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A COMPUTERIZED SYSTEM FOR PROCESSING MEDICAL REPOSITORY DATA.(U)
AUG 77 H R BALES, G D TOLAN

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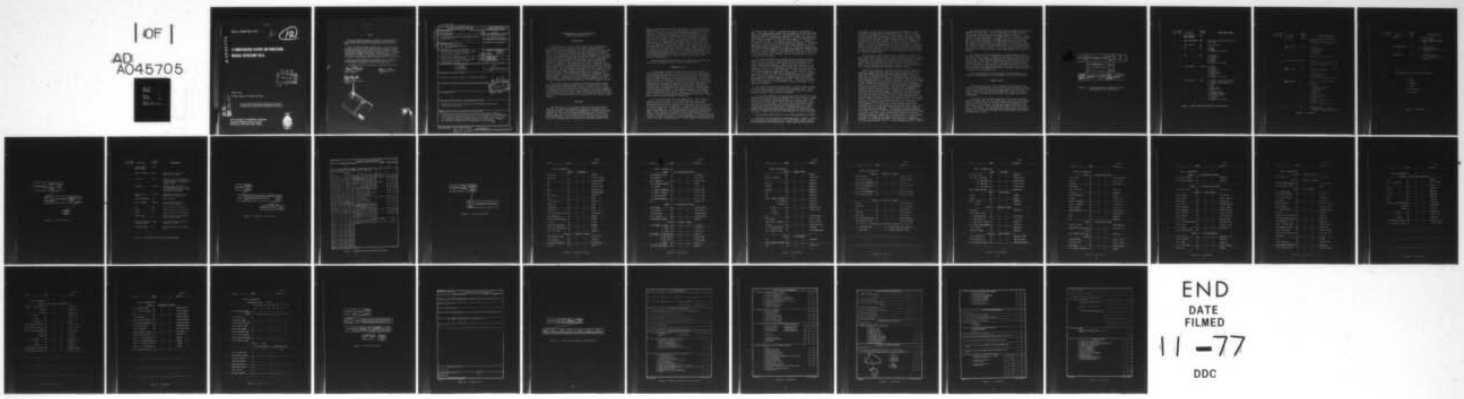

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A COMPUTERIZED SYSTEM FOR PROCESSING MEDICAL REPOSITORY DATA

August 1977

Interim Report for Period 1975-1976

Approved for public release; distribution unlimited.

USAF SCHOOL OF AEROSPACE MEDICINE
Aerospace Medical Division (AFSC)
Brooks Air Force Base, Texas 78235

NOTICES

This interim report was submitted by personnel of the Medical Computing Branch, Biometrics Division, USAF School of Aerospace Medicine, Aerospace Medical Division, AFSC, Brooks Air Force Base, Texas, under job order 7755-16-01.

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This report has been reviewed by the Information Office (OI) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

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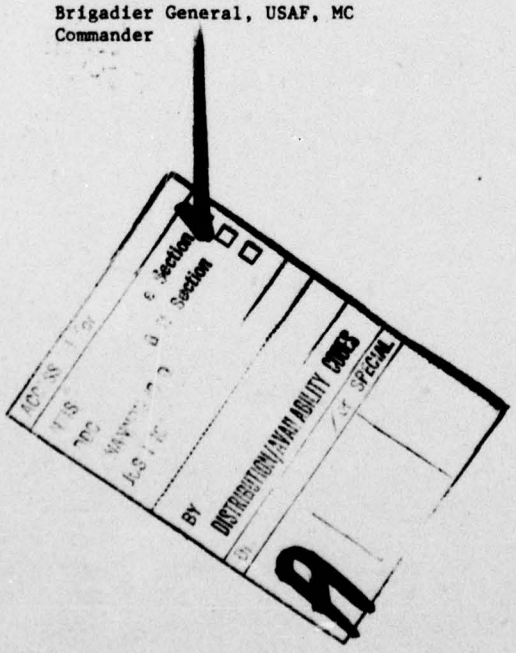

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

A description of the operation and formats of the Clinical Repository Information Filing System is presented. Field designation, codes employed, data validation, and techniques utilized are discussed. The general flow of information through the system and specific repositories are defined and presented to demonstrate the flexibility of this system.

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AB

A COMPUTERIZED SYSTEM FOR PROCESSING MEDICAL REPOSITORY DATA

INTRODUCTION

Centralization of clinical repositories allows accumulation of large numbers of case records so that clinical studies may gain statistical validity. Heretofore all of the repository efforts at the School of Aerospace Medicine have been 80-column-card oriented with little or no cross-referencing of individual repositories. With the advent of File Management Systems, in particular MARK IV, we have been able to redesign our separate repositories into record structures and efficiently bring data fields from different clinical repositories together to produce desired cross-referenced data retrievals for statistical analyses. The conversion of records of one-quarter of a million individuals in the Electrocardiogram (ECG) Repository indicated clearly that our record identification and checks used in the past were not reliable. Many discrepancies were found in Serial Number, Social Security Account Number (SSAN), Name (NAME), Date of Birth (DOB), Sex, and Race entries. These findings motivated the establishment of a master file which we call the Clinical Repository Information Filing System (CRIFS). Such a master filing system was justified to maintain the integrity of uniform record identification throughout the many clinical repositories that are handled by the Medical Computing Branch.

This clinical data file management system was designed to meet three requirements simultaneously. First, the design has satisfied the need to store relatively large amounts of medical data. Second, the design has enabled retrieval of selected data to provide summaries of USAFSAM medical experience to using commands, achieving a turnaround time of from 3 hours to 5 days. Third, the design was directed at the need for cost-effective retrieval of selected data for in-house research purposes.

DATA BASE

The first effort in the design of this data base was simply to establish the primary interconnecting repository key which is the individual's SSAN. This number is supposed to be a unique identifier; however, Air Force military personnel dependents can be treated at military bases and will use their sponsor's SSAN as a part of their own identification. Thus, we have used the individual's name (Last, First, MI, and Suffix) as a secondary key, and total identification

employs, when available, the DOB, Sex, and Race. For the purposes of obtaining quick look "query" type information, the data base has been expanded to include the type of Flying Physical Examination, Class, Death Code, and Source of Death Code. Also, the repository activity status of the individual has been incorporated into the data base. These activity features include: Date of Last Examination, Source of Last Entry, and flags indicating the existence of data in specific repositories, viz: Aeromedical Evaluation Summary Cover Sheet (CS), Electrocardiogram (ECG), Treadmill (TDM), Clinical Laboratory Determinations (LAB), and Catheterization (CAT). As other repositories are developed, they will be added to the data base. Figure 1 pictures our computer file system, which has two significant advantages. First, the system allows the individual files to be used simultaneously or individually depending on the data processing application. Also, the system obviates the need for duplicate data fields in the various specific repositories.

Figure 2 details the field length, type, and name, and lists the special code utilized for some fields in the master file.

INFORMATION FLOW

To insure that the patient identifiers will match across all repositories without having to access all the large data repositories, before updating the master file or any given repository a preliminary pass is always required to validate the patient identifiers against the small Clinical Repository Information Filing System. A patient's name is stored in a 27-character field with the last name, first name, middle initial, and suffix in capital letters without punctuation with truncation in accordance with AFM 300-4, page 6-305. The update transactions for any repository are first sequenced by patient SSAN, then both SSAN and NAME are matched against the copy of CRIFS which is also sequenced by SSAN. If both SSAN and NAME match the update, record identification is accepted. However, if either SSAN or NAME fails to match, the following strategy determines if only minor errors have occurred and makes automatic corrections.

(1) In the case where only the SSAN's match, a test is made for a single character in error in either the last name, first name, middle initial, or suffix. Date of Birth when available must also match before accepting the transaction. For example, if the last name is found to match, a 4 is placed into a special flag and we proceed to the first name test. If the last name does not match, then the last names in the CRIFS file and the transaction are scanned from both ends doing a single character-for-character match, stopping at the first mismatch. Matches are counted for each direction. If the sum of matches in each direction is equal to 1 less than the number of characters in the longest last name, the possibility of a single character error exists and

the special flag is set to 4, otherwise the special flag remains at zero. First name matching takes into consideration the fact that first names are sometimes truncated to allow the full name to fit into a 27-character field. If the shortest version of the first name matches the same number of characters in the other first name, a 3 is added to the 4 in the special flag. If the middle initial matches, 2 is added to the special flag and a 1 is used when the suffix matches. If the special flag count is greater than 6, and the DOB's when available match, the CRIFS NAME replaces the transaction name, the transaction is passed to the data validation program, and the original transaction SSAN and NAME along with the CRIFS NAME and the message "PROG CHGD" are outputed to the printer for human validation. When the special flag count is less than 7, the message will read "CK NPUT," and the transaction is returned to its source for resolution.

(2) When the SSAN's do not match, then an attempt at matching NAME's is tried utilizing a copy of CRIFS which is indexed by name. If an exact match is found, the SSAN's are scanned from the left doing a number-by-number match. The matches are counted and if this counter is equal to 8, the assumption is made that an error in transcription occurred in a single number of the transaction SSAN and the CRIFS SSAN replaces the transaction SSAN. If the counter is equal to 7, a test for numerical inversion is accomplished. If only a single numerical inversion is found, the CRIFS SSAN replaces the transaction SSAN. DOB when available is used to confirm all corrections made. The update record SSAN and NAME plus the CRIFS SSAN and the message "PROG CHGD" are printed for human validation. If the counter is less than 7, the message will read "CK NPUT." Output is returned to the responsible activity.

(3) When a match fails to materialize on both the SSAN and NAME, the record identification is printed with the message "NEW," so that it can be checked against the Military Personnel File for accuracy before entering a new patient into the system.

In the above strategy, the Clinical Repository Information Filing System patient identification is assumed to be correct. When a change is made in the patient identification such as a new last name, the CRIFS data is updated along with all the other repositories, containing data on that individual. Only after patient identification inconsistencies have been resolved and corrections made to the update transactions, does the process begin of updating the Clinical Repository Information Filing System and the data file associated with the update transactions with the latest information on this individual.

At the present time there are 5 data files associated with CRIFS:

The first file developed was the ECG Repository. Figure 3 details the hierarchical record structure of this file while Figure 4 gives field definitions and specifications. After resolving identification

differences, the ECG update transactions are validated for correct range before merging into the permanent ECG file. That is to say, checking is performed on the coding of Sex (male, female, or blank), Race (Caucasoid, Negroid, Oriental, Indian, other, or blank), Height (between 60 and 80 inches), Weight (between 85 and 265 pounds), Date of Examination, and ECG Diagnosis. If any ECG code is abnormal, a special flag is set both in CRIFS and the ECG repository top level segment. A record is completed for all validation results and if any errors are found, the entire record is printed and further processing on the record is bypassed. Corrections will be made and the record included in the next update cycle. Our update cycle occurs once every 6 to 8 weeks on the average.

The second repository completed was the Treadmill Exercise Tolerance Test (TDM). Because of the weekly output requirements (summary and graphic) the validation of data fields is accomplished during the weekly runs. The correction of errors is made and updating of the master file takes place when sufficient data has been gathered or when a special retrieval is requested. Figures 5 and 6 describe the file structure and the form from which the data is taken.

The Clinical Laboratory Determinations (LAB) was the next file automated. Daily input and output are required from a subfile of those individuals currently undergoing physical examination at the USAF School of Aerospace Medicine Consultation Service. Figure 7 shows the hierarchical file structure, and Figure 8 pictures the 12-page Laboratory Report Form. Briefly, the flow of work is as follows. A blank laboratory form is generated with correct identifiers for each patient scheduled for examination the following week. Laboratory results are recorded on this blank form and returned for keypunching. The data along with ID information is entered into a program which validates the data received, prints rejected data, and updates a temporary subfile with valid data. A summary of all laboratory results obtained during that evaluation is generated for each patient after new laboratory results are reported. Two copies are sent to the physicians' morning conference, one of which is inserted into the patient's medical records, and a third copy is returned to the laboratory for verification. Corrections and additional test results are handwritten on the laboratory copy and returned for keypunching. Three summaries of all laboratory results performed during that evaluation are sent to the physicians and clinical laboratory to replace the entire old summaries. This process is repeated each day any laboratory test is reported. One special note about validation is in order, and that is, the Laboratory Director has provided a range of healthy values and a range of permissible values for each test. Unhealthy values are flagged with a *1 and values out of the permissible range are flagged *8 (a computer-detected error). Specific comments are allowed and when these occur the test is flagged with a *9. Updating the master LAB file is done approximately every 2 months.

The next repository to be completed was the Aeromedical Evaluation Summary Cover Sheet (CS). Figure 9 describes the record structure. The coding form developed for the input is shown in Figure 10. Currently, this form is recorded on IBM MAG CARD II typewriters. When the finished form is completed, it is ready to be sent via terminal (IBM-CMC) to the IBM 360-65 where a FORTRAN program edits and validates most fields before storing it in a temporary working subfile. When the subfile accumulates several hundred cases, a listing sequenced by the diagnostic codes is printed along with the text for validation by the medical librarian. After all corrections have been made, updating the master file takes place, which occurs approximately once every 3 months.

The latest file to be completed was a Cardiac Catheterization Repository (CAT). Figure 11 details the hierarchical record structure of this file, while Figure 12 pictures the 8-page form from which the data is taken. Data from the Catheterization form is keypunched and then matched against CRIFS to resolve any identification differences. Special programs are then utilized to process and validate all data field entries before updating the master file. Detected field errors, error messages, and identification data are printed. Corrections are included in the next update cycle.

As is the case with any of the present files, deletion of data fields or the replacement of values within data fields is provided.

CURRENT STATUS

The feasibility of our Clinical Repository Information Filing System has been demonstrated as each new file has been added. Because patient identifiers are always validated against the small CRIFS file before updating the source-oriented master data files, retrievals requiring data from multiple sources have been quickly and reliably accomplished.

Future plans call for the conversions of the Vectorcardiogram, Routine Pulmonary Function Test, Dental Determinations, Double Master Exercise Tolerance Test, and the Tilt Table Study repositories from card format to this system. The Hearing Conservation Registry and Waiver File which are now maintained under MARK IV will also become part of this system. Further work will involve periodic computerized validation of the patient identification in CRIFS with the Military Personnel Center files.

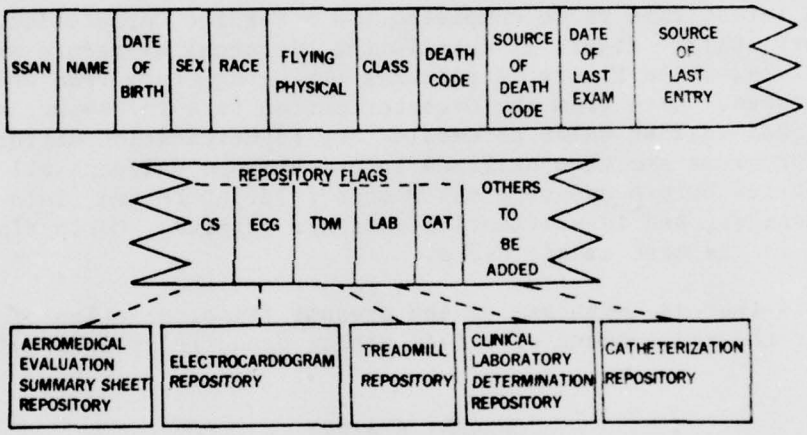

Figure 1. Clinical Repository Information Filing System (CRIFS) file organization.

FIELD LENGTH Bytes & Type		FIELD NAME	SYMBOLIC NAME	SPECIFICATION & CODES
9	C	SOCIAL SECURITY ACCOUNT NUMBER	SSAN	
27	C	NAME of INDIVIDUAL	NAME	Last, First, MI, No special characters are allowed.
6	C	DATE of BIRTH	DOB	Year, Month & Day.
1	C	SEX	SEX	M = Male F = Female Ø = Unknown or not stated.
1	C	RACE	RACE	C = Caucasoid N = Negroid O = Oriental I = Indian X = Other Ø = Unknown or not stated.
1	C	FLYING PHYSICAL	FLY-PHYS	A = Class I B = Class IA C = Class II D = Class III E = USAF Academy F = Non-Flying X = Other Ø = Unknown or not stated.
1	C	CLASSIFICATION	CLASS	R = Regular - Active duty Air Force V = Reserve - Active duty Air Force G = National Guard - Air Force A = Army N = Navy L = Coast Guard M = Marine Corps K = Cadet F = Foreign National D = Dependent (Military) S = Retired Military C = Civilian X = Other Ø = Unknown or not stated.

Figure 2. CRIFS field definitions and specifications.

FIELD LENGTH Bytes & Type		FIELD NAME	SYMBOLIC NAME	SPECIFICATIONS & CODES
1	C	DEATH CODES	DTH-CODE	Codes are extracted from AFM 300-4. Codes used are alpha (A-T). * = Dead per ECG repository information. Ø = Not identified as being dead.
1	C	SOURCE of DEATH CODE	SODC	A = DD1300 B = Death Certificate C = Autopsy Report D = Questionnaire E = MPC List F = ECG Repository X = Other Ø = Not identified as being dead.
4	C	DATE of LAST EXAM	DOLE	Year & Month (If SODC is equal to anything but a Ø, then the DATE of LAST EXAM will become the DATE of LAST BREATH.)
1	C	SOURCE of LAST ENTRY	SOLE	Indicated by assigned repository number. 1 = Clinical Cover Sheet 2 = ECG 3 = Treadmill 4 = Lab Determinations 5 = Catheterization (Other codes can be added as needed.)
1	C	CLINICAL COVER SHEET	CS	Repository flag indicated by Alpha case number. A = Special B = Cabin C = Aeromedical Evaluation D = Flying/Non-Flying E = Experimental K = USAF Cadet L = Laser M = West Point Study P = Pentathlon S = Dependents of RPW T = RPW W = W-File (Wiesbaden & Clark) X = ECG Ø = Not in this repository.
1	C	ECG	ECG	Repository flags: 1 = Normal diagnostic codes only. 2 = Normal & abnormal diagnostic codes.

Figure 2. (Continued)

FIELD LENGTH Bytes & Type		FIELD NAME	SYMBOLIC NAME	SPECIFICATION & CODES
1	C	TREADMILL	TDM	Ø = Not identified as being in this repository. 1 = Normal diagnostic codes only. 2 = Normal & abnormal diagnostic codes.
1	C	LAB DETERMINATIONS	LAB	1 = Indicates presence of laboratory data. Ø = Not identified as being in this repository.
1	C	CATHETERIZATION	CAT	1 = Indicates presence of catheterization data. Ø = Not identified as being in this repository.

REPOSITORIES STILL TO BE ADDED TO THIS SYSTEM ARE:

(1) VCG

(2) WAIVER

(3) PULMONARY

(4) DENTAL

(5) DOUBLE MASTERS

(6) TILT TABLE

Figure 2. (Continued)

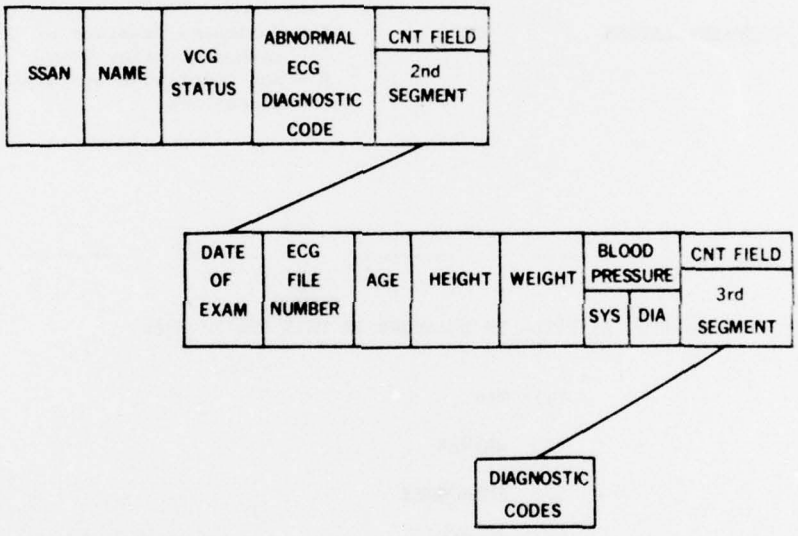

Figure 3. ECG file structure.

FIELD LENGTH Bytes	& Type	FIELD NAME	SYMBOLIC NAME	SPECIFICATIONS
9	C	SOCIAL SECURITY ACCOUNT NUMBER	SSAN	
18	C	NAME OF INDIVIDUAL	NAME	Last, First, MI. No special characters are allowed.
1	C	VCG STATUS	VCG	This is a flag. If the flag = 1, a VCG is on file in the CONSULTATION SERVICE repository, otherwise the flag is a blank.
1	C	ABNORMAL ECG	ABN-FLAG	This is a flag. If the flag = 1, an abnormal diagnostic ECG code has been read for this individual, otherwise the flag is a blank.
1	F	NUMBER OF ECG's ON FILE	ECG-CNT	This shows the number of repeated segments for this individual.
6	C	DATE OF EXAMINATION	DOE	Year, Month & Day.
6	C	ECG FILE NUMBER	FILE-NR	ECG file number assigned by the Clinical Sciences Division.
1	F	AGE	AGE	Age in years of the individual.
1	F	HEIGHT	HT	Height in inches of the individual.
2	F	WEIGHT	WT	Weight in pounds of the individual.
6	C	BLOOD PRESSURE	BP	Systolic/Diastolic(Blood Pressure) reading of the individual.
1	F	NUMBER OF DIAGNOSTIC CODES FOR THIS ECG	DX-CNT	This shows the number of repeated segments for this ECG.
3	C	DIAGNOSTIC CODES	DX	Valid codes as found in the coding chart.

Figure 4. ECG field definitions and specifications.

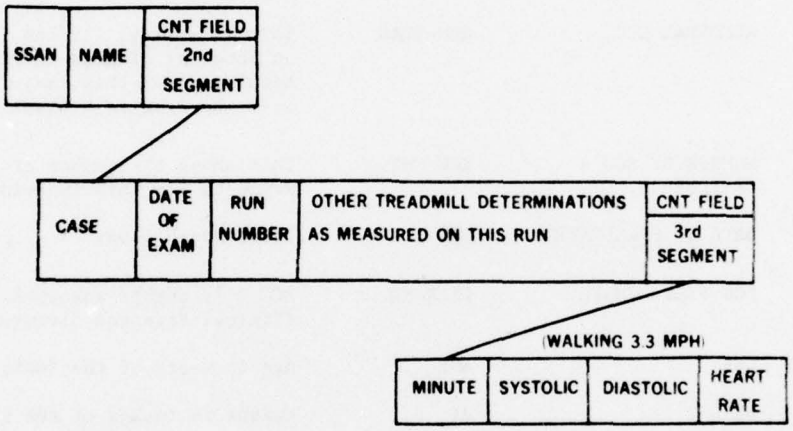

Figure 5. Treadmill file structure.

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14 TREADMILL EXERCISE TOLERANCE TEST

SOCIAL SECURITY NUMBER	NAME (Last, First, MI)	GRADE	CASE NUMBER

1. DATE OF EXAMINATION (YEAR / MONTH / DAY)	TEST RUN NUMBER (1 – INITIAL; 2, 3, 4, __ RETAKES)	PRIOR TM TEST (1 - YES; 2 - NO)	AGE	ACTIVITY STATUS (Circle One)
				1 2 3

2. CONDITIONS	
A. TIME OF DAY	
B. BELL TEMP (^0C)	
C. HOURS SINCE LAST MEAL	
D. Pb (mmHg)	
E. STPD FACTOR	
F. BELL READING	
G. SAMPLE VOLUME	
H. LBM (K_2)(H_3DIL)	
I. BODY FAT (%) (H_3DIL)	
J. BODY TEMP (^0C)	
K. ROOM TEMP (^0C)	

3. PERFORMANCE RESULTS	
A. TOTAL TIME (MIN + SEC)	
B. O_2 CONSUMED LAST MIN (L.)	
C. MAX O_2 CONSUMED (L.)	
D. MAX O_2 CONSUMED (ml/kg)	

4. BASELINE	SYST	DIAST	H.R.
A. SUPINE (2nd)			
B. IMMED. STD			
C. 3RD. STD			
D. 45 SEC. HV			

5. WALKING 3.3 MPH (90M/MIN)			
MINUTES	SYST	DIAST	H.R.
A. 1			
B. 2			
C. 3			
D. 4			
E. 5			
F. 6			
G. 7			
H. 8			
I. 9			
J. 10			
K. 11			
L. 12			
M. 13			
N. 14			
O. 15			
P. 16			
Q. 17			
R. 18			
S. 19			
T. 20			
U. 21			
V. 22			
W. 23			
X. 24			

Y. LAST			
Z. MAXIMAL			

6. RECOVERY – SUPINE			
MINUTES	SYST	DIAST	H.R.
A. IMMED			
B. 2			
C. 5			
D. 7			

7. REASON FOR TERMINATING

1. EXHAUSTION 2. LEG FATIGUE
3. JOINT/MUSCLE PAIN/OR INJURY (Explain) _____
4. CHEST PAIN (Possible Angina)
5. SUB MAX EFFORT BECAUSE OF POOR COOPERATION
6. SYST > 260 AND/OR DIAST. > 150
7. RELATIVE HYPOTENSION
8. ARRYTHMIA 9. ST CHANGES
10. OTHER (Explain) _____

8. RESPIRATORY DATA	
	EXHALED
A. VOLUME (L/min)	
B. CO_2(%)	
C. O_2(%)	
D. O_2(%) ROOM AIR	
E. MAXIMAL RQ	

9. OTHER	
A. HISTORY OF HBP (Y-N)	
B. RECENTLY OR CURRENTLY ON ANTIHYPERTENSIVES (Y-N)	

COMMENTS

10. FINDINGS	
A. INTERPRETATION	
B. REPOLARIZATION	
C. ARRHYTHMIA	
D. ECG CODE	
E. ABNORMAL BP RESPONSE (Y-N)	

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Figure 6. Treadmill exercise tolerance test form.

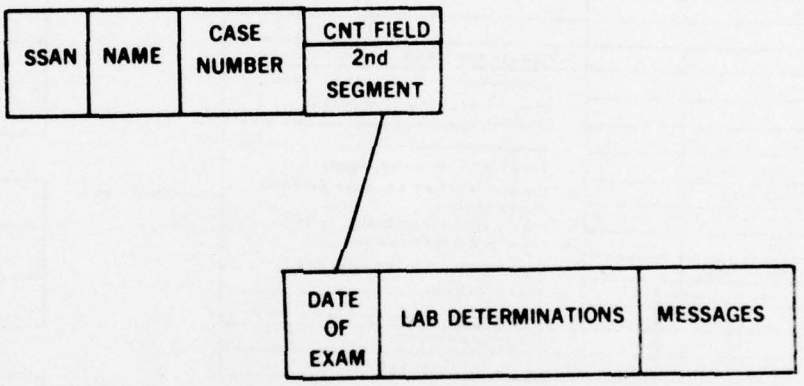

Figure 7. LAB file structure.

SSAN: NAME: CASE NR:

DATES OF EXAMINATION				
PANEL A - HEMOGRAM				
HEMATOCRIT	AA			38-52%
HEMOGLOBIN	AB			13.4-17.5 gm%
RBC	AC			4.5-6.5 m/mm³*
MCV	AD			80.0-96.0 u³
MCH	AE			27.0-32.0 pg*
MCHC	AF			30.0-35.0% *
WBC	AG			3200-8000/mm³*
NEUTROPHILS	AH			40-75% *
BANDS	AI			0-4% *
LYMPHOCYTES	AJ			15-50% *
MONOCYTES	AK			0-9% *
EOSINOPHILS	AL			0-6% *
BASOPHILS	AM			0-1% *
TOTAL EOSINOPHIL COUNT	AN			150-400/cc *
RBC MORPHOLOGY	AO			Normal
LYMPHOCYTE MORPHOLOGY	AP			Normal
ATYPICAL	AQ			0-20%
MONOCYTE MORPHOLOGY	AR			Normal
NEUTROPHIL MORPHOLOGY	AS			Normal
MONO SPOT TEST	AT			Negative
PANEL B - HEMOLYTIC SCREEN				
RETICULOCYTE COUNT	BA			0.2-1.5% *
LDH FRACTION I	BB			11-32%
INDIRECT BILIRUBIN	BC			0.4-0.8 mg%
G-6-PDH	BD			5-10 IU *

Figure 8. LAB report form.

SSAN: NAME: CASE NR:

DATES OF EXAMINATION				
PANEL C - TISSUE DESTRUCT SCREEN				
SEDIMENTATION RATE	CA			0-10 mm/hr *
HAPTOGLOBIN	CB			25-150 HBC
TOTAL PROTEIN	CC			6.0-8.3 gm%
SERUM PROTEIN ELECTRO	CD			Normal
1. ALBUMIN	CE			3.5-5.5 gm%
2. ALPHA 1 GLOBULIN	CF			0.2-0.4 gm%
3. ALPHA 2 GLOBULIN	CG			0.5-0.9 gm%
4. BETA GLOBULIN	CH			0.6-1.1 gm%
5. GAMMA GLOBULIN	CI			0.7-1.7 gm%
LDH	CJ			120-197 IU
PANEL D - CARDIOVASCULAR SCREEN				
CHOLESTEROL	DA			150-250 mg% *
TRIGLYCERIDE	DB			30-150 mg% *
PHOSPHOLIPIDS	DC			110-300 mg% *
TOTAL LIPIDS	DD			210-850 mg% *
LIPOPROTEIN ELECTRO	DE			Normal
PANEL E - HEPATIC SCREEN				
PARENCHYMAL 1. SGPT	EA			6-40 IU
2. SGOT	EB			12-30 IU
3. LDH V	EC			3.0-11.0 %
EXCRETORY 1. ALK PHOS	ED			11-94 IU
2. BILI TOT	EE			0.2-1.2 mg%
3. BILI DIR	EF			0.1-0.4 mg%
4. GGTP	EG			6-30 IU
ALK PHOS HEAT INACT	EH			Normal

Figure 8. (Continued)

SSAN: - - NAME: CASE NR:

DATES OF EXAMINATION				
PANEL F - RENAL SCREEN				
COLOR		FA		Normal
SPECIFIC GRAVITY		FB		1.001-1.035
PH		FC		5.0-7.0
PROTEIN		FD		Negative
GLUCOSE		FE		Negative
ACETONE		FF		Negative
BLOOD		FG		Negative
BILE		FH		Negative
MICRO 1.CASTS	A.HYALNE	FI		0-20 LPF
	B.F GRAN	FJ		0-20 LPF
	C.OTHER	FK		Negative
2. WBC		FL		0-20/10 HPF
3. RBC		FM		0-10/10 HPF
4. OTHER		FN		
BUN		FO		5.0-24.0 mg%
CREATININE		FP		0.8-1.3 mg%
CREATININE CLEARANCE		FQ		97-137 cc/min*
CULTURE		FR		N,0-10K Col/cc
24 HR URINE PROTEIN		FS		6-150mg *
24 HR URINE TOT VOL		FT		600-1600ml/24H*
PANEL G - MISCELLANEOUS				
RPR		GA		Negative
BLOOD GROUP-PH FACTOR		GB		
CPK		GC		26-109 IU

Figure 8. (Continued)

SSAN: - - NAME: CASE NR:

DATES OF EXAMINATION				
PANEL H - PARATHYROID SCREEN				
SERUM CALCIUM	HA			9.1-10.5 mg%
24 HR URINE CALCIUM	HB			50-300 mg/24Hr*
INORGANIC PHOSPHOROUS	HC			2.5-4.7 mg%
24HR URINE PHOSPHOROUS	HD			900-1300 mg/24*
SERUM MAGNESIUM	HE			1.8-2.4 mg%
24 HR URINE MAGNESIUM	HF			60-300 mg/24Hr*
24 HR URINE TOT VOL	HG			600-1600ml/24H*
PANEL I - METABOLIC SCREEN				
SODIUM	IA			138-144 mEq/L*
POTASSIUM	IB			3.6-5.2 mEq/L*
CO2	IC			25-33 mEq/L *
CHLORIDE	ID			98-108 mEq/L *
URIC ACID	IE			4.0-8.0 mg%
24 HR URINE URIC ACID	IF			250-750 mg/24*
24 HR URINE TOT VOL	IG			600-1600ml/24H*

* * * * * * * EXPLANATION OF NUMBERED MESSAGES * * * * * * *

1. ABNORMAL TEST
2. LAB ERROR
3. PATIENT IMPROPERLY PREPPED
8. COMPUTER DETECTED ERROR
9.

Figure 8. (Continued)

SSAN: - - NAME: CASE NR:

DATES OF EXAMINATION				
PANEL J - HEMOGRAM				
MALARIAL SMEAR	JA			Negative
RED CELL 1. PAT-INIT	JB			0.40-0.46% *
2. PAT-FINAL	JC			0.30-0.36% *
3. CNTL-INIT	JD			0.40-0.46% *
4. CNTL-FINAL	JE			0.30-0.36% *
NASAL SMEAR FOR EOS	JF			None seen
PANEL K - BACTERIOLOGY				
THROAT	KA			Normal
WOUNDS	KB			Normal
APB 1. SPUTUM	KC			Negative
2. UPINE	KD			Negative
PANEL L - HEMOLYTIC SCREEN				
SICKLEDEX	LA			Negative
HEMOGLOBIN ELECTRO	LB			
1. HEMOGLOBIN A-1	LC			94.8-96.7%
2. HEMOGLOBIN A-2	LD			3.3-5.2%
3. HEMOGLOBIN - OTHER	LE			Negative
2HR URINE UROBILINOGEN	LF			.3-1.0 EU
DIRECT COOMBS	LG			Negative
INDIRECT COOMBS	LH			Negative
PANEL M - RENAL SCREEN				
URINE OSMOLALITY	MA			800-1400 mosm*
SERUM OSMOLALITY	MB			280-290 mosm*
24 HR URINE TOT VOL	MC			600-1600 ml/24H

Figure 8. (Continued)

SSAN: - - NAME: CASE NR:

DATES OF EXAMINATION				
PANEL N	CEREBROSPINAL FLUID			
CELL COUNT	NA			0-10 Lymph/cc*
GLUCOSE	NB			40-75 mg% *
PROTEIN	NC			15-45 mg% *
GRAM STAIN	ND			
INDIA INK PREP	NE			Negative
CULTURE	NF			Negative
PROTEIN ELECTRO	NG			Normal *
ALBUMIN	NH			56.8-76.4% *
ALPHA 1 GLOBULIN	NI			1.1-6.6% *
ALPHA 2 GLOBULIN	NJ			3.0-12.6% *
BETA GLOBULIN	NK			7.3-17.9% *
GAMMA GLOBULIN	NL			3.0-13.0% *
IGG	NM			0.2-5.0mg% *
VDRL	NN			Negative
PTA	NO			Negative
PANEL O -	COAGULATION SCREEN			
PLATELET COUNT	OA			200K-400K/cc*
PROTHROMBIN TIME 1.PAT	OB			12-14 Sec *
2.CON	OC			
PART THROMB TIME 1.PAT	OD			30-45 Sec *
2.CON	OE			
BLEEDING TIME	OF			1.00 - 6.00 *
CLOTTING TIME	OG			5.00 - 11.00 *
FIBRINOGEN	OH			110-400 mg% *
CLOT RETRACTION/LYSIS	OI			Normal

Figure 8. (Continued)

SSAN: - - NAME: CASE NP:

DATES OF EXAMINATION				
PANEL P - TISSUE DESTRUCT SCREEN				
RHEUMATOID FACTOR	PA			Negative
ANTINUCLEAR ANTIBODY	PB			Negative
PANEL Q - CARDIOVASCULAR SCREEN				
FREE FATTY ACIDS	QA			9-57 mg% *
PANEL R - TRACE METALS				
SERUM COPPER	RA			70-130 ug%
URINE COPPER	RB			30-90 ug/24Hr*
SERUM ZINC	RC			75-120 ug%
URINE ZINC	RD			300-600 ug/24*
SERUM CHROMIUM	RE			.03-.20 ug% *
URINE CHROMIUM	RF			10-20 ug/24Hr*
SERUM CADMIUM	RG			.02-1.00 ug% *
URINE CADMIUM	RH			7-30 ug/24Hrs*
SERUM IRON	RI			80-160 ug% *
TOTAL IRON BIND CAPAC	RJ			250-500 ug% *
URINE IRON	RK			100-300 ug/24*
BLOOD LEAD	RL			0-50 ug% *
24 HR URINE TOT VOL	RM			
PANEL S - STOOL EXAMINATION				
OCCULT BLOOD	SA			Negative *
OVA & PARASITES	SB			Negative
FAT SCREEN	SC			Negative
72 HR STOOL FAT	SD			0.6-6.0 gm% *
CULTURE	SE			Normal

Figure 8. (Continued)

SSAN: - - NAME: CASE NR:

DATES OF EXAMINATION				
PANEL T - HEPATIC SCREEN				
EXCRE FUNC ICG	TA			2.1-9.0% *
PANEL U - PARATHYROID SCREEN				
UNBOUND SERUM CALCIUM	UA			3.7-6.3 mg% *
ALK PHOS HEAT INACT	UB			Normal
PANEL V - MISCELLANEOUS				
ACID PHOSPHATASE	VA			0-1.6 IU *
D-XYLOSE EXCRETION	VB			16-33% *
5 HR TOTAL VOLUME	VC			100-300 ml
KOH PREP	VD			Negative
SERUM AMYLASE	VE			60-160 Units% *
URINE AMYLASE	VF			35-260 Unit/Hr*
1. TOTAL VOLUME	VG			600-1600ml/24H
FTA ABS	VH			Negative
HEPATITIS ASSOC ANTIGN	VI			Negative
COCCIODIOMYCOSIS TITER	VJ			Negative
HISTOPLASMOSIS TITER	VK			Negative
ALPHA 1 ANTITRYPSIN	VL			200-400 mg% *
TOXOPLASMOSIS TITER	VM			Negative
URINE PORPHYRINS	VN			10-30 ug/24Hr*
DELTA AMINO LEVUL ACID	VO			1-7 mg/24 Hrs*
ALDOLASE	VP			1-6 IU *
TPP	VQ			80-90% *
SERUM CAPOTENE	VR			50-300 ug% *
THYROGLOBULIN ANTIBODY	VS			Negative
24 HR URINE TOT VOL	VT			600-1600ml/24H

Figure 8. (Continued)

SSAN: - - NAME: CASE NR:

DATES OF EXAMINATION | |

PANEL W - THREE GLASS URINALYSIS

COLOR	WA			Normal
SPECIFIC GRAVITY	WB			1.012-1.049*
PH	WC			5.0-7.0 *
PROTEIN	WD			Negative
GLUCOSE	WE			Negative
ACETONE	WF			Negative
BLOOD	WG			Negative
BILE	WH			Negative
MICRO-G1 1.CASTS HYALN	WI			0-20/10LPF
F GRN	WJ			0-20/10LPF
OTHER	WK			Negative
2. WBC	WL			0-20/10 HPF
3. RBC	WM			0-10/10 HPF
4. OTHER	WN			Negative
CULTURE-GLASS 1 24 HR	WO			0-10K Col/cc*
CULTURE-GLASS 1 48 HR	WP			0-10K Col/cc*

Figure 8. (Continued)

SSAN: - NAME: CASE NP:

DATES OF EXAMINATION				
PANEL X - THREE GLASS URINALYSIS				
MICRO-G2 1.CASTS HYALN	XA			0-20/10LPF
F GRN	XB			0-20/10LPF
OTHER	XC			Negative
2. WBC	XD			0-20/10 HPF
3. RBC	XE			0-10/10 HPF
4. OTHER	XF			Negative
CULTURE-GLASS 2 24 HR	XG			0-10K Col/cc*
CULTURE-GLASS 2 48 HR	XH			0-10K Col/cc*
MICRO-G3 1.CASTS HYALN	XI			0-20/10LPF
F GRN	XJ			0-20/10LPF
OTHER	XK			Negative
2. WBC	XL			0-20/10 HPF
3. RBC	XM			0-10/10 HPF
4. OTHER	XN			Negative
CULTURE-GLASS 3 24 HR	XO			0-10K Col/cc*
CULTURE-GLASS 3 48 HR	XP			0-10K Col/cc*

Figure 8. (Continued)

SSAN: - - NAME: CASE NR:

DATES OF EXAMINATION				
PANEL Y - HYPERTENSIVE SCREEN				
24 HR URINE SODIUM	YA			80-180 mEq/L*
24 HR URINE POTASSIUM	YB			25-100 mEq/L*
VMA	YC			4-15 mg/24Hr*
17 KETOSTEROIDS	YD			8-20 mgs/24Hr*
HYDROXYCORTICOSTEROIDS	YE			6-24 mg/24Hrs*
CREATININE CLEARANCE	YF			97-137 cc/min*
URINE OSMOLALITY	YG			800-1400m/k/w*
SERUM OSMOLALITY	YH			280-290 m/k/w*
PLASMA CORTISOL (AM)	YI			8-22 ug% *
PLASMA CORTISOL (PM)	YJ			5-9 ug% *
RENIN 1.SODIUM LOAD	YK			Normal *
UPRIGHT 2.SODIUM DEPL	YL			Normal *
RENIN 1.SODIUM LOAD	YM			Normal *
RECLINE 2.SODIUM DEPL	YN			Normal *
24 HR URINE TOT VOL	YO			

Figure 8. (Continued)

SSAN: - - NAME: CASE NR:

DATE OF EXAMINATION

GLUCOSE TOLERANCE - PART I

		FBS (A)	.5HR (B)	1HR (C)	1.5HR (D)	2HR (E)	3HR (F)	4HR (G)	5HR (H)
PLASMA GLUCOSE (mg%)	A								
Normals		<120	<220	<220	<172	<135	<120	<120	<120
URINE GLUCOSE	B								
PLASMA FFA (ug%)	C								
PLASMA CORTISOL (ug%)	D								
SERUM COPPER (ug%)	E								
SERUM ZINC (ug%)	F								
SERUM CHROMIUM (ug%)	G								
SERUM CALCIUM (mg%)	H								
SERUM MAGNESIUM (mg%)	I								
SERUM CADMIUM (ug%)	J								

PART II - URINE

		2HR PRE PRANDIAL (A)	2HR POST PRANDIAL (B)
TOTAL VOLUME (ml)	K		
CREATININE (mg/TV)	L		
CALCIUM (mg/TV)	M		
CHROMIUM (ug/TV)	N		
COPPER (ug/TV)	O		
MAGNESIUM (mg/TV)	P		
ZINC (ug/TV)	Q		
CADMIUM (ug/TV)	R		

Figure 8. (Continued)

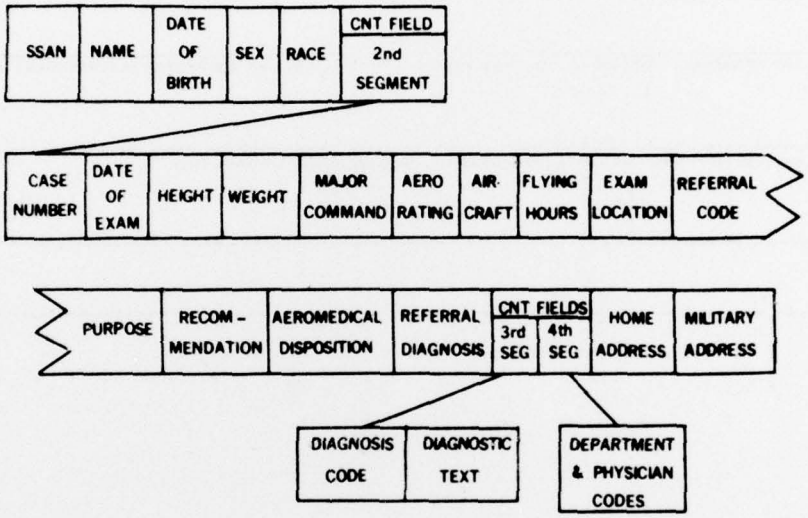

Figure 9. CS file structure.

REFERENCE CODE	PAGE NO.	01 AEROMEDICAL EVALUATION SUMMARY SHEET							
SOCIAL SECURITY ACCT NR.		NAME (LAST, FIRST, MI)						GRADE	CASE NUMBER
DATE OF BIRTH (YEAR,MONTH,DAY)	HEIGHT	WEIGHT	SEX	RACE	MAJ COMMAND	AERO-RATING	AIRCRAFT	FLYING HOURS	SEC I CODE
HOME ADDRESS (INCLUDE ZIP CODE)									
MILITARY ADDRESS (INCLUDE ZIP CODE)									
NAME, RELATIONSHIP AND PERMANENT ADDRESS OF TWO CIVILIANS THRU WHOM YOU MAY BE CONTACTED IN SUBSEQUENT YEARS. 1. 2.									
SEC II CODE	LOCATION	REFERRAL	PURPOSE	RECOMMENDATION	AEROMEDICAL DISPOSITION				
REFERRAL DIAGNOSIS									
SEC III CODE	DEPARTMENT AND PHYSICIAN								
DATE OF EXAM (YEAR MONTH DAY)	REVIEWING PHYSICIAN				SIGNATURE				
SEC IV CODE	USAFSAM, BROOKS AFB, TEXAS 78235								

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Figure 10. CS report form.

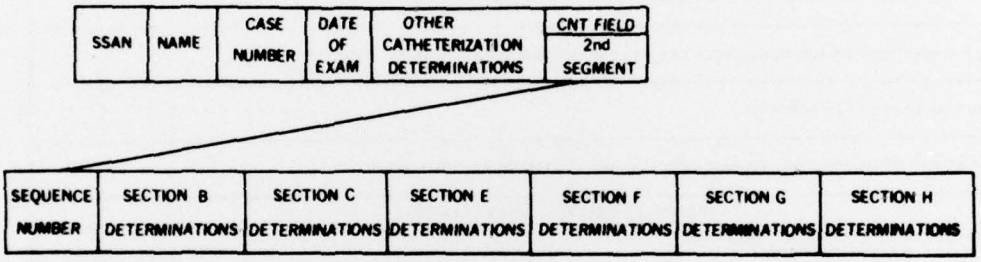

Figure 11. Cardiac catheterization file structure.

20 CATHETERIZATION

SSAN	NAME		GRADE	CASE NUMBER
DATE OF BIRTH (Yr,Mo,Day)	HEIGHT (Inches)	WEIGHT (Lbs)	CATH SEQUENCE NO.	NO. FOR PATIENT
DATE OF CATH (Yr,Mo,Day)	PHYSICIAN IN CHARGE	ARTERIAL CATH STARTED	ARTERIAL CATH ENDED	
		AMOUNT OF DYE USED	NO. OF ARTERIAL CATH CHANGES	

SECTION A - CORONARY RISK PROFILE

1. HAVE ANY OF THE PATIENT'S BLOOD RELATIVES HAD A HEART ATTACK, ANGINA *(Heart related chest pain)*, CORONARY ARTERY SURGERY, OR DIED SUDDENLY BEFORE THE AGE OF 65 YEARS? (YES-NO)
2. HAS PATIENT EVER BEEN TOLD HE HAS HIGH BLOOD PRESSURE? (Y-N)
3. HAS PATIENT EXERCISED REGULARLY AT ONE TIME BUT NO LONGER DOES SO? (Y-N)
4. DOES PATIENT PREFER AND REGULARLY EAT MEAT WITH VISIBLE FAT OR SKIN? (Y-N)
5. NUMBER OF EGGS EATEN PER WEEK
6. DOES PATIENT REGULARLY EAT *(at least every other day)* CHEESE OR BUTTER? (Y-N)

SECTION B - REFERRAL CONSIDERATIONS

7. REASON(S) FOR SAM REFERRAL *(One or more)*
   1 - FLIGHT MEDICINE
   2 - PSYCHIATRY
   3 - NEUROLOGY
   4 - OPHTHALMOLOGY
   5 - INTERNAL MEDICINE
   6 - CARDIOLOGY

8. CLINICAL REASON(S) FOR CARDIAC CATHETERIZATION (ONE OR MORE)
   01 - ABNORMAL ELECTROCARDIOGRAPHIC FINDING
   02 - ANGINA, DEFINITE OR SUSPECTED
   03 - HISTORY OF ISCHEMIC EPISODES OF INFARCTION
   04 - MITRAL VALVE DISEASE, SUSPECTED
   05 - AORTIC VALVE DISEASE, SUSPECTED
   06 - CARDIOMYOPATHY, OBSTRUCTIVE, SUSPECTED
   07 - CARDIOMYOPATHY, NON-OBSTRUCTIVE, SUSPECTED
   08 - PERICARDIAL DISEASE, SUSPECTED
   09 - RISK FACTOR PROFILE SUGGESTIVE OF CORONARY HEART DISEASE
   10 - OTHER

9. ELECTROCARDIOGRAPHIC REASON(S) FOR CARDIAC CATHETERIZATION *(One or more)*
   01 - NONE, NORMAL STUDIES
   02 - LEFT BUNDLE BRANCH BLOCK
   03 - RIGHT BUNDLE BRANCH BLOCK
   04 - INTERVENTRICULAR CONDUCTION DEFECT
   05 - SUPRAVENTRICULAR TACHYCARDIA
   06 - ATRIOVENTRICULAR BLOCK - 1ST, 2ND, OR 3RD DEGREE
   07 - SERIAL T WAVE CHANGES
   08 - SERIAL ST SEGMENT CHANGES
   09 - INFARCT PATTERNS, ECG OR VCG
   10 - ABNORMAL DOUBLE MASTERS, REFERRED WITH
   11 - ABNORMAL DOUBLE MASTERS, SAM
   12 - ABNORMAL TREADMILL STRESS TEST WITH HISTORY OF NORMAL ECG'S
   13 - ABNORMAL TREADMILL STRESS TEST WITH HISTORY OF REPOLARIZATION ABNORMALITIES
   14 - PVC'S, VT - RESTING OR EXERCISE INDUCED
   15 - ABNORMAL SEPTAL Q WAVES
   16 - ABNORMAL TREADMILL STRESS TEST, REFERRED WITH
   17 - PACEMAKER DYSFUNCTION *(e.g., sick sinus syndrome, etc.)*
   18 - OTHER

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Figure 12. Cardiac catheterization report form.

SECTION C - CATHETERIZATION PROCEDURES

10. CATHETERIZATION PROCEDURES USED *(One or more numbers)*

01 - INTRAVENOUS CATHETER, STAND BY
02 - INTRAVENOUS PACING ELECTRODE, STAND BY
03 - RIGHT HEART CATHETERIZATION
04 - LEFT HEART CATHETERIZATION, RETROGRADE BRACHIAL
05 - LEFT HEART CATHETERIZATION, RETROGRADE FEMORAL
06 - HIS BUNDLE ELECTROCARDIOGRAPHY
07 - HIS BUNDLE ELECTROCARDIOGRAPHY WITH ATRIAL PACING
08 - CARDIAC OUTPUT, FICK
09 - CARDIAC OUTPUT, CARDIOGREEN
10 - CORONARY SINUS METABOLIC STUDIES
11 - SUPINE BICYCLE ERGOMETRY
12 - CONTRACTILITY STUDIES

11. ANGIOGRAPHY COMPLETED *(One or more numbers)*

01 - RIGHT ATRIAL ANGIOGRAPHY
02 - PULMONARY ANGIOGRAPHY
03 - FORWARD ANGIOGRAPHY
04 - LEFT VENTRICLE ANGIOGRAPHY
05 - SUPRAVALVULAR, AORTOGRAPHY
06 - CORONARY ANGIOGRAPHY, SONES
07 - CORONARY ANGIOGRAPHY, JUDKINS
08 - CORONARY ANGIOGRAPHY, MIXED
09 - RIGHT VENTRICULAR ANGIOGRAPHY

12. CATHETERIZATION TECHNIQUE AND VESSEL REPAIR *(Enter appropriate number sequences)*

A

1 - ANTECUBITAL VEIN, RIGHT
2 - SAPHENOUS VEIN, RIGHT
3 - FEMORAL VEIN, RIGHT
4 - BRACHIAL ARTERY, RIGHT
5 - FEMORAL ARTERY, RIGHT
6 - ANTECUBITAL VEIN, LEFT
7 - SAPHENOUS VEIN, LEFT
8 - FEMORAL VEIN, LEFT
9 - BRACHIAL ARTERY, LEFT
0 - FEMORAL ARTERY, LEFT

B

1 - CUTDOWN
2 - PERCUTANEOUS

C

1 - PRIMARY ARTERIAL REPAIR
2 - PURSESTRING ARTERIAL REPAIR
3 - LIGATION VENOUS
4 - VENOUS REPAIR
5 - N/A

	A	B	C

13. COMPLICATIONS OF CARDIAC CATHETERIZATION *(One or more numbers)*

01 - NONE
02 - DEATH
03 - MYOCARDIAL INFARCTION
04 - VENTRICULAR FIBRILLATION
05 - VENTRICULAR TACHYCARDIA
06 - SUPRAVENTRICULAR TACHYCARDIA
07 - ATRIOVENTRICULAR BLOCK
08 - ASYSTOLE OR MARKED BRADYCARDIA
09 - ANY ARRHYTHMIA LEADING TO DISCONTINUATION OF THE PROCEDURE
10 - PROFOUND HYPOTENSION
11 - INTRAMYOCARDIAL INJECTION
12 - MYOCARDIAL PERFORATION
13 - PERFORATION OF GREAT VESSELS
14 - DIMINISHED PULSE
15 - LOSS OF PULSE WITHOUT SYMPTOMS
16 - LOSS OF PULSE WITH SYMPTOMS
17 - LOSS OF PULSE OR ARTERIAL DAMAGE REQUIRING SURGICAL REPAIR
18 - A-V FISTULA
19 - VASOVAGAL REACTION REQUIRING TREATMENT
20 - COMPLETE HEART BLOCK

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Figure 12. (Continued)

SECTION D - CATHETERIZATION HEMODYNAMICS

14. AORTIC PRESSURE *(mmHg)* - SYSTOLIC			
- DIASTOLIC			
15. AORTIC PRESSURE *(mmHg)* - MEAN			
16. LEFT VENTRICULAR PRESSURE *(mmHg)* - SYSTOLIC			
- DIASTOLIC			
17. END DIASTOLIC PRESSURE *(mmHg) (Before Angiography)*			
18. END DIASTOLIC PRESSURE *(mmHg) (After Angiography)*			
19. AORTIC VALVE GRADIENT *(mmHg)*			
20. MITRAL VALVE GRADIENT *(mmHg)*			
21. CARDIAC INDEX: L/MIN/M^2			

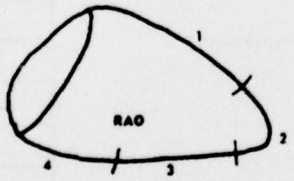
SECTION E - SUPRAVALVULAR AORTOGRAPHY

22. COMPLETED (Y-N)		
23. SUPRAVALVULAR AORTOGRAPHY *(One or more by number)*		
01 - NORMAL		
02 - DILITATION OF AORTA		
03 - ANEURYSM OF AORTA		
04 - DISSECTION OF AORTA		
05 - UNICUSPID AORTIC VALVE		
06 - BICUSPID AORTIC VALVE		
07 - ANEURYSM SINUS VALSALVA		
08 - AORTIC REGURGITATION, GRADE I		
09 - AORTIC REGURGITATION, GRADE II		
10 - AORTIC REGURGITATION, GRADE III		
11 - AORTIC REGURGITATION, GRADE IV		
12 - AORTIC RUN OFF LESION, OTHER		
13 - CALCIUM, ASCENDING AORTA		
14 - CALCIUM, AORTIC VALVE		

SECTION F - LEFT VENTRICULAR ANGIOGRAPHY

24. COMPLETED (Y-N)	
25. LEFT VENTRICULAR ANGIOGRAPHY *(N=Normal, A=Abnormal. If A, complete items 26 and/or 27)*	

26. LOCATION AND DEFINITION OF ABNORMAL CONTRACTION PATTERNS *(Select appropriate codes)*



	A	B
A		
1 - ANTERIOR WALL		
2 - APEX		
3 - DIAPHRAGMATIC		
4 - POSTEROBASAL		
5 - POSTEROLATERAL		
6 - SEPTAL WALL		
B		
1 - AKINESIS		
2 - DYSKINESIS		
3 - HYPOKINESIS		
4 - ASYNCHRONY		

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Figure 12. (Continued)

27. OTHER LEFT VENTRICULAR ABNORMALITIES *(One or more numbers)*

01 - INCREASED LEFT VENTRICULAR WALL THICKNESS
02 - THICKENED MITRAL VALVE
03 - DECREASED MOTION MITRAL VALVE
04 - BILLOWING MITRAL LEAFLET, ANTERIOR
05 - BILLOWING MITRAL LEAFLET, POSTERIOR
06 - MITRAL REGURGITATION, GRADE I
07 - MITRAL REGURGITATION, GRADE II
08 - MITRAL REGURGITATION, GRADE III
09 - MITRAL REGURGITATION, GRADE IV
10 - VENTRICULAR SEPTAL DEFECT
11 - CALCIUM, MITRAL VALVE
12 - CALCIUM, MITRAL ANNULUS
13 - INCREASED LEFT VENTRICULAR SIZE

SECTION G - CORONARY ANGIOGRAPHY

28. COMPLETED (Y–N)

29. CORONARY ANGIOGRAPHY *(N=Normal, A=Abnormal)*

30. ORIGIN OF SINUS NODE ARTERY *(Identify by segment letter or number)*

31. ORIGIN OF ATRIOVENTRICULAR NODE ARTERY

32. CIRCULATORY PATTERN

1 - RIGHT DOMINANT
2 - BALANCED
3 - LEFT DOMINANT

33. ORIGIN OF THE POSTERIOR DESCENDING CORONARY ARTERY(IES)

1 - RIGHT CORONARY ARTERY
2 - LEFT CORONARY ARTERY
3 - BOTH
4 - NEITHER

34. NUMBER OF POSTERIOR DESCENDING BRANCHES *(1, 2, etc.)*

35. DOES THE DOMINANT POSTERIOR DESCENDING BRANCH CROSS THE CRUX OF THE HEART? (Y–N)

36. CALCIUM *(As visualized by Fluroscopy - identify location by appropriate letter(s) or number(s)*

37. MYOCARDIAL BRIDGING *(As visualized by Angiography - identify location by appropriate letter(s) or number(s)*

38. CORONARY SPASM *(As visualized by Angiography - identify location by appropriate letter(s) or number(s)*

39. LOCALIZATION AND GRADING OF ANGIOGRAPHIC LESIONS *(If present)*

A = DISEASED CORONARY ARTERY BRANCH OR SEGMENT *(Identified by numbers or letters)*

B = LESION CODE - THOMPSON METHOD *(Identified by number)*

C = LESION CODE - BONES METHOD *(Identified by number)*

A		B		C

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Figure 12. (Continued)

40. VESSEL DISEASE SCORE

41. SONES FIVE YEAR MORTALITY ESTIMATE

42. CORONARY COLLATERAL CIRCULATION *(P=Present, A=Absent)*

43. CORONARY COLLATERAL CIRCULATION

A = THE CORONARY ARTERY BRANCH FROM WHICH THE COLLATERAL CHANNEL ORIGINATES *(Identify by number or letter)*

B = ANASTOMOTIC CHANNEL *(Identify by number or letter)*

C = CORONARY ARTERY BRANCH OR SEGMENT FILLED BY COLLATERAL FLOW *(Identify by number of segment)*

A		B		C	

44. CORONARY ANOMALIES

1 - NONE
2 - ANOMALIES OF THE CORONARY OSTIA
3 - ANOMALIES OF THE CORONARY ARTERIAL DISTRIBUTION
4 - OTHER

SECTION H - DIAGNOSIS

01 - NO EVIDENCE OF ORGANIC HEART DISEASE
02 - NO EVIDENCE OF CORONARY ARTERY DISEASE
03 - CORONARY ARTERY DISEASE, NORMAL VENTRICULAR FUNCTION
04 - CORONARY ARTERY DISEASE, ABNORMAL VENTRICULAR FUNCTION
05 - CARDIOMYOPATHY, OBSTRUCTIVE (IHSS)
06 - CARDIOMYOPATHY, NON-OBSTRUCTIVE
07 - AORTIC VALVE DISEASE, A.R.
08 - AORTIC VALVE DISEASE, A.S.
09 - AORTIC VALVE DISEASE, AR - AS
10 - MITRAL VALVE DISEASE, M.R.
11 - MITRAL VALVE DISEASE, M.S.
12 - MITRAL VALVE DISEASE, MR - MS
13 - BILLOWING MITRAL LEAFLET, ANTERIOR
14 - BILLOWING MITRAL LEAFLET, POSTERIOR
15 - PERICARDITIS, ACUTE
16 - PERICARDIAL EFFUSION
17 - PERICARDITIS, CHRONIC CONSTRICTIVE
18 - HYPERTENSIVE CARDIOVASCULAR DISEASE
19 - PULMONIC STENOSIS, VALVULAR
20 - PULMONIC STENOSIS, INFUNDIBULAR

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Figure 12. (Continued)