to offer these patients a choice of provider at this stage in their care. Choice will be offered following confirmation of diagnosis, at the point at which the patient agrees to further treatment. This is at the point of referral by the cardiologist for a coronary artery bypass graft, angioplasty, or heart valve operation.

All other CHD patients referred from general practice should be offered a choice of provider in line with the Choose and Book Policy Framework.

The attached diagram (Annex B) indicates the choices available in the CHD pathway.

Further guidance

The original CHD Choice guidance, *Extending Choice for Patients*, and further advice on establishing the Choice scheme and on recruiting Patient Care Advisors can be found at:

http://www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/CoronaryHeartDisease/ExtendingHeartChoiceForPatients/fs/en

For further information, please contact kate.bowe@dh.gsi.gov.uk or maree.barnett@dh.gsi.gov.uk

Kate Bowe
Heart Team
Department of Health

Annex A - Choice Scheme

Option appraisel form/preadmission workup

Surname		**Date of birth**		**SEX**
First names				❍ **M**
Hospital number				❍ **F**

Consultant Cardiologist		**Date on Waiting List (CT)**	
Consultant Surgeon		**Referred to (Cons Surgeon)**	
Operation requested		**Accepted** ❍	**Rejected** ❍

History

Option Appraisel

1 Suitable for local NHS provider only ☐
Reasons:
2 Suitable for local other provider ☐
3 Suitable for non-local provider ☐

Note: Questions marked with asterisk must be completed.

Patient History & pre-op status

Date of catheter

Coronaries affected

LAD* No ❍ Yes ❍ % stenosis _____ Proximal? ❍

Cx* No ❍ Yes ❍ % stenosis _____

RCA* No ❍ Yes ❍ % stenosis _____

Other* No ❍ Yes ❍ % stenosis _____

LMS* No ❍ Yes ❍ % stenosis _____

PA systolic _____ **AV gradient** _____

LVEDP _____ **PAWP/LAP** _____

Exercise Test?* Not done ❍ Negative ❍ Mildly positive ❍ Positive ❍ Strong + ❍

Hypercholesterolaemia?* No ❍ Yes ❍

Height?* _____ m **Weight?*** _____ kg

PVD?* No ❍ Yes ❍

Pulmonary disease?* No ❍ Asthma ❍

Bronchodilator/steroids >6 mt ❍ COPD/emphysema ❍

(if resp. function poor FEV1 =_____)

CXR date* ☐☐☐☐☐☐☐☐

Result* Normal ❍ Abnormal ❍

Details _____

CCF?* Never ❍ Now ❍ Past ❍ Unknown ❍

GI tract disease?* None ❍ Ulcer ❍ Other ❍

Myocardial Infarct?* No ❍ Yes ❍

*When?<6 hrs/6-24 hrs/1-30 days/31-90 days/90+ days

_____

Extra cardiac arteriopathy?* No ❍ Claudication? ❍

Carotid occlusion/>50% sten ❍ Prev/planned surgery t ❍
abdo. aorta, carotids, limb arteries?

Needs combined cardiac/carotid op?* No ❍ Yes ❍

Neurological dysfunction?* No ❍ Yes ❍
(severely affecting ambulation or day-to-day functioning)

Syncope?* No ❍ Yes ❍

Pulmonary oedema?* No ❍ Yes ❍

Blood results*

Hb	**WCC**	**Platelets**	**INR/APTS**
Urea	**Creat**	**Potassium**	**Liver func**

Drugs*

Aspirin? ❍ **Warfarin?** ❍ **Diuretics?** ❍

Clopidogril? ❍ **Steroids?** ❍

Work up

MRSA status* Positive ❍ Negative ❍

Dental work up?* No ❍ Yes ❍ Date complete ☐☐☐☐

Anaesthetic history*

Has patient ever had previous surgery of any kind?

Yes ❍ No ❍

Were there any problems? (eg reaction to induction agents, difficulty in intubation) _____

Parsonnet Score details*

Age <70 ❑ (0) 70-74 ❑ (7) 75-79 ❑ (12) >80 ❑ (20)

Female gender ❑ (1)

Morbid obesity (calculated) (Body Mass Index > 35) ❑ (3)

Diabetes* No ❍ (0) Diet ❍ (3) Oral ❍ (3) Insulin ❍ (3)

Hypertension (systolic > 140 mm Hg) No ❍ (0) Yes ❍ (3)

Renal disease* No ❍ (0) Creat>200 ❍ (0) Transplan ❍ (0) Dialysis ❍ (10)

Ejection fraction* >50% ❍ (0) 30-49% ❍ (2) <30% ❍ (4)

Left ventricular aneurysm* No ❍ (0) Yes ❍ (5)

Re-operation? First ❑ (5) Seconc ❑ (10)

Pre-operative IABP?* No ❍ (0) Yes ❍ (2)

Valve operation? MVR ❑ (5) MVR (PA>60) ❑ (8) AVR ❑ (5) AVR (grad > 120) ❑ (7) CABG + Valve ❑ (2)

Emergency post PTCA* No ❍ (0) <24hrs ❍ (5) >24hr ❍ (10)

Catastrophic states* _____ **(10 - 50)** (e.g anuria, oliguria < 10 ml/hr)

Rare circumstance* _____ **(2 - 10)**

PARSONNET SCORE

Euroscore (computed)

		Score
Age	Per 5 years or part thereof over 60	1
Gender	Female	1
Chronic pulmonary disease	Long term use of bronchodilators or steroids for lung disease	1
Extra cardiac ateriopathy	Any or more than one of: claudication, carotid occlusion or >50% stenosis, past or planned surgery on abdominal aorta, limb arteries or carotids	2
Neurological dysfunction	Disease severely affecting ambulation or day-to-day functioning	2
Previous cardiac surgery	Previous surgery involving opening of pericardiaum	3
Serum creatinine	>200 mmol/L pre-operatively	2
Active endocarditis	Patient still under antibiotic treatment at time of operation	3
Critical pre-operative state	Ventilation before arrival in anaesthetic room, pre-op inotropic support, IABP, or pre-op. acute renal failure (anuria or oliguria <10ml/hr)	3
Unstable angina	Angina requiring iv nitrates before operation	2
LV dysfunction	Moderate (EF 30-50%)	1
	Poor (<30%)	3
Recent MI	<90 days	2
Pulmonary hypertension	Systolic PA pressure > 60 mmHg	2
Emergency	Done on referral before next working day	2
Other than isolated CABG	Major cardiac surgery other than or in addition to CABG	2
Surgery on thoracic aorta	Ascending, arch or descending aorta	3
Post infarct septal rupture		4

TOTAL EUROSCORE

CCS Angina Scores (tick as appropriate)*

Class 0 ❍ **No angina**

Class I ❍ **Ordinary physical activity such as walking or climbing stairs does not cause angina. Angina may occur with strenuous, rapid or prolonged exertion**

Class II ❍ **Slight limitation of ordinary activity, angina may occur on walking or climbing stairs rapidly, walking up hill or walking after meals, in the cold, wind or under emotional stress or climbing more than one flight of stairs under normal conditions**

Class III ❍ **Marked limitation of ordinary physical activity. Angina may occur after walking 100m or climbing one flight of stairs under normal conditions at a normal pace**

Class IVA ❍ **Inability to perform any physical activity without discomfort. Angina may occur at rest**

Class IVB ❍ **Unstable angina on oral Rx in hospital. Symptoms improved on Rx but angina with minimal exertion**

Class IVC ❍ **In hospital on IV GTN and heparin**

Score ____

NYHA Dyspnoea Score (tick as appropriate)*

Class 1 ❍ **Patients with cardiac disease but without limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation or dyspnoea Asymptomatic patients should be classified as Class 1**

Class 2 ❍ **Cardiac disease resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitations or dyspnoea**

Class 3 ❍ **Cardiac disease resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary physical activity results in fatigue, palpitations or dyspnoea**

Class 4 ❍ **Cardiac disease resulting in an inability to conduct any physical activity without discomfort. Symptoms of cardiac failure may be present even at rest. If any physical activity is undertaken discomfort is increased**

Score ____

Acknowledgments

a Template and data set by Mr Alan Wood & Mr John Cross Barts and the London NHS Trust

b West Midlands Surgical Referral Form

c Southhampton fast track criteria

Parsonnet Score

A method of Uniform Stratification of Risk for evaluating the results of surgery in acquired adult heart disease

Circulation 1989; 79: Suppl I: 3-12

Score weights add up to an approximate percentage predicted mortality

Patient-related factors	***Definition***	***Score***
Gender	Female	**1**
Morbid obesity	Body mass index >35	**3**
Diabetes	Any history of diabetes regardless of duration or treatment. Latent diabetes of pregnancy excluded	**3**
Hypertension	A history of blood pressure greater than 140/90mmHg on two occasions, or lower if on medication	**3**
LV dysfunction	Good (>50%) Fair (30-50%) or Poor (<30%) if known	GOOD = **0** FAIR = **2** POOR = **4**
Age		70-74 = **7** 75-79 = **12** > 80 = **20**
Re-operation	**1** Second operation **2** Third (or more)	Second = 5 Third (or more) = 10
Intra aortic balloon pump	Prior to surgery. Do NOT include IABP's inserted prophylactically just prior to surgery because these represent post-operative support.	**2**
Left ventricular aneurysm	Aneurysmectomy	**5**
Recently failed intervention	**0** No **1** Within 24 hours of operation **2** > 24 hours, op on same admission	**1** Within 24 = **10** **2** > 24 hours = **5**
Renal	Dialysis dependency	**10**
Catastrophic states	e.g. acute structural defect, cardiogenic shock, acute renal failure	**10 - 50**
Other rare circumstances	eg paraplegia, pacemaker dependency, congenital heart disease in adults, severe asthma	**2 - 10**
Valve surgery		
Mitral		**5**
Pulmonary hypertension	Systolic PA pressure >60 mmHg	**8**
Aortic		**5**
Aortic gradient >120	Major cardiac operation other than or in addition to CABG	**7**
CABG at the time of valve surgery		**2**

EuroSCORE

European System for Cardiac Operative Risk Evaluation

Score weights add up to an approximate percentage predicted mortality

Patient-related factors	***Definition***	***Score***
Age	Per 5 years or part thereof over 60	**1**
Gender	Female	**1**
Chronic Pulmonary disease	Long term use of bronchodilators or steroids for lung disease	**1**
Extra cardiac arteriopathy	Any one or more of the following: claudication, carotid occlusion or >50% stenosis, previous or planned surgery on the abdominal aorta, limb arteries or carotids	**2**
Neurological dysfunction	Disease severely affecting ambulation or day-to-day functioning	**2**
Previous cardiac surgery	Previous surgery requiring opening of the pericardium	**3**
Serum creatinine	>200 micromol/L preoperatively	**2**
Active endocarditis	Patient still under antibiotic treatment for endocarditis at the time of surgery	**3**
Critical preoperative state	Ventilation before arrival in the anaesthetic room, preoperative inotropic support, intra aortic balloon counterpulsation (IABP) or preoperative acute renal failure (anuria or oliguria <10ml/hr)	**3**
Cardiac related factors		
Unstable angina	Angina requiring iv nitrates until arrival in the operating room	**2**
LV dysfunction	Moderate (EF 30 - 50%), Poor <30%	**1**
Recent myocardial infarct	<90 days	**3**
Pulmonary hypertension	Systolic PA pressure >60 mmHg	**2**
Operation related factors		**2**
Emergency	Carried out on referral before the beginning of the next working day	**2**
Other than isolated CABG	Major cardiac operation other than or in addition to CABG	**2**
Surgery on thoracic aorta	Ascending, arch or descending aorta	**3**
Post infarct septal rupture		**4**

SCTS MINIMUM DATA SET

SCTS DOMAIN	PARAMETER	OPTIONS	DEFINITION/COMMENTS		FORMAT
Demographic	Hospital number		Together with the name this is used for identification and validation.	Text	
	Surname		Enter surname here.	Text	
	First names		Enter first name	Text	
	Date of birth		Enter dd/mm/yyyy	Date	dd/mm/yyyy
	Age at surgery		This will be automatically calculated.	Number	
	Sex	**1** male **2** female	Tick appropriate box	Number	
Demographic	Ethnic data	**0** Not Given (refused) **1** White **2** Black Carribean **3** Black African **4** Black Other **5** Indian **6** Pakistani **7** Bangladeshi **8** Chinese **9** Other **99** Unknown	Tick appropriate box or other if unknown	Number	
	Date of Admission		Enter dd/mm/yyyy		
Cardiac History	Angina Status by The Canadian Cardiovascular Society (CCS)	**0** **1** **2** **3** **4**	**0** No angina **1** Ordinary physical activity such as walking or climbing stairs does not cause angina. Angina may occur with strenuous, rapid or prolonged exertion. **2** There is slight limitation of ordinary activity, angina may occur on walking or climbing stairs rapidly, walking up hill or walking after meals, in the cold, wind or under emotional stress or climbing more than one flight of stairs under normal conditions. **3** There is marked limitation of ordinary physical activity, angina may occur after walking 100 yards or climbing one flight of stairs under normal conditions at a normal pace **4** Inability to perform any physical activity without discomfort. Angina may occur at rest.	Number	
Cardiac History	Dyspnoea Status New York Heart Association (NYHA)	**1** **2** **3** **4**	**1** = Patients with cardiac disease but without limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation or dyspnoea. Asymptomatic patients should be classified as Class 1 **2** = cardiac disease resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitations or dyspnoea. **3** = cardiac disease resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary physical activity results in fatigue, palpitations or dyspnoea. **4** = cardiac disease resulting in an inability to conduct any physical activity without discomfort. Symptoms of cardiac failure may be present even at rest. If any physical activity is undertaken discomfort is increased.	Number	
Cardiac History	Congestive Cardiac Failure	**0** Never **1** Now **2** Past **9** Unknown	A history of left ventricular failure with pulmonary oedema requiring either admission to hospital or treatment with diuretics.	Number	

SCTS MINIMUM DATA SET

SCTS DOMAIN	PARAMETER	OPTIONS	DEFINITION/COMMENTS		FORMAT
Cardiac History	**Previous Q Wave MIs**	**0** None **1** One **2** Two **3** Three … etc… **99** Unknown	Number of previous Q-wave myocardial infarctions	Number	
Cardiac History	**Last Q Wave MI**	**0** Not applicable **1** < 6 hours before operation **2** 6-24 hours **3** 1-30 days **4** >30 days	A transmural myocardial infarct represented by new Q waves in two or more contiguous leads on the ECG.	Number	
	EuroScore supplement: recent MI	**0** No MI or greater than 90 days **1 Yes** MI within 90 days	MI within last 90 days. Do not alter previous question. Essential for historical data		
Previous Non-Surgical Intervention	**Previous PTCA ± stent**	**0** No **1** Yes **9** Unknown	Enter any previous intervention	Number	
	Recently failed intervention	**0** No **1** Within 24 hours of operation **2** > 24 hours, op on same admission	Any failed cardiological intervention (coronary or valvular) necessitating immediate surgery or surgery during the same admission	Number	
	Date of last intervention		Enter day / month / year (use 01 if day unknown and 06 if month unknown)	Date	dd/mm/yyyy
	Thrombolysis within 24 hours prior to surgery	**0** No **1** Yes	Was Any form of thrombolytic therapy administered within twenty-four hours of surgery.	Number	
Previous Surgical Intervention	**Previous cardiovascular or thoracic surgical intervention?**	**0** No **1** Yes	Tick YES if any Cardiac, Vascular or Thoracic procedures	Number	
	Describe previous surgical intervention	**1** CABG **2** Valve **3** Congenital Cardiac **4** Other cardiac **5** Other thoracic **6** Aortic surgery – Asc or arch **7** Aortic surgery – Desc or abdo **8** Carotid endarterectomy **9** Peripheral vascular 99 Unknown	Tick appropriate box. Can have multiple values (Separate with semi-colon)	Text	
	Date of last cardiac operation		Enter day / month / year (use 01 if day unknown and 06 if month unknown)	Date	dd/mm/yyyy
Risk factors for Coronary Disease	**Diabetes**	**0** No **1** Diet **2** Oral therapy **3** Insulin	Any history of diabetes regardless of duration or treatment. Latent diabetes of pregnancy excluded	Number	
	Hypercholesterolaemia	**0** No **1** Yes **9** Unknown	A history of a fasting cholesterol of greater than 5.2 mmol/l or lower if on treatment.	Number	
	Hypertension	**0** No **1** Yes **9** Unknown	A history of blood pressure greater than 140/90mmHg on two occasions, or lower if on medication	Number	

SCTS MINIMUM DATA SET

SCTS DOMAIN	PARAMETER	OPTIONS	DEFINITION/COMMENTS		FORMAT
	Smoking	**0** Never smoked **1** Ex smoker **2** Current smoker	Patients who have smoked within one month of surgery should be considered to be current smokers.	Number	
Additional Medical History and Risk Factors	GI tract	**0** Nil **1** Peptic ulcer **2** Previous surgery **3** Other	**0** No history of GI problems **1** Previous surgery, medical treatment or current treatment for known peptic ulceration **2** Previous gastrointestinal surgery (Exclude groin or abdominal hernias) **3** Any other GI/ or hepatobiliary symptoms. Include symptoms of indigestion or hiatus hernia.		
	Renal system	**0** No **1** Functioning transplant **2** Creatinine > 200µmol/l **3** Acute renal failure: dialysis **4** Chronic renal failure: dialysis	**0** No history of renal disease and creatinine < 200µmol/l on admission **1** Functioning renal transplant, irrespective of creatinine **2** Creatinine > 200µmol/l at the time of surgery **3** Renal failure within 6 weeks of surgery necessitating any form of dialysis up to the time of surgery **4** Chronic renal failure on regular dialysis	Number	
	Pulmonary disease	**0** No **1** COAD/emphysema **2** Asthma	**0** Tick if no history of pulmonary disease **1** Patient requires medication (inhalers, aminophylline or steroids) for chronic pulmonary disease or FEV1 less than 75% predicted value. Venous pO2 < 60mmHg, pCO2 > 50mmHg **2** Intermittent or allergic reversible airways disease treated with bronchodilators or steroids	Number	
	Cerebrovascular disease	**0** No **1** TIA < 6months ago **2** TIA > 6months ago **3** CVA < 2 weeks ago **4** CVA > 2 weeks ago **5** Carotid bruit	**1 & 2** Tick if no history or symptoms of cerebral or vascular disease **2** Any cerebral neurological deficit lasting less than 24 hours **3 & 4** A neurological deficit lasting more than 24 hours irrespective of extent of recovery **4** A carotid bruit on physical examination	Number	
	Neurological dysfunction	**0** No **1** Yes	Disease severely affecting ambulation or day-to-day functioning		
	Peripheral Vascular	**0** No **1** Peripheral vascular disease	**1** Any one of: * History or evidence of aneurysm or occlusive peripheral vascular disease. * Aortic aneurysm * Previous aortoiliac or peripheral vascular surgery * Reduced or absent peripheral pulses and/or angiographic stenosis of more than 50%	Number	
	Pre-op arrhythmia (Within two weeks of the procedure)	**0** None (sinus rhythm) **1** Atrial fibrillation/flutter **2** Complete heart block **3** Ventricular fibrillation or ventricular tachycardia	**0** Patient in sinus rhythm **1** Demonstrable, chronic or paroxysmal atrial fibrillation or flutter **2** No association of P waves to QRS complexes or pacing system in place **3** Sustained VT/VF requiring cardioversion or IV medication (i.e. amiodarone infusion).	Number	
Catheterisation data	Was the patient catheterised?	**0** No **1** Yes	If a cardiac catheterisation was performed at any time as part of he preoperative assessment - enter "yes"	Number	
	Date of catheterisation		Enter day / month / year (use 01 if day unknown and 06 if month unknown)	Date	dd/mm/yyyy
	Catheter during same admission as surgery	**0** No **1** Yes	Tick appropriate box	Number	

SCTS MINIMUM DATA SET

SCTS DOMAIN	PARAMETER	OPTIONS	DEFINITION/COMMENTS		FORMAT
Coronary anatomy	**Extent of coronary vessel disease**	**0** Normal **1** Single vessel **2** Double vessel **3** Triple vessel	The number of major (LAD, Cx, RCA system) vessels with >50% narrowing in any angiographic view. (NB: ***excludes*** Left Main Stem - Enter**0** if LMS only)	Number	
	Left main stem disease	**0** No **1** Yes	Does left main stem have > 50% narrowing in any angiographic view?	Number	
Indices and Pressures	**PA systolic**	**0** Not measured/unknown or **value** (mm Hg)	Enter value if known. Enter '0' if unknown	Number	
	Aortic valve gradient	**0** Not measured/unknown or **value** (mm Hg)	Enter value if known. Enter '0' if unknown	Number	
	LVEDP	**0** Not measured/unknown or **value** (mm Hg)	Enter value if known. Enter '0' if unknown	Number	
	PAWP/ LAP	**0** Not measured/unknown or **value** (mm Hg)	Enter MEAN value if known. Enter '0' if unknown	Number	
Ejection fraction	**LV Function (EF)**	**1** Good **2** Fair **3** Poor	Enter GOOD (>50%) FAIR (30-50%) or POOR (<30%) if known	Number	
Preoperative Support	**Pacemaker**	**0** No **1** Yes	Tick if the patient has any type of pacemaker (temporary or permanent)	Number	
	Intravenous nitrates or heparin	**0** No **1** Until operation **2** Within 1 week of operation	Tick appropriate box	Number	
	Cardiogenic shock	**0** No **1** Yes	Definition: 1. Hypoperfusion with a systolic BP < 80mmHg and adequate central filling pressure without inotropes 2. A cardiac index < 1.8 l/min/ sq. m without inotropes 3. Inotropes ± IABP required to maintain CI > 1.8 l/min/ sq. m **Prior to the induction of anaesthesia**	Number	
	Intravenous inotropes	**0** No **1** Yes	Any inotropic agents, excluding renal dose dopamine At the time of leaving theatre or in ITU. Temporary inotropes discontinued before the patient leaves theatre should not be included. Vasoconstrictors to combat peripheral vasodilatation are excluded.	Number	
	Intra-aortic balloon pump	**0** No **1** Yes	The presence of a preoperative intra-aortic balloon pump for haemodynamic reasons. Do NOT include IABP's inserted prophylactically just prior to surgery because these represent post-operative support.	Number	
	Ventilated	**0** No **1** Yes	Tick appropriate box	Number	
Operation Status	**Operative Priority**	**1** Elective **2** Urgent **3** Emergency **4** Salvage	**1** Routine admission from the waiting list. The procedure can be deferred without risk **2** Patients who have not been scheduled for routine admission from the waiting list but who require surgery on the current admission for medical reasons. They cannot be sent home without surgery **3** Unscheduled patients with ongoing refractory cardiac compromise. There should be n delay in surgical intervention irrespective of the time of day **4** Patients requiring CPR en-route to the operating theatre or prior to anaesthetic induction. CPR following anaesthetic induction should not be included	Number	
	Operation sequence	**1** First operation **2** Second operation **3** Third operation etc…	**First operation or redo:** Enter option designating number of cardiac surgical procedures including current procedure.	Number	

SCTS MINIMUM DATA SET

SCTS DOMAIN	PARAMETER	OPTIONS	DEFINITION/COMMENTS		FORMAT	
Operation	Date of operation		dd/mm/yyyy	Date	dd/mm/yyyy	
	Cardiopulmonary bypass	**0** No **1** Yes **9** Unknown	If bypass used for part or all of the procedure tick "yes"	Number		
	Procedures	**1** CABG only **2** CABG + valve **3** CABG + valve + other (see below) **4** CABG + other (see below) **5** Valve replacement/repair **6** Valve + other (see below) **7** Congenital **8** Other (see below)	Tick as appropriate This provides rapid grouping for procedure based reports	Number		
	Other cardiac procedure	**1** LV aneurysmectomy **2** Acquired VSD **3** Atrial myxoma **4** Pulmonary embolectomy **5** Cardiac transplant **6** Pulmonary transplant **7** Cardiac trauma **8** Epicardial pacemaker **9** Pericardiectomy		Number		
	Other non-cardiac procedure	**1** Aortic or peripheral vascular **2** Carotid endarterectomy **3** Other thoracic		Number		
Surgical training	Operation performed by:	**1** Consultant **2** Staff grade/clinical assistant **3** Trainee + consultant **4** Trainee	Indicates grade of operating surgeon.	Number		
	Type of trainee	**1** NTN, VTN or FTTN trainee **2** Other trainee	NTN, VTN or FTTN trainee. Tick for registered UK trainee Other trainee	Number		
	Calman year	**1** **2** **3** **4** **5** **6**	If the operation is performed by a NTN, VTN or FTTN trainee please enter the career grade year 1-6	Number		
Coronary artery bypass surgery data	Total number of distal anastamoses		Please enter appropriate number	Number		

SCTS MINIMUM DATA SET

SCTS DOMAIN	PARAMETER	OPTIONS	DEFINITION/COMMENTS		FORMAT	
	Coronary artery	Site **1** Prox RCA **2** Mid RCA **3** Distal RCA **4** RCA-PDA **5** LMS **6** Prox LAD **7** Mid LAD 8 Distal LAD **9** Diag 1 **10** Diag 2 **11** Prox LCX **12** Int/OM1 **13** Distal LCX **14** OM2 **15** CX-PDA **16** RCA - LV branch **99** Unknown	Enter site of each anastamosis – the sites are described by AHA segments CCAD Definition is currently (v1.06) Site 1 = Prox RCA 2 = Mid RCA 3 = Distal RCA 4 = RCA-PDA 5 = LMS 6 = Prox LAD 7 = Mid LAD 8 = Distal LAD 9 = Diag 1 10 = Diag 2 11 = Prox LCX 12 = Int/OM1 13 = Distal LCX 14 = OM2 15 = CX-PDA 16 = RCA - LV branch	Number		
	Local procedures	**0** Nil, routine graft **1** Endarterectomy **2** Vein patch	Enter as appropriate	Number		
	Conduit	Type of conduit used **1** Pedicle LIMA **2** Pedicle RIMA **3** Pedicle RGEA **4** Free LIMA **5** Free RIMA **6** Free GEA **7** Radial artery **8** Long SV **9** Short SV **10** Cephalic V **11** Other (specify) **99** Unknown	Enter type of conduit used	Number		
	Other conduit		Text description of “other” conduit	Text		
Valve Surgery	**Number of valves replaced/repaired**		Please enter appropriate number	Number		
	Diseased valves replaced/repaired	**17** Aortic **18** Mitral **19** Tricuspid **20** Pulmonary	Can have multiple values if more than one valve replaced/repaired (separate with semi-colon)	Number		
	Haemodynamic pathology	**1** Stenosis **2** Regirgitation **3** Mixed	Enter whether stenosis, regurgitation or mixed (separate multiple values for multiple diseased valves with semi-colon)	Number		

SCTS MINIMUM DATA SET

SCTS DOMAIN	PARAMETER	OPTIONS	DEFINITION/COMMENTS		FORMAT	
	Valve pathology	**1** Rheumatic **2** Congential **3** Ischaemic **4** Marfans **5** Myxomatous degeneration **6** Failed prior repair **7** Prosthetic valve failure **8** Paraprosthetic leak/dehiscence **9** Prosthetic valve thrombosis **10** Active infection **11** Previous infection **12** Calcific degeneration **13** Annuloaortic ectasia **14** Other degenerative valve disease **15** Dissection **16** Tumour 99 Unknown	Enter as appropriate (separate multiple values for multiple diseased valves with semi-colon)	Text		
	Prosthetic valve explant		Enter local code or UK Heart Valve registry Code (separate multiple values for multiple valve explants with semi-colon)	Text		
	Explant type	**1** Mechanical **2** Biological **3** Homograft	Mechanical or Biological valve (separate multiple values for multiple valve explant types with semi-colon)	Number		
	Procedure	**1** Replacement **2** Repair	Replacement or repair (separate multiple values for multiple diseased valves with semi-colon)	Text		
	Valve Implant		Enter local valve code (separate multiple values for multiple valve implants with semi-colon)	Text		
	Implant type	**1** Mechanical **2** Biological **3** Homograft				
	Valve Repair / conservation	**1** Commissurotomy **2** Valve repair – ring **3** repair – no ring **4** Aortic valve/cusp resuspension	Indicate type of conservative procedure (separate multiple values for multiple valve repairs with semi-colon)	Number		
	Valve / ring serial numbers		Enter serial number of prosthesis (separate multiple values for multiple valve implants with semi-colon)	Number		
	Valve / ring size		Enter size in millimetres (separate multiple values for multiple valve implants with semi-colon)	Number		
Aortic and Vascular Surgery	Concomitant carotid endarterectomy	**0** No **1** Yes	Enter yes or no	Number		
	Aortic procedure	**0** No **1** Yes	Enter 'yes' or 'no'	Number		
	Aorta	**1** Ascending **2** Arch **3** Asc + Arch **4** Descending **5** Abdominal **6** Desc + Abdominal **7** Sinus Valsava	Enter section of aorta undergoing surgery.	Number		

SCTS MINIMUM DATA SET

SCTS DOMAIN	PARAMETER	OPTIONS	DEFINITION/COMMENTS		FORMAT	
	Aortic Pathology	**1** Unknown **2** Aneurysm **3** Dissection **4** Transection **5** Coarctation **6** Atheromatous **7** Marfan's **8** Syphillis **9** Mycotic **10** Other connective tissue disorder **11** Congenital **12** Infection - native **13** Infection - graft	Enter as appropriate	Number		
	Aortic procedure	**1** Interposition tube graft **2** Tube graft + AVR **3** Root replacement with composite valve graft and coronary reimplantation **4** Root replacement with preservation of native valve and coronary reimplantation **5** Homograft root replacement **6** Autograft root replacement (Ross Procedure) **7** Aortic patch graft	1 = Any interposition graft without a valve, irrespective of whether or not other vessels (e.g. head vessels, intercostals) are implanted into the graft 2 = Include valve details under valve replacement 3 = Include details under valve replacement 4 = Root replacement with preservation of native valve and coronary reimplantation 5 = Include details under valve replacement 6 = Autograft root replacement (Ross Procedure) 7 = Any patch irrespective of material used	Number		
Myocardial protection	Predominant method of myocardial protection	**0** Non-cardioplegic **1** Cardioplegia	Tick as appropriate	Number		
	Cardioplegia solution	**1** Blood **2** Crystalloid	Enter if answer to above was “Cardioplegia”	Number		
	Cardioplegia infusion mode	**1** Antegrade **2** Retrograde **3** Antegrade and retrograde	Enter if answer to above was “Cardioplegia”	Number		
	Cardioplegia infusion temperature	**1** Cold **2** Warm	Enter if answer to above was “Cardioplegia”	Number		
	Cardioplegia infusion timing	**1** Intermittent **2** Continuous	Enter if answer to above was “Cardioplegia”	Number		
	Non–cardioplegic myocardial protection	**1** Cross-clamp fibrillation (XC/VF) **2** VF with perfusion **3** Coronary perfusion **4** Beating heart + XC **5** Beating heart + perfusion	Enter predominant technique used for **NON-CARDIOPLEGIC** protection:: Aortic cross clamping with fibrillation, fibrillation with perfusion, cross clamp with direct coronary perfusion, cross clamp and beating heart, beating heart without cross clamp.	Number		
Bypass related data	Cumulative bypass time		Enter time in minutes. Cumulative bypass time irrespective of the number of times on bypass.	Number		
	Circulatory arrest time		Enter time in minutes	Number		
	Cumulative cross clamp time		Enter time in minutes	Number		
	Longest ischaemic period		If intermittent aortic cross clamping is used, enter the longest cross-clamp period (in minutes)	Number		

SCTS MINIMUM DATA SET

SCTS DOMAIN	PARAMETER	OPTIONS	DEFINITION/COMMENTS		FORMAT	
	Patient height		Enter in centimetres	Number		
	Patient weight		Enter in kilograms	Number		
	Body Surface Area		Calculated automatically			
	Body Mass Index		Calculated automatically	Number		
Post-operative complications	Low cardiac output	**0** No **1** Inotropes **2** Intra-aortic balloon pump **3** Ventricular assist device(s)	Can have multiple values **1** On leaving theatre, or commenced in the ITU **2** Tick if used at any stage in the post operative course	Number		
	Arrhythmias	**0** None **1** Supraventricular tachycardia **2** Ventricular tachycardia / fibrillation **3** Permanent pacing	Can have multiple values **1** Includes all atrial tachycardias requiring treatment. **2** Ventricular tachycardia or fibrillation requiring treatment	Number		
	Blood used	**0** No **1** Yes	Was blood used intra-operatively or post-operatively? If so, tick 'yes'	Number		
	Reoperation	**0** None **1** For bleeding/tamponade **2** Other |(exclusive of sternal resuturing)	**1** Reoperation for bleeding related reasons **2** Exploration for other reasons e.g. cardiac arrest, additional grafting etc.	Number		
	Sternal resuturing	**0** No **1** Yes	For any reason - technical failure or infection.	Number		
	Ventilation	**Number of hours if less than 24**	Enter time frame for extubation If option 4 is selected, you MUST enter the next variable also	Number		
	Time to extubation (days)		If ventilated for more than 24 hours, enter number of days	Number		
	Pulmonary complications	**0** None **1** Re-intubation and ventilation **2** Full Tracheostomy **3** Pulmonary embolism, 4 Other	**2** Either surgical or percutaneous **3** Documented pulmonary embolism	Number		
	Neurological complications	**0** None **1** Transient stroke/neurological deficit **2** Permanent stroke, **3 Other**	**1** Neurological deficit which has recovered fully by the time of discharge from hospital. **2** Persisting neurological deficit at time of discharge from hospital	Number		
	Infective complications	**0** None **1** Sternotomy requiring debridement ± resuture **2** Septicaemia due to any cause, 3 Other	**2** From any source, known or unknown	Number		
	Renal complications	**0** None **1** Post op creatinine >200 □mol/l **2** New dialysis/ filtration required		Number		
	Gastrointestinal complications	**0** No **1** Peptic ulceration **2** Pancreatitis **3** Other	**1** Proven peptic ulceration causing, pain, bleeding or perforation **2** Amylase >1500iu **3** Any other GI complication delaying recovery	Number		
	Multisystem failure	**0** No **1** Yes	Tick 'yes' or 'no'	Number		

SCTS MINIMUM DATA SET

SCTS DOMAIN	PARAMETER	OPTIONS	DEFINITION/COMMENTS		FORMAT
Summary of post-operative course	**Length Of Stay On ITU**		Enter time in nights as appropriate	Number	
	Readmitted to ITU	**0** No **1** Yes	Yes or No	Number	
	Status at Discharge	**1** Alive **2** Dead	Alive or Dead	Number	
	Date of discharge or death		Enter day / month / year. If alive at discharge, enter date of discharge. If died before discharge, enter date of death.	Date	dd/mm/yyyy
	Post operative LOS		Length of post-op stay in days (Automatically calculated)	Number	
	Post discharge date of death		If survived to discharge but died later, enter date of death.	Date	dd/mm/yyyy
	Died on post-op day		Day post-op that patient died	Number	
	Discharge to	**0** Home **1** Other hospital **2** Other specialty in same hospital **3** Convalescence, 9 Unknown	Where did the patient go after leaving the cardiothoracic surgical ward?		
	Cause of death	**1** Cardiac **2** Neurological **3** Pulmonary **4** Septicaemia **5** Carcinoma **6** Other **9** Unknown		Number	

Annex B - CHD Choice