LABORATORY OF PHYSIOLOGICAL HYGIENE

MINNESOTA HEART HEALTH PROGRAM

MANUAL OF OPERATIONS

1981-1982

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Admittance Form, Diagnosis Sheet, Autopsy Report
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Teaching-Conferences, Accountability, Medication Record Sheet, Blood Pressure Chart, Nursing Data Base, Problem List, Nurse's Notes.
A. Objectives

1. To continue to monitor Minnesota mortality rates by causes and to begin to monitor morbidity in order to assess the changing burden of cardiovascular disease in the Twin Cities metropolitan community.

2. To estimate the extent to which changes in cardiovascular mortality rates are due to changes in disease incidence and/or case fatality.

3. To estimate the extent to which changes in mortality rates are related to and hence might be explained by changes in levels of risk factors and their associated behaviors and selected indicators of medical care.

4. To establish a model system for long-term surveillance and an ongoing system for the Twin Cities metropolitan area.

B. Specific Aims


2. Establishment for the years 1970-1990 of hospital morbidity data surveillance of myocardial infarction (MI) and cerebrovascular accident (CVA) to ascertain a) morbidity rates and b) fatality rates to determine how they contribute to the changing mortality rates.

3. Measurement of primary risk factors for MI and CVA (cigarette smoking, serum cholesterol levels, blood pressure levels, diet and physical activity) in serial cross-sectional samples of the Minnesota population to examine temporal relationships of change in risk factors and change in morbidity and mortality.

4. Monitor trends in knowledge, attitudes and behavior related to risk factor levels, e.g. eating habits.
5. Examination of various methodological problems in surveillance of mortality, morbidity and risk factors and creation of a model long-term surveillance system.

   - number of admissions to coronary care units
   - number of MI patients admitted alive following out-of-hospital resuscitation
   - number of coronary artery bypass graft operations

C. Overview of Methods

1. Data will be gathered and analyzed with the following hypotheses in mind:
   a. The downward trends in coronary heart disease (CHD) and cerebrovascular disease (CVD) mortality can be explained by decreasing case-fatality rates and decreasing disease incidence.
   b. Decreasing mortality, morbidity and case-fatality from CHD and CVA are correlated with downward trends in the prevalence and population distributions of risk factors (elevated blood pressure, serum cholesterol, cigarette smoking, etc.), changes in their associated health behavior and with improved medical care.

2. This will be accomplished as follows:
   a. Mortality data in Twin Cities metropolitan area (pop. approx. 2 million) will be obtained from the State Health Department for the years 1960-1990.
   b. Morbidity data will be obtained through surveillance of hospital discharges in the metropolitan area for acute MI and completed CVA for the years 1970-90.
      The ages to be considered in mortality and morbidity analyses are 30 through 74.
   c. The accuracy of both data sources will be verified by validation of samples of cases.
   d. Trends in risk factors and related health behaviors will be measured in the metropolitan population in four consecutive annual surveys, 1980-1990. Ages surveyed are 20 through 74.
   e. Trends in medical care indicators (coronary care unit admissions, successful out-of-hospital resuscitations of MI cases, coronary artery bypass operations) in the metropolitan population will be estimated from hospital statistics, record reviews and PSRO data for the years 1970-90.
SECTION 2

DESIGN AND OBJECTIVES

2.1

Minnesota Heart Health Program Objectives

The overall objectives of the Heart Health Program for cardiovascular diseases as stated in Section 1.3 are:

1. To develop, test, implement and evaluate coordinated strategies of community-wide health education for behavioral change to reduce cardiovascular risk.

2. To increase community knowledge of cardiovascular risk factors.

3. To improve community behaviors related to population levels of risk factors.

4. To change levels of the known risk characteristics for heart and vascular diseases among the educated communities.

5. To modify specific eating and activity patterns, reduce blood lipids, weight, cigarette smoking and blood pressure level.

6. To reduce incidence of premature disability and death from heart and vascular diseases in educated communities.

7. To develop a vital resource of knowledge, skills, research and training in community approaches to prevention and health promotion.

In order to meet these objectives a specific strategy is designed to develop and apply health education programs by techniques of community screening and referral for direct individual and group education, combined with mass communications, community organization, enhancement of prevention services and environmental change, and to demonstrate the feasibility and efficacy of these programs in free-living educated communities compared to similar reference communities.

2.2

Program Design

2.2.1

Town Pairing

Community-wide prevention education and mass communications are carried out in total populations defined by town boundaries. For each
community chosen for the education program, a similar community has been selected to serve as a comparison in which only surveillance is performed. The many changes in economic conditions, energy supply, changing lifestyles, concern for health, medical care, work status and other factors are not highly predictable or controllable. The Minnesota Heart Health Program will control in part for these potential confounders by the identification of reference communities alike in as many variables as possible to the educated communities.

Three town pairs will provide the population base of the program. Each town pair will include an educated town and a reference town, while systematic surveys of morbidity, mortality, risk factor status, and health beliefs and behavior will be conducted throughout the course of the program in both. The beginning of intervention in the educated towns will arrive sequentially at one year intervals. This staged introduction of the program is necessary for logistic reasons but defensible on the scientific grounds of repetitions and increased generalizability. Experience in the first educated town will also allow improvement of the education program prior to the beginning of intervention in the remaining educated towns.

The choice of several distinct town pairs is made for three reasons. First, sizeable populations are required to obtain sample sizes adequate to differentiate accurately morbidity and mortality changes from random variables. Second, intervention and comparison in several pairs is required to assess even minimally the generalizability of results obtained. Use of criteria of consistency and temporality of change in addition to statistical significance will also strengthen the evaluation. Third, unanticipated events within the program plan or extraneous to it may occur in a single pair, potentially weakening the analysis. For example, industry shutdowns in one town of a pair could cause serious changes in population characteristics.

2.2.2

Community Selection Criteria

Community selection is based on three levels of criteria:

1. Primary criteria are basic characteristics requiring close matching critical to the study design. Included are the characteristics important to "success" plus the comparability of endpoint measures:
   a. Population size
   b. Geographic location
   c. Population in age of interest (25-74)
   d. Distribution of major risk indicators
   e. Mortality trends
   f. Migration rates

Laboratory of Physiological Hygiene (LPH) studies in the Twin Cities and in Western Minnesota indicate no significant dif-
ferences in average levels of risk indicators between areas. Mortality rates by region in Minnesota are also quite similar between areas.

2. Secondary criteria are characteristics of importance to the educational program, but of less direct importance to the endpoint criteria:

a. Hospital and medical care base
b. Industrial base
c. Ethnic composition
d. Education level of population
e. Agricultural base
f. Educational system
g. Media characteristics
h. Employment/unemployment characteristics
i. Economic status
j. Distance from Minneapolis

3. The final criteria are not easily quantified but were considered when the town assignments were made:

a. Town receptivity
b. Medical community receptivity
c. Governmental receptivity
d. Media availability
e. Community organization potential

2.2.3 Research and Program Evaluation

It will be possible to describe and measure the effects of the educational program on the educated communities. The preventive effects of the program will be evaluated by tested epidemiological methods describing changes in morbidity, mortality and risk indicators. In addition, health related behavior change will be both directly and unobtrusively evaluated.

Equally important to the demonstration is evaluation of the individual components of the educational program. The purposes of this evaluation are to understand the nature and effect of individual strategies and to isolate the successful elements. There is a need for the rapid identification of more and less successful strategies so that the former may be enhanced and the latter eliminated. Finally, new and innovative health education hypotheses will be formed and tested in the field setting to advance knowledge and determine relevance and effect.

Other evaluation elements include the collection of information related to costs, because community based prevention efforts are new and their cost, relative to benefits, is unknown.
2.2.3.1 Evaluation Activities

The Heart Health Program evaluation activities and their methods include morbidity surveillance, mortality surveillance, risk factor surveys, screening panels, pilot projects, unobtrusive measures, rapid surveys, school surveys, and cost analyses. Following is a brief description of each:

Mortality surveillance will be performed in educated and reference communities and in the entire state. The objective is to determine whether mortality rates change differentially in the educated towns. It is hypothesized that cardiovascular mortality in the educated towns will be lower at the end of the program relative to that experienced in comparison towns. The surveillance will be conducted by the systematic examination of death certificates, with validation of subsamples.

Morbidity surveillance will be performed in all educated and reference towns. The objective is to determine whether differential morbidity rates occur in communities exposed to the educational program. It is hypothesized that by the end of the education program, cardiovascular disease morbidity will be lower in the educated towns, relative to observed morbidity in the reference towns. This evaluation will be carried out through systematic analysis of hospital data.

The risk factor survey will be performed in each educated and reference town, using randomly generated population samples. Survey activity in all towns will begin the first year of the program and will be designed to assess pre-education risk factor distributions, knowledge, attitudes, beliefs and values related to health behavior, intentions regarding future health behavior, and self-reports of health-related behavior. The population survey will be repeated annually. The objective is to determine whether risk and related characteristics change differentially in educated towns. By the end of the education program, risk factor levels should be lowered and beliefs and behavior altered in line with the educational message, more so in the educated than in the reference towns.

All persons who participate at the Heart Health Education Centers will be randomly assigned to one of eight follow-up screening panels in each town. Subsamples of each panel will be re-surveyed once during the remaining period of the study. The objective of this study is to assess the effects of screening and subsequent direct education in the educated towns. This survey is restricted to the educated towns as an education program is not conducted in the reference towns.

Pilot projects will be conducted in educated and non-Heart Health Program communities to test new strategies and procedures, although much pilot testing of strategies and procedures has already been accomplished and some is under way. This pilot activity will be con-
centrated during the first year of the program but will also continue in succeeding years.

Throughout the term of the education program occasional rapid surveys will be conducted by telephone, mail, or direct interview, with the objective of obtaining prompt feedback on the effect of specific educational strategies. The objective is to rapidly determine the effect of any single strategy, so it may be altered, improved, or discontinued. These rapid surveys will be conducted in the educated towns only.

Subgroup surveys will be conducted throughout the program on subsets of randomly selected individuals from a population subgroup. The objective is to assess the effect of individual programs, such as the youth education program, or the health professional education programs, in the educated towns.

Unobtrusive assessments of community health behavior will be made in the educated and reference communities throughout the project. These will include measures of medication prescriptions, food and cigarette sales, and the recording of other community health and major nonhealth events. The objective is to provide additional information, from a different data source, related to health behavior.

Cost data, including medical-related costs and Heart Health Program costs will be collected in each community for later program cost analysis evaluation.

2.2.3.2

Evaluation of the Education Process

Multiple methods and a special working group is dedicated to the task of evaluating the intervention process. Many small and medium size evaluation projects will be carried out (approximately 50/year) and will also review the risk factor and unobtrusive measures data. The evaluation goals are: 1) to examine each major education strategy and attempt separation of effects of the individual components; 2) to identify effective education strategies and strengthen them, and to identify ineffective strategies and eliminate or alter them; and 3) to increase understanding of health-related behavior by testing alternative strategies aimed at modification of specific behaviors.

Evaluation will be made of both the principal objectives in the areas of smoking, eating pattern, high blood pressure and physical activity, and the individual methods of mass media, community organizations, education center and health professional, adult and youth education. Several methods will be utilized in this task including the annual risk factor surveys, screening panels, pilot projects, rapid surveys and subgroup surveys.
2.2.4

Risk Factor Change Analyses

Risk factor reduction is anticipated from the education program in the educated communities. That change will precede reductions of morbidity and mortality related to the education program. Risk factor distribution and distributions of relevant antecedent behavior and unobtrusive measures of risk will be obtained from survey samples. These form the data base for analysis of risk factor change and evaluations for strategy adjustment in the study.

To enhance knowledge or risk factor change throughout the study period, surveillance will be carried out in each reference and educated town in each year of the study. The survey in years zero and one will be under "control" or baseline conditions in all towns. In year 2 the survey will be under control conditions in five towns and intervention conditions in one. In year 3 the survey will be under control conditions in four towns, under intervention in two towns; in year 4 under maintenance intervention conditions in two towns, initial intervention in one, and control in three. The surveys for years 5-8 will be under maintenance intervention conditions in three towns and under control conditions in three towns.

Limiting attention to mean levels of risk factors, the assumption that Heart Health Program efforts are the predominant cause of risk factor change leads to a result where there is little change in the risk or education characteristic during control years or the later years of the study, but large changes in the first two years of the study in each community. The model suggested will be used to infer that the program is not working as anticipated and whether or not the comparison communities are relatively unaffected by risk factor change.

It is proposed to survey a probability sample annually from each community of total sample size 500, a new sample being drawn each year. This sampling method is chosen over a cohort survey because persons in the cohort are likely to be affected by the frequent survey, probably in the direction of making more changes than the general population. This would give an over-estimate of the program effect. In addition, cohorts are relatively hard to follow and dropout is a problem, whereas cross-sectional samples are not affected by screening or dropout but require larger sample sizes. One exception to cross-sectional samples is a proposition to resurvey all persons with elevated blood pressure for their blood pressure and medication status one year after initial identification. About 80 persons per year per town are estimated. In identifying these persons, efforts will be taken to minimize the effect of screening without avoiding the ethical obligation for referral by specified criteria.

The risk factor or knowledge levels between any year and baseline will be compared. Typically, the number in the sample each year will be 500 for a single community pair or 1500 for all educated communities.
compared to all comparison communities. In the case of larger communities the use of a two-year baseline period may be justified, in which case the number used would be as much as 3000 for baseline and 1500 for a single year after baseline. Such larger samples may be subdivided according to other characteristics and subgroups of interest (male vs female; young vs old).

More complex analyses will be carried out using least squares models. Even with sample sizes limited for subgroup analysis, differential aspects of the Heart Health Program can be examined and evaluated for statistical significance using regression modeling, with some added power at the expense of added modeling assumptions. Data can also be pooled across years of education to increase power. This technique would be particularly effective in the situation in which the risk level achieves a maximum drop, then remains stable for a period of time.
CRITERIA FOR EVENTS

The events will be classified as definite, possible, and no event.

I. Fatal Coronary Events

A. Definite Fatal Myocardial Infarction (MI) (Dx Code 01)
   1a. Definite myocardial infarction within 4 weeks of death by MHHP criteria;
   -OR-
   1b. Acute myocardial infarction diagnosed by autopsy.

B. Definite Sudden Death Due to Coronary Heart Disease (CHD) (Dx Code 02)
   1. Death witnessed as occurring within one hour after the onset of severe myocardial infarction or within one hour after the subject having last been seen without symptoms.
   -AND-
   2. No documentation of definite acute MI within 4 weeks prior to death by MHHP criteria. (See below for criteria for definite MI).
   -AND-
   3. No known non-atherosclerotic or non-cardiac-atherosclerotic process that was probably lethal according to death certificate, autopsy report, hospital records or physician report.

C. Definite Fatal Coronary Heart Disease (Dx Code 03)
   1. Death certificate with consistent underlying or immediate cause(s) (ICD-9 codes 410-414) or hospital record with any mention of ICD9CM 410-414. (Medical certification of cause of death, Part I a,b or c.)
   -AND-
   2. No documentation by MHHP criteria of definite acute MI within 4 weeks prior to death.
   -AND-
   3. MHHP criteria for sudden death not met.
   -AND-
   4. No known non-atherosclerotic or non-cardiac atherosclerotic process or event that was probably lethal according to death certificate, autopsy report, hospital records or physician records.
   -AND-
   5a. Previous history of MI according to relative, physician or hospital records; old MI on autopsy; or definite, or possible MI by MHHP record
5b. Autopsy reporting severe atherosclerotic coronary artery disease or old MI without acute myocardial infarction. (> 50% proximal narrowing of two major vessels or > 75% proximal narrowing of one major vessel if anatomic details given.)

-OR-

5c. Rapid death:

Death occurring greater than one and less than or equal to 24 hours after the onset of severe cardiac symptoms or subject having last been seen without symptoms.

D. Possible Fatal CHD (Dx Code 08)

1. No documentation by MHHP criteria of definite acute MI within 4 weeks prior to death.

-AND-

2. No documentation by MHHP criteria of definite sudden death.

-AND-

3. No documentation by MHHP criteria of definite fatal CHD.

-AND-

4. Death certificate with consistent underlying or immediate cause (ICD-9 Codes 410-414,427,429,798,799) or hospital record with any mention of ICD9CM 410-414.

-AND-

5. No known non-atherosclerotic or non-cardiac atherosclerotic process that was probably lethal according to death certificate, autopsy report, hospital records, or physician records.

II. Nonfatal Myocardial Infarction

A. Definite (Dx Code 04)

1. Evolving diagnostic ECG

-AND/OR-

2. Diagnostic ECG and abnormal enzymes.

-AND/OR-

3. Prolonged cardiac pain and abnormal enzymes.

B. Possible - hospital discharge diagnosis 410-411 or one or more of the following categories using the stated definitions below: (Dx Code 10)

1. Equivocal enzymes and equivocal ECG (with or without pain).

2. Equivocal enzymes and diagnostic ECG (no pain).

3. Abnormal enzymes and other ECG (no pain).
4. Abnormal enzymes and equivocal ECG (no pain).
5. Abnormal enzymes alone (no pain, ECG absent).
6. Prolonged cardiac pain and equivocal enzymes (ECG absent).
7. Prolonged cardiac pain and equivocal ECG (enzymes incomplete).
8. Prolonged cardiac pain and diagnostic ECG (equivocal or incomplete enzymes).
9. Prolonged cardiac pain alone (ECG and enzymes incomplete).
10. Prolonged cardiac pain, 'other' ECG, equivocal enzymes.
11. Prolonged cardiac pain, 'other' ECG, incomplete enzymes.

DEFINITIONS

Prolonged cardiac pain: When it is characterized by pain with the following characteristics.

(a) occurring anywhere in the anterior chest, left arm or jaw which may also involve the back, shoulder, right arm, or abdomen on one or both sides,
(b) duration of more than 20 minutes.
(c) no definite non-cardiac cause of chest pain (all cases of non-cardiac chest pain to be reviewed by physicians' panel).

ECG

(a) Evolving diagnostic ECG -- an evolving pattern on serial ECGs of a diagnostic ECG:

(An evolving pattern of changes (appearance or disappearance within lead groups: anterior (V1-V5); lateral (1, aVL, V6); inferior (II, III, aVF)) established the infarct as acute. Two or more ECG recordings during the hospitalization are needed for this classification.

1) No Q code in one ECG record followed by a record with a
diagnostic Q code (Minn. code 1-1-1 through 1-2-5 plus
1-2-7).
-OR-

2) An equivocal Q code (Minn. code 1-2-8 or any 1-3 code) and no
major ST segment depression in one ECG record followed by a record
with a diagnostic Q code PLUS a major ST segment depression (Minn.
code 4-1, or 4-2).
-OR-

3) An equivocal Q code and no ST segment elevation in one ECG
record followed by a record with a diagnostic Q code PLUS an ST
segment elevation (Minn. code 9-2).
4) An equivocal Q code and no major T wave inversion in one ECG record followed by a record with a diagnostic Q code PLUS a major T wave inversion (Minn. code 5-1 or 5-2).

-OR-

5) No Q code and neither 4-1 nor 4-2 followed by a record with an equivocal Q code plus a 4-1 or a 4-2.

-OR-

6) No Q code and no 9-2 followed by a record with an equivocal Q-code plus a 9-2.

-OR-

7) No Q code and neither 5-1 nor 5-2 followed by a record with an equivocal Q code plus a 5-1 or a 5-2.

(b) Diagnostic ECG:
1) Minnesota code 1-1-1 through 1-2-5 and 1-2-7 for Q and QS patterns

-OR-

2) Minnesota code 9-2 for ST segment elevation PLUS any T wave depression item coded 5-1 or 5-2.

(None of the above T-wave depression items can be used in the presence of ventricular conduction defects).

(c) Equivocal ECG:
1) Q and QS pattern 1-2-8 through 1-3-6

-OR-

2) ST junction (J) and segment depression 4-1 through 4-3

-OR-

3) T-wave items 5-1 through 5-3

-OR-

4) ST segment elevation item 9-2

(d) Other ECG: all other findings, including normal.

(e) Uncodable ECG
1) Missing lead.

2) Baseline drift greater than 1 in 20, if it obscures ST-T wave.

3) Muscle tremor artifact giving more than 2 mm peak-to-peak oscillation.

4) Other technical errors making Q-wave measurement impossible, such as extreme lack of centering, or marked clipping.

(f) Absent ECG: No ECG available for coding.

The ECG series will be assigned the highest category for which criteria are met, i.e. evolving diagnostic > diagnostic > equivocal > other.
CARDIAC ENZYMES

Enzymes will be considered for the category of "abnormal" only if the upper limit of normal for the laboratory making the determination is recorded for the enzymes(s) used to make the diagnosis, and:

a. CPK-MB and total CPK have been measured within 72 hours of admission or onset of acute event, whichever is later.

-OR-

b. total CPK has been measured and one of LDH or SGOT has been measured within 72 hours of admission or onset of acute event, whichever is later.

Enzymes are "abnormal" if:

1. CPK-MB has been measured and is "present" (If hospital uses criteria of "present" and "absent") or at least twice the upper limits of normal (if hospital uses quantitative criteria) and total CPK is at least twice the upper limits of normal.  
-OR-

2. total CPK has been measured and is at least twice the upper limits of normal and either LDH or SGOT has been measured and is at least twice the upper limits of normal.

Enzymes will be considered for the category of "equivocal" only if the upper limit of normal for the laboratory making the determination is recorded for the enzyme(s) used to make the diagnosis.

Enzymes are "equivocal" if:

1. CPK-MB and total CPK have been measured within 72 hours of admission or onset of acute event and CPK-MB is above the upper limits of normal but less than twice the upper limits of normal for laboratories giving quantitative values or "present" for laboratories giving qualitative values but in either case total CPK is less than twice the upper limits of normal.  
-OR-

2. at least one of CPK,LDH or SGOT has been measured within 72 hours of admission or onset of acute event and is above the upper limits of normal, and the criteria for "abnormal" enzymes are not met.  
-OR-

3. Enzymes (CPK-MB, CPK, SGOT or LDH) are "abnormal", as defined above, but there is a non-ischemic cause present (defibrillation, surgery, liver disease, injections, etc.).

Enzymes are "normal" if:

they meet criteria for consideration as "abnormal" or "equivocal" but criteria for these categories are not met.

Enzymes are "incomplete" if:

they do not meet criteria for consideration as "abnormal" or "equivocal."
III. Primary Cardiac Arrest with Successful Resuscitation

A. DEFINITE (Dx Code 07)

1. Ischemic arrest
   (a) Sudden cardiovascular (absent pulse) and pulmonary (absent spontaneous respiration) collapse with successful resuscitation
   -AND-
   (b) Ventricular fibrillation or asystole reported on resuscitation ECG
   -AND-
   (c) ECG's, enzymes and history necessary for diagnosis of "definite" or "possible" MI collected. "Definite" and "possible" MI by MHHP criteria have been excluded
   -AND-
   (d) No known non-atherosclerotic or non-cardiac atherosclerotic acute or chronic process or event that would have been probably lethal
   -AND-
   (e) History of previous MI
   -AND-
   (f) Subsequent documentation of significant CHD (but not acute MI) during same hospitalization (coronary angiography showing > 50% proximal narrowing of 2 or more major vessels, or > 75% proximal of 1 or more major vessels, old MI on ECG - Minnesota Codes 1-1, 1-2).

2. Primary Arrhythmia (without ischemia)
   (a) Sudden cardiovascular (absent pulse) and pulmonary (absent spontaneous respiration) collapse with resuscitation
   -AND-
   (b) Ventricular fibrillation or asystole reported on resuscitation ECG
   -AND-
   (c) ECG's, enzymes and history necessary for diagnosis of "definite" or "possible" MI collected. "Definite" and "possible" MI by MHHP criteria have been excluded
   -AND-
   (d) No known non-atherosclerotic or non-cardiac atherosclerotic acute or chronic process or event that would have been probably lethal
   -AND-
   (e) No history of previous MI
   -AND-
   (f) Subsequent documentation of no significant CHD during same hospitalization (absence of both > 50% proximal narrowing of 2 or more or > 75% proximal narrowing of 1 or more major vessels on coronary angiography).

3. Non-Specific (insufficient information to classify as ischemic or primary arrhythmia).
   (a) Sudden cardiovascular (absent pulse) and pulmonary (absent spontaneous respiration) collapse with resuscitation.
   -AND-
   (b) Ventricular fibrillation or asystole reported on resuscitation ECG. 
   -AND-
   (c) ECG's, enzymes and history necessary for diagnosis of "definite" or "possible" MI collected. "Definite" and "possible" MI by MHHP criteria have been excluded.
   -AND-
   (d) No known non-atherosclerotic or non-cardiac atherosclerotic acute or chronic process or event that would have been probably lethal.
B. Possible (Dx Code 12)

1. Apparent sudden cardiovascular and pulmonary collapse with resuscitation as with "definite primary cardiac arrest"  
   -AND-  

2. Lack of documentation for ventricular fibrillation or asystole during resuscitation  
   -AND-  

3. Definite MI by WHIP criteria has not been diagnosed for this event.  
   -AND-  

4. No known nonatherosclerotic or non-cardiac atherosclerotic acute or chronic process or event that would have been probably lethal.

IV. Fatal Stroke

A. Definite (Dx Code 05)

1a. Cerebral infarction or hemorrhage diagnosed at autopsy  
   -AND-  

1b. No history of atrial flutter or fibrillation; myocardial infarction in the preceding 2 months; mitral stenosis or other source for cardiac thromboembolus or paradoxical embolus; no hypercoagulable state/hemorrhage, other disease process or event such as brain tumor, subdural hematoma, subarachnoid hemorrhage, metabolic disorder or peripheral lesion that could cause localizing neurological deficit or coma - according to death certificate, autopsy, hospital records or physician records.  
   -OR-  

2a. History of rapid onset (< 48 hours from onset to time of admission or maximum acute neurologic deficit) of localizing neurologic deficit and/or change in state of consciousness.  
   -AND-  

2b. Documentation of localizing neurologic deficit by unequivocal physician or laboratory finding within 6 weeks of death with > 24 hour duration of objective physician findings.  
   -AND-  

2c. See list under 1b above.

B. Possible (Dx Code 09)

1. Death certificate with consistent underlying or immediate cause (ICD-9, Codes 431-437).  
   -AND-  

2. No evidence at autopsy examination of the brain, if performed, of any disease process other than cerebral infarction or hemorrhage that could cause localizing neurological signs. (See 1b above.)
V. Nonfatal Stroke

A. Definite (Dx Code 06)

1. History of rapid onset (< 48 hours from onset to time of admission or maximum acute neurologic deficit) of localizing neurologic deficit and/or change in state of consciousness.

   -AND-

2. Documentation of localizing neurologic deficit by unequivocal physician or laboratory finding within 6 weeks of onset with > 24 hour duration of objective physician findings.

   -AND-

3. No history of atrial flutter or fibrillation; myocardial infarction in the preceding two months; mitral stenosis or other source for cardiac thromboembolus, or paradoxical embolus; hypercoagulable state; hemorrhage; brain tumor; subdural hematoma; subarachnoid hemorrhage; metabolic disorder; or peripheral lesion that could cause localizing neurological deficit or coma according to hospital records.

B. Possible (Dx Code 11)

1a. History of rapid onset (< 48 hours from onset to time of admission or maximum acute neurologic deficit) of localizing neurologic deficit and/or change in state of consciousness.

   -AND-

1b. Documentation of localizing neurologic deficit by unequivocal physician or laboratory finding within 6 weeks of onset with > 24 hour duration of objective physician findings.

   -OR-

1c. Discharge diagnoses with consistent primary or secondary codes (ICD-9-CM Codes 431, 432, 434, 436, 437)

   -AND-

2. No evidence by unequivocal physician or laboratory findings of any other disease process or event causing focal brain deficit or coma other than cerebral infarction or hemorrhage (N.B. definite evidence of systemic arterial embolism to other organs is required as proof of cardiac or paradoxical thromboembolism) according to hospital records.

MHHP Criteria for Events

Unequivocal Laboratory Findings

1. A CAT scan showing no definite findings of any disease process or event causing focal brain deficit or coma other than cerebral infarction or hemorrhage.

   -AND-

2a. Showing focal area of decreased or normal attenuation consistent with cerebral infarct

   -OR-

2b. Showing focal increased attenuation consistent with intracerebral hemorrhage.
<table>
<thead>
<tr>
<th>Criteria Section</th>
<th>Diagnostic Code</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.A.</td>
<td>01.</td>
<td>01.</td>
<td>Definite fatal myocardial infarction (MI)</td>
</tr>
<tr>
<td>I.B.</td>
<td>02.</td>
<td>02.</td>
<td>Definite sudden death due to coronary heart disease (CHD)</td>
</tr>
<tr>
<td>I.C.</td>
<td>03.</td>
<td>03.</td>
<td>Definite fatal CHD</td>
</tr>
<tr>
<td>II.A.</td>
<td>04.</td>
<td>04.</td>
<td>Definite nonfatal MI</td>
</tr>
<tr>
<td>IV.A.</td>
<td>05.</td>
<td>05.</td>
<td>Definite fatal stroke</td>
</tr>
<tr>
<td>V.A.</td>
<td>06.</td>
<td>06.</td>
<td>Definite nonfatal stroke</td>
</tr>
<tr>
<td>III.A.</td>
<td>07.</td>
<td>07.</td>
<td>Definite primary cardiac arrest - with resuscitation</td>
</tr>
<tr>
<td>I.D.</td>
<td>08.</td>
<td>08.</td>
<td>Possible fatal CHD</td>
</tr>
<tr>
<td>IV.B.</td>
<td>09.</td>
<td>09.</td>
<td>Possible fatal stroke</td>
</tr>
<tr>
<td>II.B.</td>
<td>10.</td>
<td>10.</td>
<td>Possible nonfatal MI</td>
</tr>
<tr>
<td>V.B.</td>
<td>11.</td>
<td>11.</td>
<td>Possible nonfatal stroke</td>
</tr>
<tr>
<td>III.B.</td>
<td>12.</td>
<td>12.</td>
<td>Possible primary cardiac arrest - with resuscitation</td>
</tr>
<tr>
<td>98.†</td>
<td>98.</td>
<td>98.</td>
<td>Fatal event not due to CHD or stroke</td>
</tr>
<tr>
<td>99.†</td>
<td>99.</td>
<td>99.</td>
<td>Nonfatal event not due to CHD or stroke</td>
</tr>
</tbody>
</table>

When criteria are met for two events occurring within 6 weeks of each other, the primary diagnosis will be that with the lowest diagnostic code in this hierarchy.
Clarifications for MHHP Coders and Abstractors

Rules when using the Minnesota Code:

1. 4-codes are independent of 5-codes (4's without 5's)
2. QS pattern in lead I 1-1-1; QS pattern in lead V6 1-1-1
3. New code for abstractors
   1-1-6 QS pattern when initial R-wave is present in adjacent lead to the right on chest, in any of leads V2, V3, V4, V5, V6.
4. Do not code 4-4 or 5-4's.
5. Although MHHP is limited to Q, 4, 5, 9-2, 6-1, 6-8, 7-4, 8-2 and 9-8 codes, the suppressions from the Minnesota Code book should be applied for any other code that affects a coding procedure. (Example: 3-2 suppresses 1-2-8. It is not coded for MHHP but the suppression is still in effect. Put the reason for the MHHP suppression (i.e., "3-2 suppresses 1-2-8") in the "Uncoded Leads" column.
6. When a QRS > 0.12 sec., determine if it is a 7-1-1, 7-2-1 or a 7-4. Then apply the suppressions for that specific code. Record 7-4 regardless of which 7-code it is.
7. If there are any questions on coding, call Denise Hesselroth.

Rules for the special codes in the ECG category:

1. Evolving Diagnostic deals in lead groups. If more than one code is needed, they have to occur in the same lead group.
2. Diagnostic can occur on any ECG. The criteria does not have to occur in the same lead group. Example: 5-2 lead II; 9-2 lead V5.
INTRODUCTION - The Minnesota Heart Health Program Event Criteria divide events into 12 cardiovascular disease (CVD) events—four fatal coronary events (definite fatal myocardial infarction, definite sudden death due to coronary heart disease (CHD), definite fatal CHD, and possible fatal CHD), two levels of non-fatal MI ('possible' and 'definite' non-fatal MI), two levels of primary cardiac arrest with successful resuscitation ('definite' and 'possible'), two levels of fatal stroke ('definite' and 'possible' fatal stroke), and two levels of non-fatal stroke ('definite' and 'possible' non-fatal stroke). Each CVD event is assigned a code number for ordering the hierarchy of events occurring within six weeks of each other (codes 01-12), and fatal events not due to CVD are assigned code 98 and non-CVD events not associated with death are assigned code 99.

Some of the criteria categories require definition of other criteria categories or of subcategories (i.e., ECG and cardiac enzyme data) that do not appear in the list of final diagnoses. For example, the test for a fatal coronary heart disease (CHD) requires first testing for non-fatal MI; and testing for a non-fatal MI requires categorization of ECG and enzyme data.

Table 1 presents the fourteen categories of final diagnosis, their hierarchical codes and the table number that explains how the diagnostic elements are applied to assign a final diagnosis. Tables 2 through 8 present the rules for categorizing the data into each of the diagnostic categories and subcategories. The tables are in order of expected application.
Table 1 - The 14 MHHF final diagnoses, their hierarchical levels for assigning diagnosis when two events occur within a six-week time period, and the table numbers for determining final diagnosis (if two or more events occur within six weeks of each other, diagnosis is event with lowest code number)

**NON-FATAL CORONARY HEART DISEASE EVENTS** (table 4)
- Definite non-fatal MI (Code 04)
- Possible non-fatal MI (Code 10)

**FATAL CORONARY HEART DISEASE EVENTS** (table 5)
- Definite fatal myocardial infarction (MI) (Code 01)
- Definite sudden death due to coronary heart disease (CHD) (Code 02)
- Definite fatal CHD (Code 03)
- Possible fatal CHD (Code 08)

**PRIMARY CARDIAC ARREST EVENTS** (table 6)
- Definite primary cardiac arrest with resuscitation (Code 07)
- Possible primary cardiac arrest with resuscitation (Code 12)

**FATAL STROKE EVENTS** (table 7)
- Definite fatal stroke (Code 05)
- Possible fatal stroke (Code 09)

**NON-FATAL STROKE EVENTS** (table 8)
- Definite non-fatal stroke (Code 06)
- Possible non-fatal stroke (Code 11)

**NON-CVD EVENTS**
- Fatal event not due to CVD (Code 98)
- Non-fatal non-CVD event (Code 99)
### Table 2 - Criteria for Categorizing Cardiac Enzymes

(To be applied if case has target or screening MI codes)

<table>
<thead>
<tr>
<th>DIAGNOSTIC ELEMENT</th>
<th>abnormal</th>
<th>DIAGNOSTIC CATEGORY</th>
<th>equivocal</th>
<th>normal</th>
<th>incomplete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total CPK and CPK-MB measured</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Total CPK and one of SGOT or LDH measured (1)</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>At least one measurement of total CPK &gt; 2 times ULN* and CPK-MB 'present' or &gt; 7 times ULN (2)</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>At least one measurement of total CPK &gt; 2 times ULN and at least one measurement of SGOT or LDH &gt; 2 times ULN (2)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>All measurements &lt; ULN</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Other cause for enzyme elevation present (3,4)</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

Key: + = must be present; + may be present but not essential; - = must be not present
* upper limits of normal

(1) only measurements within 72 hours of admission or acute event, whichever is later, are considered in categorizing the enzyme data

(2) If another cause of enzyme elevation is present, the enzyme value is treated as being between one and 2 times ULN, not > 2 times ULN

(3) Enzyme patterns which would otherwise be categorized as 'abnormal' are categorized as 'equivocal' in the presence of another cause of enzyme elevation

(4) Conditions other than myocardial infarction which cause elevations of serum enzymes

[From: Wallach J. Interpretation of diagnostic tests. 2nd Ed. Boston; Little, Brown and Co, 1974.]
<table>
<thead>
<tr>
<th>ICD9 Codes</th>
<th>Description</th>
<th>Raises SGOT</th>
<th>ICD9 Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>191,198.3,225.0</td>
<td>cerebral neoplasm</td>
<td></td>
<td>574-6</td>
<td>cholecystitis</td>
</tr>
<tr>
<td>237.5,239.6</td>
<td>pulmonary infarction</td>
<td></td>
<td>577</td>
<td>acute pancreatitis</td>
</tr>
<tr>
<td>415.1</td>
<td>cerebral infarction</td>
<td></td>
<td>593.81</td>
<td>renal infarction</td>
</tr>
<tr>
<td>434.9</td>
<td>liver disease</td>
<td></td>
<td>791.3</td>
<td>myoglobinuria</td>
</tr>
<tr>
<td>570-3</td>
<td></td>
<td></td>
<td>863</td>
<td>intestinal injury</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>990</td>
<td>irradiation injury</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICD9 Codes</th>
<th>Description</th>
<th>Raises LDM</th>
<th>ICD9 Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>428.0</td>
<td>congestive heart failure</td>
<td>140-239</td>
<td></td>
<td>malignant tumors</td>
</tr>
<tr>
<td>36</td>
<td>cardiovascular surgery</td>
<td>710.3-710.9,728.0</td>
<td></td>
<td>muscle diseases</td>
</tr>
<tr>
<td>070,571,573</td>
<td>hepatitis</td>
<td>415.1</td>
<td></td>
<td>pulmonary embolus and infarction</td>
</tr>
<tr>
<td>281.0</td>
<td>pernicious anemia (untreated)</td>
<td>580-593</td>
<td></td>
<td>renal disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICD9 Codes</th>
<th>Description</th>
<th>Raises CPK</th>
<th>ICD9 Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>429.0</td>
<td>myocarditis</td>
<td>345.3</td>
<td></td>
<td>status epilepticus</td>
</tr>
<tr>
<td>359.0,359.1</td>
<td>muscular dystrophy</td>
<td>244.9</td>
<td></td>
<td>hypothyroidism</td>
</tr>
<tr>
<td>710.4</td>
<td>polymyositis</td>
<td>434.9</td>
<td></td>
<td>brain infarction</td>
</tr>
<tr>
<td>791.3</td>
<td>myoglobinuria</td>
<td>641-676</td>
<td></td>
<td>partuition</td>
</tr>
<tr>
<td>800-869,</td>
<td>muscle trauma</td>
<td>99.1-99.2</td>
<td></td>
<td>post-operative state</td>
</tr>
<tr>
<td>880-897,</td>
<td></td>
<td>99.6</td>
<td></td>
<td>injection</td>
</tr>
<tr>
<td>922-929</td>
<td></td>
<td></td>
<td></td>
<td>defibrillation</td>
</tr>
</tbody>
</table>

Table 3 - Criteria for categorizing electrocardiographic data

(To be applied if case has target or screening MI codes; the diagnostic category is defined by the presence or absence of the diagnostic elements)

<table>
<thead>
<tr>
<th>DIAGNOSTIC CATEGORY</th>
<th>Evolving</th>
<th>Diagnostic</th>
<th>Equivocal</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least 2 ECG's</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evolving Q-wave pattern (1)</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stationary diagnostic Q-waves (2)</td>
<td>-or-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST elevation (3) and major T-wave inversion (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equivocal Q-waves (5)</td>
<td>-or-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>any ST depression (6)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>any T-wave inversion (7)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST elevation (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: + = must be present; ± = may be present but not essential; - = must be not present
(1) An evolving Q-wave pattern includes at least 2 ECG's with:

No Q code in a lead group in one ECG followed by an ECG with a diagnostic Q code (1-1-1 through 1-2-5 or 1-2-7) in the same lead group (lead groups are: V1-V5; I, aVL, V6; and II, III aVF), or

An equivocal Q code (1-2-6, 1-2-8, or any 1-3-x) and no major ST segment depression (4-1 or 4-2) in a lead group in one ECG followed by an ECG with a diagnostic Q code PLUS major ST segment depression in the same lead group, or

An equivocal Q code and no ST segment elevation (9-2) in a lead group in one ECG followed by an ECG with a diagnostic Q code PLUS an ST segment elevation in the same lead group, or

An equivocal Q code and no major T-wave inversion (5-1 or 5-2) in a lead group in one ECG followed by an ECG with a diagnostic Q code PLUS major T-wave inversion in the same lead group, or

No Q-code and no major ST segment depression in a lead group in one ECG followed by an ECG with an equivocal Q-code and major ST segment depression, or

No Q-code and no ST segment elevation in a lead group in one ECG followed by an ECG with an equivocal Q-code and ST segment elevation, or

No Q-code and no major T-wave inversion in a lead group in one ECG followed by an ECG with an equivocal Q-code and major T-wave inversion.

(2) Codes 1-1-1 through 1-2-5 and 1-2-7

(3) Code 9-2

(4) Codes 5-1 and 5-2

(5) Codes 1-2-6, 1-2-8, and any 1-3-x

(6) 4-1, 4-2, and 4-3

(7) 5-1, 5-2, and 5-3

Note: A lead is uncodable (not coded) if any of the following are present: Missing record; baseline drift greater than 1:20 or if it obscures the ST-T wave; muscle tremor artifact giving more than 2 mm peak-to-peak oscillation; other technical errors making Q-wave measurement impossible such as extreme lack of centering or marked clipping of the complex; QRS >.012 sec; pacemaker stimulated complex; complete AV block; ventricular tachycardia or asystole. Any and all pathological findings in a lead group are recorded for that lead group, that is, even if one or more leads in a group are uncodable, the remaining leads are coded.
Table 4 - Diagnostic Criteria for Non-fatal Myocardial Infarction

(To be applied if case has target or screening MI codes)

Diagnosis is found in cell defined by the level of pain, ECG category and enzyme category

<table>
<thead>
<tr>
<th>PAIN (1)</th>
<th>NO PAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENZYMES (2)</td>
<td>ENZYMES</td>
</tr>
<tr>
<td>abn. equiv incom normal</td>
<td>abn. equiv incom normal</td>
</tr>
<tr>
<td>04 04 04 04</td>
<td>Evolving diagnostic</td>
</tr>
<tr>
<td>04 10 10 99</td>
<td>Diagnostic</td>
</tr>
<tr>
<td>04 10 10 99</td>
<td>Equivocal</td>
</tr>
<tr>
<td>04 10 10 99</td>
<td>Absent, Uncodable or 'Other'</td>
</tr>
</tbody>
</table>

ELECTROCARDIOGRAM (3)

04=DEFINITE MI
10=POSSIBLE MI (conditional on MI screening codes being present on discharge)
99=NO MI

(1) Pain: (a) occurring anywhere in the anterior chest, left arm or jaw which may also involve the back, shoulder, right arm, or abdomen on one or both sides, and (b) with a duration of more than 20 minutes or if duration is not defined, for which the patient sought medical care after taking nitroglycerin or calcium blockers.

(2) See table 2 enzyme for categorization rules

(3) See table 3 for ECG categorization rules
Table 5 - Diagnostic Criteria for Fatal Coronary Heart Disease (CHD) Events

Death certificates are excluded from analysis if decedent is outside age range or if cause of death (Medical certification of cause of death, Part I a,b, or c) lists accident, homicide or suicide, other trauma, chronic obstructive pulmonary disease, cancer, cirrhosis of liver, or rheumatic heart disease without mention of atherosclerotic heart or vascular disease.

The diagnostic category is defined by the presence or absence of the diagnostic elements:

<table>
<thead>
<tr>
<th>DIAGNOSTIC CATEGORY</th>
<th>Definite Fatal MI (Code 01)</th>
<th>Definite Sudden Death Due to CHD (Code 02)</th>
<th>Definite Fatal CHD (Code 03)</th>
<th>Possible Fatal CHD (Code 08)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definite MI (1)</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>-or-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute MI on Autopsy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sudden Death (2)</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>History of Previous MI (3)</td>
<td></td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>-or-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autopsy reporting severe CAD (4)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>-or-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid death (5)</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Death Certificate with 410-414</td>
<td></td>
<td>+</td>
<td>+</td>
<td>+**</td>
</tr>
<tr>
<td>Probably lethal non-atherosclerotic or non-cardiac atherosclerotic cause of death present (6)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Key: + = must be present; + = may be present but not required; - = must be documented to be absent or documentation of absence or presence lacking

(1) within 4 weeks of death and meeting MHHP criteria for MI (see table 4)
(2) death within 1 hour of developing symptoms or being found dead within 1 hour of being seen without symptoms
(3) any source of information acceptable
(4) >50% proximal narrowing of 2 or more major vessels or >75% proximal narrowing of one or more major vessels
(5) death between 1 and 24 hours of developing symptoms or being found dead within 1 hour of being seen without symptoms
* Any of 427,429,798 or 799 also qualifies death for possible fatal CHD
Table 6 - Primary cardiac arrest with Successful Resuscitation

The diagnostic category is defined by the presence or absence of the diagnostic elements:

**Diagnostic Category**

<table>
<thead>
<tr>
<th>Primary Cardiac Arrest:</th>
<th>Definite (Code 07)</th>
<th>Possible (Code 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic Primary Non-specific Arrest Arrhythmia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Diagnostic Elements**

<table>
<thead>
<tr>
<th>Sudden collapse with resuscitation(1)</th>
<th>+</th>
<th>+</th>
<th>+</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF or asystole reported on ECG</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>0</td>
</tr>
<tr>
<td>'Definite' and 'possible' MI excluded(2)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>0</td>
</tr>
<tr>
<td>History of prior MI(3)</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Severe CAD(4)</td>
<td>+</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Probably lethal non-atherosclerotic or non-cardiac atherosclerotic cause of death present</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Key:** + = must be present; + = may be present but not required; - = must be documented to be absent; O = documentation may be missing

(1) Apparent cardiac arrest with resuscitation effort by MEMF criteria
(2) Any source of history accepted
(3) > 50% proximal narrowing of 2 or more major vessels or >75% proximal narrowing of one or more major vessels documented angiographically during same hospitalization
### Table 7 - Diagnostic Criteria for Non-fatal Stroke

Diagnosis is found in cell defined by correct combination of neurological event and non-stroke cause for the event

<table>
<thead>
<tr>
<th>NON-STROKE CAUSE PRESENT?</th>
<th>definite (1)</th>
<th>possible (2)</th>
<th>not present</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E definite (3)</td>
<td>99</td>
<td>11</td>
<td>06</td>
</tr>
<tr>
<td>U</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O possible (4)</td>
<td>99</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N no event</td>
<td>99</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: 06 = Definite non-fatal stroke; 11 = Possible non-fatal stroke; 99 = No CVD event

(1) 'Definite' causes of non-fatal focal neurological deficit or coma

<table>
<thead>
<tr>
<th>ICD9 Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>140-208 and 225-239</td>
<td>brain tumor and (possible) metastasis</td>
</tr>
<tr>
<td>250</td>
<td>diabetic coma</td>
</tr>
<tr>
<td>251</td>
<td>hypoglycemic coma</td>
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<tr>
<td>345.3</td>
<td>epileptic coma</td>
</tr>
<tr>
<td>430</td>
<td>subarachnoid hemorrhage</td>
</tr>
<tr>
<td>432.0</td>
<td>epidural hematoma</td>
</tr>
<tr>
<td>432.1</td>
<td>subdural hematoma</td>
</tr>
<tr>
<td>444</td>
<td>peripheral (systemic) embolism</td>
</tr>
<tr>
<td>444</td>
<td>paradoxical thromboembolism</td>
</tr>
<tr>
<td>572.2</td>
<td>hepatic coma</td>
</tr>
<tr>
<td>586</td>
<td>uremic coma</td>
</tr>
</tbody>
</table>
(2) 'Possible' causes of non-fatal focal neurological deficit or coma

<table>
<thead>
<tr>
<th>ICD9 Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>276</td>
<td>disorders of fluid, electrolyte and acid-base balance</td>
</tr>
<tr>
<td>286.6</td>
<td>disseminated intravascular coagulation defect</td>
</tr>
<tr>
<td>286</td>
<td>coagulation defect</td>
</tr>
<tr>
<td>350-359</td>
<td>peripheral neuropathy</td>
</tr>
<tr>
<td>394</td>
<td>mitral stenosis</td>
</tr>
<tr>
<td>410-411</td>
<td>myocardial infarction</td>
</tr>
<tr>
<td>427.31</td>
<td>atrial fibrillation</td>
</tr>
<tr>
<td>427.32</td>
<td>atrial flutter</td>
</tr>
<tr>
<td>459.0</td>
<td>hemorrhage</td>
</tr>
<tr>
<td>88.41</td>
<td>carotid angiography</td>
</tr>
<tr>
<td>88.57</td>
<td>coronary angiography</td>
</tr>
<tr>
<td>88.53, 88.54</td>
<td>left ventriculography</td>
</tr>
</tbody>
</table>

(3) History of rapid onset (<48 hours from onset to time of admission or maximum acute neurological deficit) of localizing neurological deficit and/or change in state of consciousness, and; documentation of localizing neurological deficit or change in state of consciousness by unequivocal physician or laboratory findings within 6 weeks of onset with > 24 hour duration of objective physical findings. Unequivocal laboratory findings are defined as a CAT scan showing: 1. no definite findings of any disease process or event causing focal brain deficit or coma other than cerebral infarction; and 2a. a focal area of decreased or normal attenuation consistent with cerebral infarct or 2b. a focal area of increased attenuation consistent with intracerebral hemorrhage.

(4) One or more of ICD9 Codes 431, 432, 434, or 436 present.
## Table 8 - Diagnostic Criteria for Fatal Stroke

Diagnosis is found in cell defined by correct combination of neurological event and non-stroke cause for the event.

<table>
<thead>
<tr>
<th>NON-STROKE CAUSE PRESENT?</th>
<th>definitive (1)</th>
<th>possible (2)</th>
<th>not present</th>
</tr>
</thead>
<tbody>
<tr>
<td>E definite (3)</td>
<td>98</td>
<td>09</td>
<td>05</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EURO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>possible (4)</td>
<td>98</td>
<td>09</td>
<td>09</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no event</td>
<td>98</td>
<td>98</td>
<td>98</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: 05 = Definite fatal stroke; 09 = Possible fatal stroke; 98 = No fatal CVD event

1. Evidence at autopsy examination of the brain, if performed, of any disease process other than cerebral infarction or cerebral hemorrhage that could cause localizing neurological deficit.

2. Use list for 'possible' and 'definite' non-fatal non-stroke causes of neurological event in Table 6 as criteria for 'possible non-stroke cause of fatal neurological event'.

3. A. Cerebral infarction or cerebral hemorrhage diagnosed at autopsy; or-
   B. History of rapid onset (<48 hours from onset to time of admission, maximum neurological deficit or death) of localizing neurological deficit and/or change in state of consciousness, and documentation of localizing neurological deficit by unequivocal physician or laboratory findings within 6 weeks of death with > 24 hours duration of unequivocal physician findings or findings leading to death.

4. One or more of ICD9 Codes 431, 432, 433, 434, 435, 436, 437 present
Morbidity and Mortality Flow - MHMP

Hosp. list

CPHA Tape

Selection - Hosp.

Data Entry

Labels for folders

(target criteria)

Log Outs - Hosp.

Hosp.'s

Reports

Log Outs - Int.

Inadeq.

Work Lists

Complete Folders

ICD Coding

Reports

Log Ins - Hosp.

(same file?)

ECG

MD Review

Reports

Log Ins - Int.

(same file?)

Next-of-kin Selection - Int.

Labels for folders

Death Lists

Death Certificates

Data Entry

Reports

MD Review

* death within 24 hours and no enzymes

** Hosp. within 6 wks of death
I. SAMPLE SELECTION

A. Selection of Hospital Charts

The selection of medical records is determined by the hospital medical record number and the MI and STROKE diagnosis codes recorded in a patient's hospital chart. This information may be obtained from computer tapes provided by the hospital or the examination of hospital records by clerical staff.

B. Morbidity Log Files

The hospital code, medical record number, sex, age, date of discharge, length of stay in the hospital and the MI and/or STROKE diagnosis codes are entered on a computer log using computer tapes or keypunched hospital record information. Each medical record number is assigned an MHHP ID number and abstractor code number. Information concerning patient eligibility and data form completion is updated to the Morbidity Log file by Data Control personnel upon receipt of abstracted hospital charts.

C. Data Identification

The MHHP ID number consists of nine digits. The first character is an alpha character designating city. The second and third characters indicate year, the fourth character is the numerical city code, the fifth digit is the quality control identifier and the last five characters are a sequential number identifying the chart.

```
City Year Area Q.C. Sequence
M 80 1 0 00001
```

City codes - M=Mankato
W=Winona

Year - 80, 81, etc.

Area codes - 1=Mankato
2=Winona
3=Bloomington
4=Roseville
5=Roseville
6=Fargo

Quality Control - 0=Non-quality control
1=Quality Control

Sequence Number - 00001,00002, etc.

D. Identification Labels

Using the computer log information, identification labels are generated for each hospital chart. Two "selection" labels are printed listing the MHHP ID number and log file information and twenty "ID" labels are printed listing the MHHP ID number.

E. Hospital Listings

A computer listing will accompany the folders assigned to an abstracter. The computer listing will contain the name of the
hospital, medical record number, discharge diagnosis codes, and date of discharge. A copy of the printout is sent to the hospital so that the needed charts may be pulled before the abstractors go to the hospital. A copy of the listing is also kept by the abstractor for his/her records.

II. DATA FORMS

The Data Control Section prepares the morbidity folders for the Morbidity Field staff. A selection label is attached to the upper right hand corner of the morbidity folder and the remaining selection label and 20 ID labels are attached to the inside of the folder. The folders are then assigned to the Morbidity Field staff.

Blank data collection forms are kept by the morbidity staff. Individual hospital charts require varying data collection forms, therefore, data forms are not pre-assigned to the folders. The nurse abstractors label and complete the forms as needed.

Requests for additional data forms should be made to the Data Control Section.

III. DATA COLLECTION

Folder Assignment and Forms Completion

Nurse abstractors are assigned folders by the Data Control Section. Each abstractor is responsible for the ID numbers assigned to him/her.

The abstractor reviews the patient's medical records and completes the appropriate data collection forms (depending upon the diagnosis codes and the information in the chart). In addition to completing the questions on the forms, the abstractor makes xerox copies of all the appropriate reports and includes them in the folder. The selection label is affixed to the form 02 and the ID labels are used to identify the other forms and reports contained in the folder.

1. Form 01 - MORBIDITY FOLDER
2. Form 02 - CORE DATA
3. Form 21 - AUTOPSY REPORT
4. Form 04 - MI HOSPITAL ABSTRACT
5. Form 40 - ENZYME VALUES
6. Form 06 - STROKE
7. ECG's
8. Angiograms
9. Brain Scans
10. Summary Reports
11. Chest x-rays
12. Cat Scans

When the appropriate forms have been completed in the field the chart is returned to the Data Control Section where it will be reviewed by the D.C. Staff who categorizes the folders for further abstracting.

1. ECG's
2. MI Abstract
3. Death Certificate
4. Autopsy Report
IV. VISUAL EDITING BY MORBIDITY STAFF

Before sending a folder to Data Control, it should be checked to make sure all of the forms indicated on the folder checklist are contained in the folder, that the appropriate forms and reports have been completed, and that the questionnaires have been completed properly.

Completed folders should be shipped to Data Control at least once a week. A monthly report will be prepared by the Data Control Section indicating the ID's given to the Morbidity staff and those returned to the Data Control Section.

VI. DATA PROCESSING

A. Morbidity Log File

When the folders are returned to the LPH Data Control Section they are logged on the Morbidity Log file and the forms are visually edited and batched.

B. Visual Editing, Keying, and Computer Editing

Folders which have missing information will be returned to the Morbidity Section for completion.

Folders will fall into three categories; INELIGIBLE, ALIVE, and DEAD.

If the patient chart is INELIGIBLE the ineligibility status is entered on the log file. Data forms are not completed for INELIGIBLE charts.

ALIVE folders are divided into STROKES (06) and MI'S (04). The 06's are visually edited and sent directly to keying. Form 04's are divided into two groups; folders which must have further abstracting (eg. MI abstract, ECG coding) before being sent to keying; folders which do not need further abstracting and are sent directly to keying.

DEAD folders are divided into: "waiting for death certificate or autopsy" and "received death certificate or autopsy". Once they have passed from the "waiting to the "received" category, they are processed in the same manner as the ALIVE folders.

Folders with forms requiring further abstracting will be separated into categories and sent to the various coding sections. Coding stations will be provided in the Data Control Section for coding personnel (MD abstracting, ECG coding, Death Certificate and Autopsy coding).

C. Filing

After the forms have been computer edited they will be filed back into the patient folders.

D. Masterfiles

The final step of the editing process will be to add the edited forms to the morbidity masterfiles and return the charts to the Morbidity Section.
MORBIDITY SURVEILLANCE

ID LABEL

PATIENT STATUS

ELIGIBLE
1 □ DEAD
2 □ ALIVE
3 □ NOT FOUND

INELIGIBLE
1 □ AGE
2 □ ZIP CODE
3 □ SAMPLE SELECTION CODE
4 □ DISCHARGE DATE
5 □ DUPLICATE

□ 02 CORE DATA
□ 20 DEATH CERTIFICATE ABSTRACT
□ Death Certificate
□ 21 AUTOPSY REPORT ABSTRACT
□ Autopsy Report

□ 04 MI
□ 40 ENZYME VALUES
□ 41 PHYSICIAN REVIEW
□ Chest X-rays
□ Coronary Angiograms
□ 42 ECG CODING SHEET
□ ECG's

□ 06 STROKE
□ Summary Reports (Discharge or Death Summary)
□ Cerebral Angiograms
□ Cardiac Angiograms
□ Brain Scans
□ CAT/EMI Scans
INSTRUCTIONS FOR MHUP ABSTRACTING FORMS
(07/06/82)

General Instructions:

1. Use black felt-tip pen. Do not use pencil.
2. Write legibly.
3. Two types of boxes are used:
   A. Small boxes are to be marked with an x as shown: \[ x \]
      Use a black felt tip pen, and keep the x within the box.
   B. Large boxes are to be marked with the appropriate letter or number.
      Draw horizontal lines through boxes that are not applicable.
      Keep numbers and letters within boxes.

EXAMPLES:

   \[ \begin{array}{c}
   \frac{1}{3} \\
   \text{Third Name/Title}
   \end{array} \]

   \[ \begin{array}{c}
   \text{x} \\
   \text{Not Recorded}
   \end{array} \]

C. Not recorded box is to be marked with an x when information is not recorded, not sure, missing from chart, not done or unknown. If there is no box draw a horizontal line through the boxes as shown below.

EXAMPLES:

   \[ \begin{array}{c}
   \text{x} \\
   \text{Not Recorded}
   \end{array} \]

4. Complete only appropriate boxes. E.g., record minutes/times OR "Not recorded in chart." Do not fill in both.
5. When an error is made, cross out the error with a single horizontal line through the entire box or set of boxes. Write the correction just above or as near as possible. Do not in any way obliterate (black out, erase) any data that has been written in, correct or not.
6. Be sure to follow correct skip patterns.
7. Before beginning to fill out any of these forms, read quickly through the following: face sheet, emergency report, ambulance report, problem list, physician admitting note, and discharge summary. This should take about 5-10 minutes. Then begin completing the forms. Some items can be done from memory, or you should remember approximately where in the chart to find the needed information. It is helpful to use paper clips or strips of paper to identify these pages in the chart.

In answering most questions you will have the choice of "Yes", "No" and not recorded "NR". "Yes" or "No" will be marked only if there is no doubt due to information in the hospital record. If nothing is written down which definitely answers the question, "NR" should be circled.
<table>
<thead>
<tr>
<th>Person</th>
<th>Code Number</th>
<th>Person</th>
<th>Code Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosalie Seibel R.N. (inactive)</td>
<td>011</td>
<td>June Lofgren R.N. (inactive)</td>
<td>028</td>
</tr>
<tr>
<td>Charlotte Herman, R.N. (inactive)</td>
<td>012</td>
<td>Ruth Whitlock R.N.</td>
<td>029</td>
</tr>
<tr>
<td>Jane Edmondson R.N. (inactive)</td>
<td>013</td>
<td>Debra Dykins (inactive)</td>
<td>040</td>
</tr>
<tr>
<td>Deborah McGuire R.N.</td>
<td>014</td>
<td>John Che (inactive)</td>
<td>041</td>
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<td>K.C. Jenkins R.N.</td>
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<td>Dale Moss</td>
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<td>Judy Broeker (inactive)</td>
<td>016</td>
<td>Wendy Adams R.N. (inactive)</td>
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<td>R. Gillum, M.D.</td>
<td>017</td>
<td>PHRED (computer)</td>
<td>044</td>
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<tr>
<td>T. Kottke, M.D.</td>
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<td>Kathleen Mullen R.N. (inactive)</td>
<td>045</td>
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<tr>
<td>R. Prineas, M.D.</td>
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<td>046</td>
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<td>R. Luepker, M.D.</td>
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<td>Bernice McCullough</td>
<td>047</td>
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<td>Cindy Royce (inactive)</td>
<td>048</td>
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<tr>
<td>Masako Katoh (inactive)</td>
<td>022</td>
<td>Carol Thompson (inactive)</td>
<td>049</td>
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<tr>
<td>Jim Huber</td>
<td>023</td>
<td>Fran Galle, R.N.</td>
<td>056</td>
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<tr>
<td>Isabelle Fertey</td>
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<td>Stephen Mascioli, M.D.</td>
<td>069</td>
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<td>Cheryl Bernstein R.N. (inactive)</td>
<td>025</td>
<td>Michelle Paul (inactive)</td>
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<td>Leah Hillesheim R.N. (inactive)</td>
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<td>Steve Norgaard</td>
<td>073</td>
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<tr>
<td>Cynthia Jurgensen R.N.</td>
<td>027</td>
<td>Aaron Folsom, M.D.</td>
<td>076</td>
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<td>John Kipp, M.D.</td>
<td>077</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peg Wedell</td>
<td>092</td>
</tr>
</tbody>
</table>
### STANDARDIZED ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV</td>
<td>Avenue</td>
</tr>
<tr>
<td>BLVD</td>
<td>Boulevard</td>
</tr>
<tr>
<td>CIR</td>
<td>Circle</td>
</tr>
<tr>
<td>CTR</td>
<td>Center</td>
</tr>
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<td>VA</td>
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<td>WAY</td>
<td>Way</td>
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<tr>
<td>W</td>
<td>West</td>
</tr>
</tbody>
</table>

### COUNTY ABBREVIATIONS

- Anoka An
- Carver Ca
- Dakota Da
- Hennepin He
- Ramsey RA
- Scott Sc
- Washington Wa
### MHHP Hospital Code Numbers and Abstractor Assignments

#### Minneapolis/St. Paul

<table>
<thead>
<tr>
<th>Code</th>
<th>Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>0200</td>
<td>Fairview Downtown</td>
</tr>
<tr>
<td>0504</td>
<td>Midway</td>
</tr>
<tr>
<td>0519</td>
<td>Samaritan</td>
</tr>
<tr>
<td>0528</td>
<td>St. Mary's</td>
</tr>
<tr>
<td>0273</td>
<td>U. of Minnesota</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>0157</td>
<td>Abbott-Northwestern</td>
</tr>
<tr>
<td>0201</td>
<td>Fairview Southdale</td>
</tr>
<tr>
<td>0223</td>
<td>Fairview Deaconess</td>
</tr>
<tr>
<td>0211</td>
<td>Hennepin County Med. Ctr.</td>
</tr>
<tr>
<td>0230</td>
<td>Methodist</td>
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<td>Metropolitan Med. Ctr.</td>
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<td>0237</td>
<td>Mt. Sinai</td>
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<tr>
<td>0240</td>
<td>North Memorial</td>
</tr>
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<td>0609</td>
<td>St. Francis</td>
</tr>
<tr>
<td>0233</td>
<td>Veteran's Administration</td>
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</table>

<table>
<thead>
<tr>
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<th>Hospital</th>
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<tr>
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<td>Bethesda Lutheran</td>
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<td>Lakeview Memorial</td>
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<td>0009</td>
<td>Mercy</td>
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<td>0523</td>
<td>St. John's</td>
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<td>St. Joseph's</td>
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#### Minnesota

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### Note

Codes are from Licensed and Certified Health Care Facilities, Minnesota Department of Health, 1980, except for starred codes (*), which were assigned by LPH/MHHP staff.
HOSPITAL LISTING

OUT OF TWIN CITY METROPOLITAN AREA

In-State Hospitals

Mankato

Immanuel-St. Joseph's Hospital  
325 Gordon Blvd.  
Mankato, MN 56001  
(507) 625-4031

Pres. Donald Stordahl  
CS Dr. R.W. Kearney, J.  
CC Dr. R.W. Reissen  
CN None  
DMR Bonnie Doering

Winona

Community Memorial Hospital  
Convalescent & Rehabilitation Unit  
855 Mankato Ave.  
Winona, MN 55987  
(507) 454-3650

Adm. Roger L. Metz  
CS Dr. J.V. Testor  
CC Dr. Edin  
CN None  
DMR Haizie Myers

Out-of-State Hospitals

Fargo

Dakota Hospital  
1720 University Dr.  
Fargo, ND 58103  
(701) 280-4100

Pres. D.D. Wightman (Mr.)  
CS Dr. E.P. Wenz  
CC Dr. Houghton  
CN Dr. Grossman  
DMR Peggy Sullivan

St. John's Hospital  
510 4th St. So.  
Fargo, ND 58103  
(701) 232-3331

Adm. Robert Wolter  
CS Dr. C.M. Hunter  
CC None  
CN None  
DMR Mary Jen Hagen

St. Luke's Hospital  
5th St. at Mills Ave.  
Fargo, ND 58122  
(701) 280-5000

Adm. A.J. Finnie (Mr.)  
CS Dr. Roger Jordan  
CC Dr. Matt Ehlen  
CN Dr. Ryan Harrington  
DMR Mary Jen Hagen

V.A. Hospital  
Elm St. and 21st Ave. N.  
Fargo, ND 58102  
(701) 232-1241

Dir. Francis E. Gothman  
CS Dr. Michael J. Kelly  
CC Dr. Gopal Das  
CN Dr. Roger Brumback  
DMR Jill Domenichetti
Moorhead
St. Ansgar Hospital
715 N. 11th St.
Moorhead, MN 56560
(218) 299-2220

Sioux Falls
McKennon Hospital
800 E. 21st St.
Sioux Falls, SD 57105
(605) 339-8000

Sioux Valley Hospital
1100 S. Euclid Ave.
Sioux Falls, SD 57105
(605) 336-3440

Veteran's Hospital
2501 W. 22nd St.
Sioux Falls, SD 57105
(605) 336-3230

* Dr. Solberg is the Cardiologist for the North Central Heart Institute, which is affiliated with the Sioux Valley Hospital.

WHO/MNC/82.2
Appendix III Rev. 1
page 45

Pres. President
Dir. Director
Adm. Administrator
CS Chief of Staff
CC Chief of Cardiology
CN Chief of Neurology
DMR Director of Medical Records
SEVEN-COUNTY METROPOLITAN HOSPITAL LISTING

Abbott-Northwestern Hospitals ........................ Adm. Gordon Sprenger (Pres.)
2727 Chicago Ave. S.                           Robert Spinner (V.P.)
Minneapolis, MN 55407                          Richard Kramer (Med./Surg.)
874-5123                                       M.R. Marion Kuehn
C.S. Dr. Hal Meeker                             C.C. Dr. Raymond Scallen
C.N. Dr. Thomas N. Wilson                       C. S. Dr. Roger Farber

Bethesda Lutheran Hospital ........................ Adm. Donald C. Mills
559 Capitol Blvd.                               M.R. Carol Gray
St. Paul, MN 55103                               Diana Gliadon, Asst. Director
221-2200                                       C.S. Dr. Ross Anderson
                                              C.C. Dr. Peter Cermak
                                              C.N. Dr. Terrance Capistrant

District Memorial Hospital ........................ Adm. Terrence J. Brenny
246 11th Ave. SE                                M.R. Alice Benson
Forest Lake, MN 55025                           C.S. Charles Beck
464-3341                                        C.C. not applicable
                                              C.N. not applicable

Divine Redeemer Hospital ........................... Adm. John F. Lannon
724 19th Ave. N.                                M.R. Sue Koering
S. St. Paul, MN 55075                           C.S. Dr. Kevin N. Lawler
450-4500                                       C.C. Dr. Jose D. Canto
                                              C.N. Dr. Terrance Capistrant
                                              Path. Dr. Kevin Lawler (Head, Resch.)

Eitel Hospital ........................................ Adm. Francis J. Wiesner
1375 Willow St.                                M.R. Leah P. Beachy
Mpls., MN 55403                                 C.S. Dr. Sheldon Lagaard
870-1122                                        C.C. Dr. Aydin Bilgutay
                                              C.N. Dr. Richard Siebert

Fairview Hospital ...................................... Adm. Stephen A. Gregg
2312 So. 6th St.                                M.R. Jo Milosevic
Mpls., MN 55454                                 C.S. Dr. Jennings Peteler
371-6300                                       C.C. Dr. Aydin Bilgutay
                                              C.N. Dr. Richard Siebert

Fairview-Southdale .................................... Adm. Kirby J. Erickson
6401 France Ave. So.                           M.R. Beverly Siemens
Edina, MN 55435                                 C.S. Robert L. Sturgess
920-4400                                        C.H. Joseph Tombers

Golden Valley Health Center ......................... Adm. Cris Stang (Exec. V.P)
4101 Golden Valley Road                          M.R. Jeanny Kuczcek
Golden Valley, MN 55422                        C.S. Dr. David K. Murdock
585-2771                                        C.T.M. Dr. F.G. Azzam
                                              C.N. Dr. John Larnrow

Abbreviations:  C.C. - Chief of Cardiology        M.R. - Medical Records
               C.M. - Chief of Medicine
               C.I.M. - Chief of Internal Medicine
               C.N. - Chief of Neurology
               C.S. - Chief of Staff
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<td>Dale C. Mattison</td>
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<td>Steve T. Kumagi (Sr. V.P.)</td>
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<td>Peter H. Sammond (Pres.)</td>
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North Memorial Medical ................................. Adm. Vance C. DeNong (Pres.)
            3220 Lowry Ave. No.
            Minneapolis, MN 55422
            588-0618
            M.R. Marilyn Galazen
            C.S. Dr. William R. Scott
            C.C. Dr. John Manier
            C.N. Dr. Bruce Norback
            C.I.M. Dr. Gary Hanovich

Queen of Peace .......................... Adm. Sister Jean Juenemann
            301 Second St. S.E.
            New Prague, MN 56071
            758-4431
            M.R. Sister Catherine McInnis
            C.S. Dr. Roger Hallgren
            Cons. Card.: Dr. Richard Nelson

Regina Memorial Hospital .......................... Adm. John Junkman
            Kininger Road
            Hastings, MN 55033
            437-3121
            M.R. Natalia Schiller
            C.S. Dr. James Noreen
            C.C. not applicable
            C.N. not applicable

Samaritan Hospital .......................... Adm. Erick Sande
            1515 Charles Ave.
            St. Paul, MN 55104
            645-9111
            M.R. Bernadine Prusak
            C.S. Dr. John Benton
            C.C. not applicable
            C.N. not applicable

Sanford Memorial Hospital .......................... Adm. James Elmslie
            913 Main St.
            Farmington, MN 55024
            463-7825
            M.R. Arlene Judd
            Prim. Phys. Dr. Murray Hunter
            Riverside Clinic

St. Francis Hospital .......................... Adm. Sister Agnes Otting (Exec. Dir.)
            325 W. 5th St. So.
            Shakopee, MN 55379
            445-2322
            M.R. Rick Schreck
            C.S. Dr. Barry Bershad
            C.C. Dr. Marriane Kanning
            C.N. Dr. Charlotte Lee

St. John's Hospital .......................... Pres. Gerald J. McCarthy
            401 Maria Ave.
            St. Paul, MN 55106
            228-3600
            M.R. Anne Voss Tegen
            C.S. Dr. Harold Broman
            C.C. Dr. Thomas J. Sharkey
            C.N. Dr. Richard Foreman

St. Joseph's Hospital .......................... Adm. Lawrence T. Suess
            69 W. Exchange St.
            St. Paul, MN 55102
            291-3000
            M.R. Marlene Johnson
            C.S. Dr. Richard Carley
            C.N. Dr. David Bartsch

St. Mary's Hospital .......................... Adm. Sister Mary Madonna (Pres.)
            2414 So. 7th St.
            Minneapolis, MN 55454
            338-2229
            M.R. Connie Brown
            C.S. Dr. Patrick J. Barrett
            C.N. John Middlebrook
            C.M. Louise Town
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<td>640 Jackson St.</td>
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<td>David W. Gitch (Exec. Dir.)</td>
<td>Phyllis Schwarzbauer</td>
<td>Dr. Frank Quattleboum</td>
<td>Brian Campion</td>
<td>Dr. Robert Gumnit</td>
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<td>333 Smith Ave. N.</td>
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<td>C. Jerome Jorgensen (Pres.)</td>
<td>Ethel Ikeda</td>
<td>Dr. Geist</td>
<td>Victor Tschida</td>
<td>Robert E. Lindell</td>
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<td>550 Osborne Rd.</td>
<td>786-2200</td>
<td>John F. Haines (Exec. V.P.)</td>
<td>Cheryl Anderson</td>
<td>Dr. Myron Erickson</td>
<td>Dr. Steven Long</td>
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<tr>
<td>University of Minnesota Hospitals</td>
<td>420 Delaware St., SE</td>
<td>373-8484</td>
<td>John Westerman (Gen. Dir.)</td>
<td>John Dennis</td>
<td>Dr. Paul Quie</td>
<td>Dr. Paul Winchell</td>
<td>Dr. Joseph Resch</td>
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<tr>
<td>Veterans Administration Hospital</td>
<td>54th St. &amp; 48th Ave. So.</td>
<td>725-6767</td>
<td>Daniel E. Cooney (Med. Ctr. Dir.)</td>
<td>Sheila Makie</td>
<td>Dr. Robert A. Petzel</td>
<td>Dr. Elliot Chesler</td>
<td>Dr. David Webster</td>
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<td>Waconia Ridgeview Hospital</td>
<td>500 Maple St. So.</td>
<td>442-2191</td>
<td>John P. Devins (Exec. Dir.)</td>
<td>Donna Schlumpberger</td>
<td>Dr. Robert Heeter</td>
<td>Dr. P.R. Pederson</td>
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CLOSED (Records at Waconia Ridgeview)
CLOSED (Records at United Hospitals)
ZIP CODES FOR MINNESOTA HEART SURVEY

**Minnesota**

Bloomington .................................. 55420
55431
55435
55437

Roseville, Maplewood,
North St. Paul ............................... 55109
55113
55117
55119

Mankato ................................. 56001
North Mankato

Moorhead .................................. 56560

Winona ..................................... 55987

**North Dakota**

Fargo ....................................... 58102
58103

**South Dakota**

Sioux Falls ............................. 57102
57103
57104
57105
57106
57107
HOSPITAL CODES 1980

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| Minnesota                                |                              |
| Mankato (Immanuel-St. Joseph's)          | 0033                         |
| Winona (Community Memorial)              | 0701                         |
| Moorhead (St. Ansgar's)                  | 0074                         |
| Dakota                                   | 3001                         |
| St. John's                               | 3002                         |
| St. Luke's                               | 3003                         |
| Veterans Administration                  | 3004                         |
| McKennan                                 | 4001                         |
| Sioux Valley                             | 4002                         |
| Veterans Administration                  | 4003                         |

NOTE: Codes are from Licensed and Certified Health Care Facilities, Minnesota Department of Health, 1978, except for starred codes (*), which were assigned by LPH/HHIP staff.
Hospitals on PAS

### Seven County Twin Cities Area

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### Out-of-Area

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<td>Moorhead - St. Ansgar</td>
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DISCHARGE DIAGNOSIS INDICES


In 1980 MHHP contracted with CPHA in Ann Arbor, Michigan, to purchase a tape of discharge diagnosis index information covering the time period January 1, 1980 through December 31, 1980 and including the hospitals listed below (1-11). A copy of the contract and the tapes are on file in the LPH data center in Unit A. It was necessary to have each hospital administrator sign a contract as well. These signed contracts are on file in Room 87, Stadium Gate 20.

1. Abbott-Northwestern
2. Bethesda Lutheran
3. Hennepin County Medical Center
4. Lakeview Memorial
5. Methodist
6. Metropolitan Medical Center
7. Mount Sinai
8. Samaritan
9. St. John's
10. St. Paul Ramsey
11. United
12. Mankato (On PAS in October 1981)
13. Moorhead (Not on MHMP PAS Tape 1980)
14. Winona ("")
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**Notes:**
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- The zip codes are not specified in the image.
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CORE DATA

FORM 02

1. ID LABEL

2. Abstractor ID Code

3. Date Abstracted:

   MONTH / DAY / YEAR

   33 / 35 / 37
### Medical Record Number

49 (From Hospital Chart)

### Admission

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### Discharge

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### Patient Information

**8. Last Name**

**9. First Name**

**10. MI**

**11. House Number**

**12. Street Name or Rural Route & Number**

**13. Lot Number**

**14. City**

**15. State**

**16. ZIP Code**

**17. County**

**18. Birthdate:**

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**19. Social Security Number**

**20. Marital Status:**

- [ ] Married
- [ ] Separated
- [ ] Divorced
- [ ] Widowed
- [ ] Never Married
- [ ] Single (no other data available)

**21. Ethnic Status**

- [ ] White Caucasian
- [ ] Black/Negro
- [ ] Asian/Pacific Islander
- [ ] American Indian/Native American
- [ ] Hispanic
- [ ] Other, _____________________

**7. NOT Recorded in Chart**

**104 105**

**skip**
22. DISCHARGE DIAGNOSIS CODES

23. OPERATIONS & PROCEDURES CODES

Patient status on DISCHARGE

1 □ ALIVE

2 □ DEAD → ATTACH AUTOPIST REPORT ABSTRACT (if autopsy was performed)

25. Did the patient die in the Emergency Room?

95 1 □ YES 2 □ NO 3 □ NOTRecorded

WHO/MNC/82.2
Appendix III Rev. 1
page 63
1. **ID Number:**
   This number will be generated by the computer, and a label on which the number is printed will be put at the top of the first page of each section of the form by the abstractor. For example: Form 02-1; 04-1; etc., until you run out of labels, then write in the number and enclose it in a box. Be sure to write and box in the number on all photocopies.

2. **Abstractor Personal Code Number:**
   The abstractor/validator/interviewer/coder must fill in his/her personal code number. (See Personal Code Number sheet).

3. **Date Abstracted**
   Use all six boxes, beginning with the month in the first two boxes, day in the next two, and year in the last two. Use a "leading zero" if necessary, as shown in this example:
   
   January 6, 1925 0 1 0 6 2 5

4. **Medical Record Number**
   19 (From Hospital Chart)

5. **ADMISSION**
   
   5. **DATE:**
   
   6. **TIME:**

6. **DISCHARGE**
   
   7. **DATE:**
   
   24 HOUR CLOCK
Medical Record Number

This number will be found on the face sheet of all hospital charts. Do not confuse it with the hospital account number. The medical record number must match the number on the label provided by the data center. A list of these same numbers is photocopied and sent to the hospitals for charts to be pulled. The sample selection source may be the PAS, hospital computer printouts, discharge diagnosis index cards, microfiche listings or others. The medical record number copied from the chart must match the number on the label. It is possible that a medical record number has been changed and differs from the one on the label. Check this out with the medical records librarian. If the number has been changed, put the new number on Form 02. Be sure to check age and discharge date also. The number may have 4-10 digits. Place the last digit in the last box to the right and each subsequent digit to the left of this box, using lead zeros to fill in empty boxes.

**EXAMPLE:** M.R.# 69330

| 0 | 0 | 0 | 0 | 6 | 9 | 3 | 3 | 0 |

In some cases a dash may be present in the number. Include the dash and the number only when it is present on the label.

**EXAMPLE:**

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**Medical Record Number**

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**EXAMPLE:**

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**Medical Record Number**

```
| 0 | 0 | 0 | 0 | 0 | 4 | 4 | 5 | 4 |
```

MHIP Inst./Form 02/Rev. 06/21/82/Disk 14

5. **Admission Date**

Follow instructions given for Form 02, Q.3. This information will be found on the ER sheet or on the face sheet. If there is a discrepancy in time between the two, take the earlier time.

6. **Admission Time**

Time should be recorded according to the 24-hour clock. If the time given in the chart is from the 12-hour clock, it should be converted to the 24-hour clock. Explanation for 24-hour clock:

- 0100 = 1 a.m.
- 1200 = noon
- 1300 = 1:00 p.m.
- 0200 = 2 a.m.
- 1230 = 12:30 p.m.
- 2400 = midnight

7. **Discharge Date**

Follow instructions given for Form 02, Q.3.
18. Follow instructions given for Form 02, Q.3.

19. Social Security Number
   If the SS# is in the chart, copy it exactly as given including the letter which may be at the end. If there is no letter, draw a line through the last box. If neither are present, draw a horizontal line through all boxes. This number is important. Check all available face sheets for this information.

   Social Security numbers are the same as Medicare numbers. However, Medicare numbers are always followed by a letter. Letters A - T are used for various reasons. Once specific benefits are sought the letters are added onto the Social Security/Medicare number.

   Ex. Social Security #
       A - Own
       B - Wife
       C - Child
       D - Widow
       E - Minor with Children

   See Social Security # Explanation Sheet.

20. Marital Status
   Check appropriate box.

21. Ethnic Status
   This item may be on the face sheet of the chart. If not, review entire chart, i.e., Admission M.D.'s history, Admitting Nurse's Notes, or Nurses' general notes. If necessary, search other face sheets available for this item only. If conflicting information is found, mark box 6, and write information under "Specify".
22. Discharge Diagnosis Codes

Fill in as listed on the face sheet or discharge summary. Be sure primary diagnosis, as designated by M.D., is listed somewhere before box k. If there is a letter preceding the code, insert it in the first separate box on the left. If there is none, draw a horizontal line through the box(es), as with missing data. Insert lead 0's if there are more boxes in a group than digits given. See examples below.

Examples: E059.96 [E 0 5 9 6 34 0 3 4]

Physician's Discharge Diagnosis
Write in the diagnoses in the order in which they are listed on the face sheet.

23. OPERATIONS & PROCEDURES CODES

Patient status on DISCHARGE

1 [□] ALIVE
2 [□] DEAD

ATTACH AUTOPSY REPORT ABSTRACT (if autopsy was performed)

25. Did the patient die in the Emergency Room?

1 [□] YES 2 [□] NO 3 [□] NOT RECORDED

[skip]
8. Surname
   Start with the first box on the left and fill in the surname from left to right. If there are not enough boxes, fill in the remaining letters under the boxes. If there are more than enough boxes, leave the remaining boxes blank.

9. First Name
   (Same as surname). When patient has first initial and middle name, insert first initial in first box on left, period in second box, middle name in succeeding boxes. Then insert the first letter of middle name in middle initial box. See example below.

10. Middle Initial
    Fill in if present. If there are two middle initials, put the first one in the box, and the second one underneath. If there is no initial, draw a line through the box.

11-17. Address

11. House Number: Fill in numbers from left to right, using all numbers and leaving remaining boxes blank.

   EXAMPLE: 123 =

12. Street name or Rural Route and Number:

   EXAMPLE: R.R. 104 =

13. Apt., Box, Lot: Check one.
    Number: Fill in number left to right.

14. City: Fill in letters from left to right.

   EXAMPLE: L A N G K A

15. State Use abbreviations on list of standard abbreviations.

   EXAMPLE: M N

16. ZIP code Fill in from left to right, using all available numbers. Leave remaining boxes blank.

   EXAMPLE: 5 5 4 1 4

17. Fill in name of county and county code number.
18. BIRTHDATE: MONTH | DAY | YEAR
   - | 68 | 90
19. SOCIAL SECURITY NUMBER
   - | - | - | 92

20. MARITAL STATUS:
1. Married
2. Separated
3. Divorced
4. Widowed
5. Never Married
6. Single (no other data available)
7. Not recorded in chart

21. ETHNIC STATUS
1. White Caucasian
2. Black/Negro
3. Asian/Pacific Islander
4. American Indian/Native American
5. Hispanic
6. Other, ______________________
7. Not recorded in chart

22. DISCHARGE DIAGNOSIS CODES

PHYSICIAN'S DISCHARGE DIAGNOSIS

IDCODE

Record 0: 1:

skip

Recop: 0:

IDCOR

23. **Operations and Procedures Codes**
   Fill in as listed on the face sheet or discharge summary.
   See instructions for Form 02, Q.22.

24. **Patient Status on Discharge**
   Check appropriate box. If dead, attach autopsy report abstract (if autopsy was performed) and answer Form 02, Q.25.

25. **Did the patient die in the emergency room?**
   Check the appropriate box.
1. ID LABEL

2. Abstracter ID
   Code 29

3. Date Abstracted:
   MONTH 33 / DAY 35 / YEAR 32

CORE DATA

FORM 02
SOCIAL SECURITY INFORMATION

Address: Social Security Administration
1811 Chicago Ave.
Minneapolis, MN

Phone: 378-1151

Each Social Security Number has nine digits:

Ex. Social Security # 9 digits + Letter

Social Security Numbers are the same as Medicare numbers. However, Medicare numbers are always followed by a letter. Letters A - E are used for various reasons. Once specific benefits are sought, the letters are added onto the Social Security/Medicare number.

Ex. Social Security # 9 digits + Letter

A or HA - Own - retirement or disability benefits

B - Wife
C - Child
D - Widow
E - Mother with Children

Railroad Retirement Board

Phone: 725-7491

Railroad numbers are always preceded by letters

A + 8 digits - individual railroad employee

WA + 7 digits - spouse of railroad employee
WA - widow of railroad employee
WCA - child of railroad employee

Railroad employee eligible for medicare
I.D. # does not change.
1. ID LABEL

MI

HOSPITAL ABSTRACT

FORM 04
2. Give a brief narrative description of the acute event that led to admission or occurred during this hospitalization. (Include the time sequence and course of symptoms)


3. Is there a history of previous MI?

4. How long before admission was the last MI?
   (CHECK ONE ONLY)
   1 □ Less than 4 weeks  4 □ More than 8 weeks
   2 □ 6 weeks or less   5 □ NOT RECORDED
   3 □ 8 weeks or less

5. Was the patient hospitalized for this last MI?

6. Is there a history of stroke previous to this admission?

7. Is there a history of coronary bypass surgery?

8. Is there a history of angina pectoris which began more than 8 weeks before this admission?

9. Is there a history of hypertension?

10. Was the patient on a digitalis drug at the time of hospital admission?
11. Is there a history of previous cardiac arrest with resuscitation?  

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

12. Was the patient transported in an ambulance?  

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

13. Was the patient admitted to a CCU/ICU?  

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

14. Was BP obtainable at first attempted measurement?  

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NOT RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

15. First recorded blood pressure and heart rate (not during CPR):  

```
SYSTOLIC / DIASTOLIC  NOT RECORDED  HEART RATE  NOT RECORDED
A. 42 / 45  1 48
B. 49  52
```

*IF ONLY SYSTOLIC BLOOD PRESSURE WAS RECORDED ENTER 999 UNDER DIASTOLIC*

16. Where was the above blood pressure and heart rate measured?  

1. Ambulance  
2. ER  
3. Medical Unit  
4. NOT RECORDED

The following questions apply to the acute illness that led to and/or developed or recurred during the current hospitalization. This includes events in the last 6 weeks or since the last hospital discharge, whichever is shorter.

17. Was this an elective admission?  

1. YES  
2. NO  
3. NOT RECORDED

18. What was the reason for this admission?  

a. Transfer from another hospital  
b. Coronary angiography  
c. Coronary surgery  
d. Other cardiac problem  
e. Other non-cardiac problem

60 75  
\skip
19. Was there an acute episode(s) of discomfort or pain anywhere in the anterior chest, left arm or jaw, which may also have involved the back, shoulder, right arm or abdomen on one or both sides?

1  □ YES  2  □ NO  3  □ NOT RECORDED

20. Record date and time of onset of pain:

A. MONTH  DAY  YEAR  [ 1  □ NOT RECORDED  24 hr. clock  1  □ NOT RECORDED ]

B. 31  32  33  34  35  36  37  38  39  40

21. Was onset of pain in the hospital?

1  □ YES  2  □ NO  3  □ NOT RECORDED

22. Did this pain include the anterior chest?

1  □ YES  2  □ NO  3  □ NOT RECORDED

23. Prior to receiving medical attention, did the patient take nitrates or calcium blockers over and above the fixed dosage regiment? (i.e. took "prn" medication)

1  □ YES  2  □ NO  3  □ NOT RECORDED

24. Did the patient seek emergency medical care because the pain was not relieved by the nitrates or calcium blockers or because the pain kept returning?

1  □ YES  2  □ NO  3  □ NOT RECORDED

25. Did any of the pain episodes last longer than 20 minutes?

1  □ YES  2  □ NO  3  □ NOT RECORDED

26. Were enzymes measured within 72 hours of the most recent of these episodes?

1  □ YES  2  □ NO  3  □ NOT RECORDED

27. What was the date, time and duration of the most recent episode?

A. MONTH  DAY  YEAR  [ 1  □ NOT RECORDED ]

B. 56  57  58  59  60  61  62  63  64  65

24 hour clock

C. 66  67  68  69  70  71  72  73  74  75

28. What was the duration of the longest episode?

1  □ NOT RECORDED

29. What was the date, time and duration of the most recent episode?

A. 76  77  78  79  80

B. 81  82  83  84  85  86  87  88  89  90

24 hour clock

C. 91  92  93  94  95  96  97  98  99  100

30  □ YES  2  □ NO  3  □ NOT RECORDED
29. Was there out-of-hospital collapse with closed chest massage and/or cardioversion (CPR) since last hospital discharge or within 6 weeks of this admission, whichever is shorter?

1 □ YES
2 □ NO
3 □ NOT RECORDED

30. Estimated date

31. Location of collapse: 1 □ Home 2 □ Work 3 □ Other

32. CPR was administered by:

1 □ Bystander
2 □ M.D.
3 □ Ambulance attendant, EMT, Fire, or Police
4 □ Other, specify ________________________________
5 □ NOT RECORDED

33. Was DC countershock given (cardioversion)?

1 □ YES 2 □ NO 3 □ NOT RECORDED

34. Was cardiac rhythm documented?

1 □ YES
2 □ NO
3 □ NOT RECORDED

35. What abnormal rhythm was documented? (CHECK ALL THAT APPLY)

a. Ventricular fibrillation (VF)
b. Atrial flutter
c. Atrial fibrillation (AF)
d. Ventricular tachycardia (VT)
e. Asystole
f. Complete AV block (3° HB)
g. Other, ____________________________

36. Was closed chest massage or cardioversion successfully administered during this hospitalization? (i.e., resulted in patient being discharged alive).

1 □ YES
2 □ NO
3 □ NOT RECORDED

37. Where was CPR administered? (CHECK ALL THAT APPLY)

a. On ward/CCU/ICU
b. In emergency room
c. Other, specify ____________________________

38. Was DC countershock (cardioversion) ever given during this hospitalization?

1 □ YES 2 □ NO 3 □ NOT RECORDED

39. Was cardiac rhythm documented at time of any cardioversion?

1 □ YES
2 □ NO
3 □ NOT RECORDED

40. What abnormal rhythm was documented? (CHECK ALL THAT APPLY)

a. Ventricular fibrillation (VF)
b. Atrial flutter
c. Atrial fibrillation (AF)
d. Ventricular tachycardia (VT)
e. Asystole
f. Complete AV block (3° HB)
g. Other, ____________________________
41. Did the patient die during this admission?

- 1 YES
- 2 NO

42. Was the patient found dead? (i.e. not observed at the moment of death)

- 1 YES
- 2 NO
- 3 NOT RECORDED

43. Was patient observed to be free of severe cardiac symptoms within one hour of being found dead?

- 1 YES
- 2 NO
- 3 NOT RECORDED

44. Was patient free of severe cardiac symptoms within 24 hrs. of death?

- 1 YES
- 2 NO
- 3 NOT RECORDED

GO TO Q. 48

45. Did patient die without developing severe cardiac symptoms? (i.e. died instantaneously)

- 1 YES
- 2 NO
- 3 NOT RECORDED

46. Did the patient die within one hour of developing severe cardiac symptoms?

- 1 YES
- 2 NO
- 3 NOT RECORDED

47. Did the patient die within 24 hours of developing severe cardiac symptoms?

- 1 YES
- 2 NO
- 3 NOT RECORDED

GO TO Q. 48

48. Was this death thought to be a terminal complication of a non-cardiac disease?

- 1 YES
- 2 NO
- 3 NOT RECORDED

49. Were either of the following observed?

a. Rales (exclude basilar)

- 1 YES
- 2 NO
- 3 NOT RECORDED

b. S3 (3rd heart sound, ventricular gallop)

- 1 YES
- 2 NO
- 3 NOT RECORDED

CHECK "PRESENT" IF SUMMATION GALLOP.
EXCLUDE S4 OR ATRIAL GALLOP.
50. Was there evidence of a stroke during this hospitalization, within 6 weeks of this event or since last hospital discharge whichever is shorter?

- [ ] YES       COMPLETE FORM 06
- [ ] NO
- [ ] NOT RECORDED

51. Were ECG's recorded?

- [ ] YES       INCLUDE COPIES OF ALL TRACINGS
- [ ] NO
- [ ] NOT RECORDED

52. Was a coronary angiography performed?

- [ ] YES
- [ ] NO
- [ ] NOT RECORDED

53. Date of procedure:

- [ ] MONTH / DAY / YEAR

- [ ] NOT RECORDED

INCLUDE A COPY OF THE CORONARY ANGIOGRAPHY REPORT

54. Has patient had any surgical procedures this admission?

- [ ] YES
- [ ] NO

55. Dates of Procedures:

- [ ] MONTH / DAY / YEAR

56. Specify procedures:

- __________________________________________________________________________
- __________________________________________________________________________
- __________________________________________________________________________

57. Status of Chest X-rays (check one)

- [ ] X-rays not done
- [ ] Reports not present
- [ ] All reports say "no change" and refer to other admissions
- [ ] Not all films read as "normal" (XEROX ALL COPIES OF CHEST X-RAYS)
- [ ] All films read as "normal"
58. First Recorded BUN

59. Highest Recorded BUN

60. Are there any serum enzyme measurements?

61. Was CPK-MB measured within 72 hours of admission or onset of acute event, whichever is later?

62. Was total CPK measured within 72 hours of admission or onset of acute event, whichever is later?

63. Was LDH measured within 72 hours of admission or onset of acute event, whichever is later?

64. Was SGOT measured within 72 hours of admission or onset of acute event, whichever is later?

65. Are all patient enzymes NORMAL?

66. Does the patient have active liver disease (cirrhosis, cancer, etc.)

67. Has the patient had trauma within one week of admission?

COMPLETE ENZYME VALUES - FORM 40
M I A B S T R A C T

Chest X-Rays

1. Pulmonary congestion on first upright or PA CXR.  
   YES  NO  NOT RECORDED
   1  2  3

2. Pulmonary congestion on any upright or PA CXR.  
   YES  NO  NOT RECORDED
   32  33  34

3. Interstitial or pulmonary edema on first upright or PA CXR.  
   YES  NO  NOT RECORDED
   35  36  37

4. Interstitial or pulmonary edema on any upright or PA CXR.  
   YES  NO  NOT RECORDED

5. Cardiomegaly on first PA CXR.  
   YES  NO  NOT RECORDED

6. Cardiomegaly on any PA CXR.  
   YES  NO  NOT RECORDED

Coronary Angiography

7a. Excludes both >50% proximal narrowing of 2 or more and >75% proximal narrowing of any major vessels.  
   YES  NO  NOT RECORDED
   1

b. Documents either >50% proximal narrowing of 2 or more and >75% proximal narrowing of any major vessels.  
   YES  NO  NOT RECORDED
   3

c. Neither "1" or "2" above  
   NOT RECORDED
   3

LPH/MHHP-MORB 41(1-1) 1/82 Ver. 1
1. ID LABEL

MI

HOSPITAL ABSTRACT

FORM 04
MI HOSPITAL ABSTRACT
FORM 04

Q.1. Study I.D. Number
Attach study I.D. number label to Form 04 cover sheet.

2. Give a brief narrative description of the acute event that led to admission or occurred during this hospitalization. (Include the time sequence and course of symptoms)

3. Is there a history of previous MI?

1 □ YES
2 □ NO
3 □ NOT RECORDED

4. How long before admission was the last MI? (CHECK ONE ONLY)

1 □ Less than 4 weeks
2 □ 6 weeks or less
3 □ 8 weeks or less
4 □ More than 8 weeks
5 □ NOT RECORDED

5. Was the patient hospitalized for this last MI?

1 □ YES 2 □ NO 9 □ NOT RECORDED
Q.2. Narrative

The purpose of the narrative is to describe the specific circumstances surrounding the event that precipitated the patient's admission to the hospital. Using direct quotes from the hospital chart whenever possible, this description must include:
1. the location and duration of pain
2. any medication given to relieve the pain and how long (minutes/hours) until pain was relieved
3. if the patient died during this hospitalization, explain your answers to Q.42-48.

In addition, if you feel your responses to any of these questions misses an important aspect of the case, add this to the narrative. If the physician's discharge summary covers all of the above; it is still necessary to include items 1-4 above and attach copy of discharge death summary to form 04. If conflicting information is recorded in two or more of the sources, choose the information from the source according to the order listed below.

1. Resident/Intern
2. Attending Physician
3. Neurology Consultant
4. ER Physician
5. Nurse
6. Other (List medical students under "Other").

Focus on first "acute episode" of chest pain or discomfort (a crushing, band-like pressure or heaviness on chest) lasting more than 20 minutes. Mention other cardiac symptoms such as shortness of breath, palpitations, dizziness; past fainting, ankle swelling, etc., but do not elaborate on these latter symptoms. Pertinent past historical information on physician's findings, tests, etc. prior to admission may be noted briefly. If there are several acute events, be sure to record information for each event.

Q.3. Is there a history of previous MI?

Take information from the history of the resident or intern, if any, the attending physician, the cardiovascular consultant, the ER physician, nursing notes, or medical student, in that order. "History" refers to information from the patient and his family. A "Q" wave noted in the progress notes is not sufficient to constitute an MI. If conflicting information is recorded in two or more sources, choose the information from the source according to the order listed above (Q.2). (See following example.)
6. Is there a history of stroke previous to this admission?
   YES □ NO □ NOT RECORDED □
   1 □ 2 □ 3 □

7. Is there a history of coronary bypass surgery?
   YES □ NO □ NOT RECORDED □
   1 □ 2 □ 3 □

8. Is there a history of angina pectoris which began more than 8 weeks before this admission?
   YES □ NO □ NOT RECORDED □
   1 □ 2 □ 3 □

EXAMPLE:
History states: "Patient awoke yesterday with chest pain. There is no prior history of heart disease or stroke. He came to hospital after three hours of pain."

Answers to Q.3-19
3. No
6. No
7. No
8. No
9. NR
10. NR
11. NR
17. No
19. Yes

8. Answer "Yes" if the history includes any of the following:

1. the statement that the patient has "angina" or "angina pectoris".
2. the statement that the patient takes nitroglycerine or calcium blockers for chest pain.
3. The statement (or an equivalent) that the patient has any of the following symptoms: "substernal pressure, pain, tightness, or burning distress precipitated by exercise or excitement, or both, and is relieved by rest and/or nitroglycerine" and appears to have been present for 4 or more weeks prior to admission.

Answer "No" if the history explicitly states that the patient has "no history of angina", or "no history of angina pectoris".

Answer "No" if the patient has developed angina-like symptoms (see 3 above) in 4 weeks or less prior to the acute event.

Answer "NR" if none of the above criteria for "Yes"/"No" responses apply. (These criteria are adapted from the Mayo Clinic criteria.)
9. Is there a history of hypertension?  
10. Was the patient on a digitalis drug at the time of hospital admission?

11. Is there a history of previous cardiac arrest with resuscitation?
12. Was the patient transported in an ambulance?
13. Was the patient admitted to a CCU/ICU?
14. Was BP obtainable at first attempted measurement?

15. First recorded blood pressure and heart rate (not during CPR):

   SYSTOLIC / DIASTOLIC  NOT RECORDED

   HEART RATE  NOT RECORDED

   A. 1 [RECORDED]  B. [RECORDED]

   IF ONLY SYSTOLIC BLOOD PRESSURE WAS RECORDED
   ENTER 999 UNDER DIASTOLIC

16. Where was the above blood pressure and heart rate measured?

   1 [Ambulance]
   2 [ER]
   3 [Medical Unit]
   4 [NOT RECORDED]
14. Was BP obtainable at first attempted measurement?

First attempt may be charted on (1) ambulance sheet, (2) ER sheet, (3) the clinical graph or (4) nursing admission note. Answer "Yes" unless there was an event such as cardiac arrest or collapse leading you to believe that the BP was not measurable at first attempt.

The following questions apply to the acute illness that led to and/or developed or recurred during the current hospitalization. This includes events in the last 6 weeks or since the last hospital discharge, whichever is shorter.

17. Was this an elective admission?

1 [ ] YES  2 [ ] NO  3 [ ] NOT RECORDED

18. What was the reason for this admission?

   a. [ ] Transfer from another hospital
   b. [ ] Coronary angiography
   c. [ ] Coronary surgery
   d. [ ] Other cardiac problem
   e. [ ] Other non-cardiac problem

19. Was there an acute episode(s) of discomfort or pain anywhere in the anterior chest, left arm or jaw, which may also have involved the back, shoulder, right arm or abdomen on one or both sides?

1 [ ] YES  2 [ ] NO
17. **Elective Admission**

Defined as any admission for a non-acute event. (E.g., repeated angina—patient admitted for stabilization of medication, or for coronary angiography). If an admission is through the ER, it is probably not elective.

19. If "Yes", answer Q.20-28. If "No" or "NR", go to Q.29. Record first "acute episode" of chest pain or discomfort, (a crushing, band-like pressure on chest) lasting more than 20 minutes. If there are several acute events (i.e., events occurring in-hospital), be sure to record information for each event in Q.2 (Narrative) using Q.19-28 as guidelines.
20. Record date and time of onset of pain:

A. MONTH || DAY || YEAR || NOT RECORDED B. 24 hr., clock || NOT RECORDED

21. Was onset of pain in the hospital?
   1 YES  2 NO  3 NOT RECORDED

22. Did this pain include the anterior chest?
   1 YES  2 NO  3 NOT RECORDED

23. Prior to receiving medical attention, did the patient take nitrates or calcium blockers over and above the fixed dosage regimen. (i.e. took 'prn' medication)
   1 YES  2 NO  3 NOT RECORDED

24. Did the patient seek emergency medical care because the pain was not relieved by the nitrates or calcium blockers or because the pain kept returning?
   1 YES  2 NO  3 NOT RECORDED

25. Did any of the pain episodes last longer than 20 minutes?
   1 YES  2 NO  3 NOT RECORDED

26. Were enzymes measured within 72 hours of the most recent of these episodes?
   1 YES  2 NO  3 NOT RECORDED

27. What was the date, time and duration of the most recent episode?

A. MONTH || DAY || YEAR || NOT RECORDED
B. 24 hour clock || NOT RECORDED
C. hr || min. || NOT RECORDED

28. What was the duration of the longest episode?
   hr || min. || NOT RECORDED
20. A. Record date of continuous episode of chest pain leading to admission

B. Record time chest pain began. Estimate clock time based on time of admission and any other statements in record. Time should be recorded according to the 24-hour clock.

Explanation for 24-hour clock:

<table>
<thead>
<tr>
<th>Time</th>
<th>AM/PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>0100</td>
<td>1 a.m.</td>
</tr>
<tr>
<td>1200</td>
<td>noon</td>
</tr>
<tr>
<td>1300</td>
<td>1:00 p.m.</td>
</tr>
<tr>
<td>0200</td>
<td>2 a.m.</td>
</tr>
<tr>
<td>1230</td>
<td>12:30 p.m.</td>
</tr>
<tr>
<td>2400</td>
<td>midnight</td>
</tr>
</tbody>
</table>

Record time only if enough data is available to make a reasonable estimate. Otherwise, record 9999=NR.

25. It is most crucial to attempt an accurate estimate if the pain lasted more than 20 minutes. If there were repeated episodes of pain of relatively short duration, record the length of the last episode prior to admission, and indicate the intermittent nature of symptoms in the narrative summary (Q.2). Answer "NR" if it is not possible to determine how long the pain lasted.

27. The most recent episode is the one that precipitated the patient's admission to the hospital or occurred within the hospital. Refer to history, physical examination and physician's progress notes for this information. Date is Q.27a. Time pain began is Q.27b and duration of pain is Q.27c.

28. The longest episode is from the moment the patient first developed symptoms to when the pain was first relieved.
29. Was there out-of-hospital collapse with closed chest massage and/or cardioversion (CPR) since last hospital discharge or within 6 weeks of this admission, whichever is shorter?

1. YES
2. NO
3. NOT RECORDED

30. Estimated date [MM DD YYYY]


32. CPR was administered by:
   1. Bystander
   2. M.D.
   3. Ambulance attendant, EMT, Fire, or Police
   4. Other, specify ______________________________ __
   5. NOT RECORDED

33. Was DC countershock given (cardioversion)?
   1. YES
   2. NO
   3. NOT RECORDED

34. Was cardiac rhythm documented?
   1. YES
   2. NO
   3. NOT RECORDED

35. What abnormal rhythm was documented (CHECK ALL THAT APPLY)
   a. 1. Ventricular fibrillation (VF)
   b. 1. Atrial flutter
   c. 1. Atrial fibrillation (AF)
   d. 1. Ventricular tachycardia (VT)
   e. 1. Asystole
   f. 1. Complete AV block (3° HB)
   g. 1. Other, ________________
29. If "Yes", answer Q.30-35. If "No" or "NR", go to Q.36. Q.29 refers to an out-of-hospital occurrence only, i.e., it would be answered "Yes" if a patient collapsed at work, had a cardiac arrest in the ambulance enroute to the hospital and CPR was administered at that time. Cardiovascular collapse is defined as a loss of consciousness with the apparent cessation of respiration and pulse. Cardiopulmonary resuscitation (CPR) is defined as electrical cardioversion for V-tach or V-fib and/or external cardiac massage by chest compression, combined with artificial ventilation by mouth-to-mouth, bag/mask-to-mouth, or other means. A bystander is someone who initiates CPR immediately on the scene. A physician or other health professional with the patient in a non-professional capacity at the time would be counted as a bystander.

30-35. Refer to the following sources of information: emergency room notes, hospital admission notes, ambulance sheet (usually pink, sometimes to be located outside the patient chart).

33. Refer to ER, ICU/CCU, ward notes, physician's progress notes, CPR or cardiac arrest sheets.

35. If answered "Yes", check all items for a-f. These refer to the rhythm immediately surrounding CPR administration. "Other" (g) can be anything other than Q.35a-e, including normal.
36. Was closed chest massage or cardioversion successfully administered during this hospitalization? (i.e. resulted in patient being discharged alive).

1 YES  
2 NO  
3 NOT RECORDED

37. Where was CPR administered? (CHECK ALL THAT APPLY)

a. 1 On ward/CCU/ICU
b. 1 In emergency room
c. 1 Other, specify _______

38. Was DC countershock (cardioversion) ever given during this hospitalization?

1 YES  
2 NO  
3 NOT RECORDED

39. Was cardiac rhythm documented at time of any cardioversion

1 YES  
2 NO  
3 NOT RECORDED

40. What abnormal rhythm was documented? (CHECK ALL THAT APPLY)

a. 1 Ventricular fibrillation (VF)
b. 1 Atrial flutter
c. 1 Atrial fibrillation (AF)
d. 1 Ventricular tachycardia (VT)
e. 1 Asystole
f. 1 Complete AV block (3rd HB)
f. 1 Other, _______

41. Did the patient die during this admission?

1 YES  
2 NO  

42. Was the patient found dead? (i.e. not observed at the moment of death)

1 YES  
2 NO  
3 NOT RECORDED

43. Was patient observed to be free of severe cardiac symptoms within one hour of being found dead?

1 YES  
2 NO  
3 NOT RECORDED

44. Was patient free of severe cardiac symptoms within 24 hrs. of death?

1 YES  
2 NO  
3 NOT RECORDED

GO TO Q. 48

45. Did patient die without developing severe cardiac symptoms? (i.e. died instantaneously)

1 YES  
2 NO  
3 NOT RECORDED

46. Did the patient die within one hour of developing severe cardiac symptoms?

1 YES  
2 NO  
3 NOT RECORDED

47. Did the patient die within 24 hours of developing severe cardiac symptoms?

1 YES  
2 NO  
3 NOT RECORDED

GO TO Q. 48

48. Was this death thought to be a terminal complication of a non-cardiac disease?

1 YES  
2 NO  
3 NOT RECORDED
36. Check appropriate box. Refer to ER, ICU/CCU, ward notes, CPR or cardiac arrest sheets. Answer "yes" only if the patient received CPR at any time in-hospital and was alive at discharge.

EXAMPLE: CPR administered twice in-hospital.
Patient died in-hospital.

No CPR in-hospital. Patient alive at discharge.

CPR administered 5 times in-hospital.
Patient alive at discharge.

ANSWER: No
ANSWER: No
ANSWER: Yes

37-40. Follow instructions for Form 04, Q.30-35.

41-48. If the patient died during this admission, refer to the physician's progress notes, the nurse's notes and the discharge summary for this information.
49. Were either of the following observed?  
   a. Rales (exclude basilar)  
   b. S3 (3rd heart sound, ventricular gallop)  
      CHECK "PRESENT" IF SUMMATION GALLOP  
      EXCLUDE S4 OR ATRIAL GALLOP.  
      PRESENT  ABSENT  
          1  2  3  
          1  2  3

50. Was there evidence of a stroke during this hospitalization, within 6 weeks of this  
    event or since last hospital discharge whichever is shorter?  
    YES  NO  NOT RECORDED

51. Were ECG's recorded?  
    YES  NO  NOT RECORDED

52. Was a coronary angiography performed?  
    YES  NO  NOT RECORDED

53. Date of procedure:  
   MONTH  DAY  YEAR  
   INCOMPLETE  NOT RECORDED

54. Has patient had any surgical procedures this admission?  
   YES  NO

55. Dates of Procedures:  
   a. / /  
   b. / /  
   c. / /  

56. Specify procedures:  

57. Status of Chest X-rays (check one)  
   X-rays not done  
   Reports not present  
   All reports say "no change" and refer to other admissions  
   Not all films read as "normal" (XEROX ALL COPIES OF CHEST X-RAYS)  
   All films read as "normal"
50. Refer to physician's admitting note. If answered "Yes", complete Form 06.

51. If answered "Yes", attach all tracings for each acute event. Photocopy mounted 12-lead ECG's only. An attempted 12-lead is counted as a 12-lead ECG. Do not photocopy tracings from exercise stress tests unless no other ECG is available, in which case only the resting, pre-exercise tracing should be copied. If there are multiple acute cardiac events in-hospital, include all ECG's for each event.

52. If answered "Yes", attach photocopy and answer Q.53. If M.D. mentions angiogram in progress notes or elsewhere in chart, but there is no specific date listed and notation that an angiogram was done and there is no report, check N.R.

57. Check one box only. If box # 4 is checked ("not all films read as normal"), photocopy all chest X-rays and attach to form.
58. First Recorded BUN

59. Highest Recorded BUN

IF ONLY ONE VALUE GIVEN RECORD THAT VALUE IN BOTH 9 & 10

60. Are there any serum enzyme measurements?

1 □ YES

2 □ NO

3 □ NOT RECORDED

FINISHED

61. Was CPK-MB measured within 72 hours of admission or onset of acute event, whichever is later?

62. Was total CPK measured within 72 hours of admission or onset of acute event, whichever is later?

63. Was LDH measured within 72 hours of admission or onset of acute event, whichever is later?

64. Was SGOT measured within 72 hours of admission or onset of acute event, whichever is later?

65. Are all patient enzymes NORMAL?

1 □ YES

2 □ NO

FINISHED

66. Does the patient have active liver disease (cirrhosis, cancer, etc.)

1 □ YES, specify ____________________________

2 □ NO

3 □ NOT RECORDED

67. Has the patient had trauma within one week of admission?

1 □ YES, specify ____________________________

2 □ NO

3 □ NOT RECORDED

COMPLETE ENZYME VALUES - FORM 40
58-59. Record the first and highest BUN values obtained during this hospitalization. Refer to lab sheet and ER sheet for these values. If only one BUN was obtained, record this value in boxes for Q.58-59.

60. If answered "Yes", complete Q.61-67 and Enzyme Values - Form 40. If answered "No" or "NR", you are finished.

61-64 Refer to lab sheets or lab reports. The enzymes are CPK-MB, total CPK, total LDH, and SGOT. Total CPK = MB+MM+BB. CPK synonyms are CK, CKI. If any of these have been measured within 72 hours of admission or onset of the acute event, whichever is later, answer "Yes", and go to Q.65. Answer "No" if lab sheet is missing, or if lab values were measured after 72 hours of admission or onset of acute event, whichever is later. For further information on enzyme values, see instructions for Form 40: Enzyme Values.

65. Refer to the hospital's established normal values listed in the chart or obtainable from the hospital lab to determine if the patient's values are within normal range. If answer to Q.65 is "Yes", you are finished.

66-67. If there are any abnormal patient enzyme values, complete Q.66-67 and complete Enzyme Values - Form 40. See instructions for Form 40: Enzyme Values.
**Chart A - Laboratory Standards**

<table>
<thead>
<tr>
<th>RANGE SET</th>
<th>CPK-MB</th>
<th>TOTAL CPK</th>
<th>SGOT</th>
<th>TOTAL LDH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. RANGE SET 1</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2. RANGE SET 2</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>3. RANGE SET 3</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>12</td>
</tr>
</tbody>
</table>

**Chart B - Patient's Values**

Record all enzymes in first 24 hours, and the highest readings for each of the next 3 days following an acute event. Place the appropriate range set number in the box on the right.

<table>
<thead>
<tr>
<th>MONTH</th>
<th>DAY</th>
<th>HOUR</th>
<th>A. CPK-MB</th>
<th>B. RANGE SET</th>
<th>C. TOTAL CPK</th>
<th>D. RANGE SET</th>
<th>E. SGOT SET</th>
<th>F. TOTAL LDH</th>
<th>RANGE SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>10</td>
<td>30</td>
<td>30</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>10</td>
<td>30</td>
<td>60</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6.</td>
<td>10</td>
<td>30</td>
<td>90</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>7.</td>
<td>10</td>
<td>30</td>
<td>30</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>8.</td>
<td>10</td>
<td>30</td>
<td>30</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>9.</td>
<td>10</td>
<td>30</td>
<td>30</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>10.</td>
<td>10</td>
<td>30</td>
<td>30</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>11.</td>
<td>10</td>
<td>30</td>
<td>30</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>12.</td>
<td>10</td>
<td>30</td>
<td>30</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>13.</td>
<td>10</td>
<td>30</td>
<td>30</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
1. Study I.D. Label:
   Attach label to form.

CHART A (Laboratory Standards):
Range Set 1-3:
Record the hospital's established normal range (Low/High) for each enzyme. Some hospitals use several different normal ranges within their own laboratory and may even use normal ranges from other hospital laboratories. These are called alternate normal ranges. Some hospitals record CPK-MB enzymes values only as absent/negative and present/positive or trace. In this case, fill in the normal range as follows: Low ABSE, high ABSE = 6666. Trace is considered positive and = 7777. Present/Positive = 7777.

EXAMPLE: Normal CPK-MB = ABSENT/NEGATIVE

\[
\begin{array}{c}
\text{Low:} \\
6 \\
6 \\
6 \\
6 \\
\text{High:} \\
6 \\
6 \\
6 \\
6 \\
\end{array}
\]

If the normal range for any of the enzymes is indicated as "< XX" (less than XX), the Low should be recorded as "0001" and the High as "0059".

EXAMPLE: Normal range of SGOT is "< 60".

\[
\begin{array}{c}
\text{Low:} \\
0 \\
0 \\
0 \\
1 \\
\text{High:} \\
0 \\
0 \\
5 \\
9 \\
\end{array}
\]

1. Some hospitals may use different abbreviations, e.g., CK, CKI, CPK-MB are synonyms for CPK. Record totals only. (If MB, MM or BB are given separately, add them up for a total CPK.) Refer to hospital folders, or check with the hospital lab for information concerning unusual formats.

2. Decimals: Round off decimals to the nearest whole number. (e.g., 6.4 = 6; 6.5 = 7)

3. 5-Digit Values: Fill in as follows: (e.g., CPK: 12,340)

\[
\begin{array}{c}
9 \\
9 \\
9 \\
8 \\
\end{array}
\]

Then add the true value (12,340) at the right margin.

4. Other: (e.g., CPK: 2-5) Record the higher value as shown:

\[
\begin{array}{c}
0 \\
0 \\
0 \\
5 \\
\end{array}
\]

Occasionally, there may be more than one method used by a hospital to measure a particular enzyme, e.g., a total LDH may be done as part of the admission battery, and also as part of the cardiac enzyme routine, with differing normal ranges for each test.
4-13. CHART B (Patient's Values):

Record all patient's enzymes in first 24 hours. Also include the highest reading for each of the 3 days after each acute event. Place the appropriate range set number in the last box on the right.

Month/Day: Use "leading zeroes", if necessary.

Hour: Record time according to the 24-hour clock. If the time given in the chart is from the 12-hour clock, it should be converted to the 24-hour clock.

EXAMPLE:

<table>
<thead>
<tr>
<th>Time</th>
<th>12-hour clock</th>
<th>24-hour clock</th>
</tr>
</thead>
<tbody>
<tr>
<td>0100</td>
<td>1 a.m.</td>
<td>0100</td>
</tr>
<tr>
<td>1200</td>
<td>noon</td>
<td>1200</td>
</tr>
<tr>
<td>1300</td>
<td>1:00 p.m.</td>
<td>2400</td>
</tr>
<tr>
<td>1230</td>
<td>12:30 p.m.</td>
<td>1230</td>
</tr>
<tr>
<td>2400</td>
<td>midnight</td>
<td>0000</td>
</tr>
</tbody>
</table>

Refer to the lab sheet or lab report for patient values.

NOTE: There is a difference between CPK-MB and total CPK. Be sure to fill in the appropriate values beneath the proper heading and to use totals when indicated under headings D. and F.

NOTE: If some enzymes are not measured at a given time, draw a line through boxes corresponding to enzymes not measured. See below.

<table>
<thead>
<tr>
<th>CHART B (PATIENT'S VALUES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
</tr>
<tr>
<td>----</td>
</tr>
<tr>
<td>01</td>
</tr>
</tbody>
</table>

Range Set: Fill in corresponding range set number from Chart A (1, 2, or 3). (See instructions for Chart A.)

Use as many Form 40's as necessary, and attach to MI Form 04.
**ECG CODING FORM**

<table>
<thead>
<tr>
<th>Calibr. Codes</th>
<th>Date</th>
<th>Uncoded leads (reason and lead)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 mm. ± .25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Abstractor #**

**Date Coded**

<table>
<thead>
<tr>
<th>MMMP I.D.#</th>
<th>Abstracter #</th>
<th>Lead numbering:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LPH-MMMP (1/81)</td>
</tr>
</tbody>
</table>

**ECG Category:**

- Evolving diagnostic
- Diagnostic
- Equivocal
- Other

**Reasons for uncodable complexes:**

- Complete A-V block [6-1]
- Artificial pacemaker [6-8]
- QRS >.12 [7-4]
- Asystole or V. fib. [8-2]
- Technical problems [9-8]
- AVL = O4
- AVF = O5
- V1 = 11, V2 = 12, etc.
- Present in all leads = 33
- Example: Wandering baseline in lead V6

**Lead numbering:**

- i = O1
- II = O2
- III = O3
- V1 = 11, V2 = 12, etc.

**Example:** Wandering baseline in lead V6 would be 9-8/16
1. **ID LABEL**

**STROKE**

**HOSPITAL ABSTRACT**

**FORM 06**
2. Give a brief narrative description of the acute event that led to admission or occurred during this hospitalization. (Include time sequence and course of symptoms.)

(ATTACH COPY OF DISCHARGE/DEATH SUMMARY REPORT IF AVAILABLE)

## PRE-ADMISSION HISTORY

3. Is there a history of a previous stroke?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Not Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

4. How long before admission was the last stroke? (CHECK ONE ONLY)

<table>
<thead>
<tr>
<th>Less than 3 weeks</th>
<th>6 weeks or less</th>
<th>More than 6 weeks</th>
<th>Not Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

5. Was the patient hospitalized for this last stroke?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Not Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

6. Is there a history of previous hypertension?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Not Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

7. Is there a history of a previous TIA?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Not Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

8. Was this an elective admission?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Not Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

9. What was the reason for this admission? (CHECK ALL THAT APPLY)

<table>
<thead>
<tr>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Transfer from another hospital</td>
</tr>
<tr>
<td>b. Cardiac angiography</td>
</tr>
<tr>
<td>c. Cerebrovascular angiography</td>
</tr>
<tr>
<td>d. Cerebrovascular surgery</td>
</tr>
<tr>
<td>e. Other neurological problem</td>
</tr>
<tr>
<td>f. Other non-neurological problem</td>
</tr>
</tbody>
</table>
10. Were there new (within 6 weeks or since previous hospital discharge—whichever is shorter) subjective neurological symptoms that led to this hospital admission or that occurred during this hospitalization? If the patient has been transferred from another acute care hospital, answer "NO", unless new symptoms developed during this admission.

11. Was the onset of new symptoms during this admission?

- 1  □ YES
- 2  □ NO
- 3  □ NOT RECORDED

12. What were the patient's new symptoms? (CHECK ALL THAT APPLY)

- a.  □ Weakness or clumsiness of face and/or limb(s) on one side of body
- b.  □ Difficulty speaking or understanding speech
- c.  □ Visual disturbances
- d.  □ Dizziness, unsteadiness of gait
- e.  □ Seizures
- f.  □ Prolonged unconsciousness (coma)
- g.  □ Altered state of consciousness
- h.  □ Brief unconsciousness (syncope or fainting)
- i.  □ Other (Specify)

13. When did the above new symptoms begin?

A. Date:

- 1  □ NOT RECORDED

B. Estimated 24 Hr. Time: 1  □ NOT RECORDED

For patients whose neurological event began outside the hospital, indicate the duration from onset of new neurological symptoms to the hospital admission.

For patients whose event occurred in the hospital, indicate the time from onset to first physician examination.

14. Can you CLASSIFY the duration from onset of new neurological symptoms according to the categories listed in Question 13?

- 1  □ YES
- 2  □ NO

15. What was the length of the duration? (CHECK ONE)

- 1  □ Less than 24 hours
- 2  □ Less than 48 hours
- 3  □ Less than 72 hours
- 4  □ Less than 6 weeks
- 5  □ 6 weeks or more

GO TO Q. 19

16. Does the chart contain ANY information indicating the rate of development of new neurological symptoms?

- 1  □ YES
- 2  □ NO

17. What was the rate of development?

- 1  □ Rapid (probably less than 48 hours)
- 2  □ Not rapid (probably more than 48 hours)

18. Specify wording used to indicate time.
PHYSICIAN'S EXAM FINDINGS

19. Did a physician document a new localizing neurological deficit (within 6 weeks or since previous hospital discharge, whichever is shorter) or did a CAT SCAN indicate definite or probable cerebral infarction or hemorrhage without other pathology?

- [ ] YES
- [ ] NO
- [ ] NOT RECORDED

GO TO PAGE 7, Q. 43 HISTORY OF FINDINGS DURING HOSPITALIZATION

20. Can you CLASSIFY the length of time from symptom onset to physician exam in hospital according to the categories listed in Question 21?

- [ ] YES
- [ ] NO

21. What was the length of time from symptom onset?

- [ ] Less than 72 hours
- [ ] Less than 3 weeks
- [ ] Less than 6 weeks
- [ ] 6 weeks or more

GO TO Q. 25

22. Does the chart contain any information indicating the length of time from symptom onset to physician exam?

- [ ] YES
- [ ] NO

23. What was the length of time from symptom onset?

- [ ] Probably less than 6 weeks
- [ ] Probably 6 weeks or more

24. Specify wording used to indicate length of time

25. What was the conclusion from the pupil examination? (abnormal = "constricted" or "dilated" or "unresponsive to light") (CHECK ONE)

- [ ] Both normal
- [ ] One abnormal (anisocoria)
- [ ] Both abnormal
- [ ] Physician not sure/cannot determine
- [ ] NOT EXAMINED (NR)

26. What was the conclusion from the Plantar (Babinski) reflex examination? (Abnormal = "positive", "up-going toe", "extensor", or "present") (CHECK ONE)

- [ ] Normal both sides
- [ ] Abnormal one side
- [ ] Abnormal both sides
- [ ] "Equivocal" one or both sides
- [ ] NOT EXAMINED (NR)
27. What was the patient's level of consciousness? (CHECK ONE)

1. Comatose (unresponsive to pain, voice, or other stimuli)
2. Unconscious but responsive to pain or other noxious stimuli
3. Conscious, but with abnormality of consciousness or orientation
4. Normal, conscious and oriented
5. NOT RECORDED

28. What were the motor function findings? Each item refers to the body region indicated or any parts thereof.

<table>
<thead>
<tr>
<th>Body Region</th>
<th>UNAFFECTED</th>
<th>AFFECTED, BUT CAN BE MOVED BY PATIENT</th>
<th>TOTALLY PARALYZED</th>
<th>NOT RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Left Arm</td>
<td>31 1</td>
<td>2</td>
<td>3 4</td>
<td></td>
</tr>
<tr>
<td>b. Right Arm</td>
<td>32 1</td>
<td>2</td>
<td>3 4</td>
<td></td>
</tr>
<tr>
<td>c. Left Leg</td>
<td>33 1</td>
<td>2</td>
<td>3 4</td>
<td></td>
</tr>
<tr>
<td>d. Right Leg</td>
<td>34 1</td>
<td>2</td>
<td>3 4</td>
<td></td>
</tr>
<tr>
<td>e. Left Face</td>
<td>35 1</td>
<td>2</td>
<td>3 4</td>
<td></td>
</tr>
<tr>
<td>f. Right Face</td>
<td>36 1</td>
<td>2</td>
<td>3 4</td>
<td></td>
</tr>
</tbody>
</table>

29. Did the patient have any of the following neurological deficits? (SEE MANUAL FOR DEFINITIONS)

a. Aphasia 37 1 2 3 4
b. Apraxia 38 1 2 3 4
c. Dysarthria 39 1 2 3 4
d. Visual field defects 40 1 2 3 4
e. Other 41 1 2 3 4

specify:

30. Was the patient's temperature recorded on this admission (ER/WARD/CCU)?

1. YES
2. NO

31. What was this first temperature recorded in the hospital after onset of symptoms? (Indicate farenheit or centigrade)

<table>
<thead>
<tr>
<th>Temperature</th>
<th>O F</th>
<th>O C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

32. How was this temperature obtained?

1. Oral
2. Rectal
3. Axillary
4. NOT RECORDED
33. Was the blood pressure recorded on this admission (ER/WARD/ICU)?

1 □ YES  
2 □ NO

34. What was the first blood pressure reading recorded in the hospital after onset of symptoms?

<table>
<thead>
<tr>
<th>Systolic</th>
<th>Diastolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP</td>
<td></td>
</tr>
</tbody>
</table>

35. Can you CLASSIFY the duration of new objective findings of localizing neurological deficit according to the categories listed in Question 36?

1 □ YES  
2 □ NO

36. What was the duration of the objective deficit from first physician documentation until last? (CHECK ONE)

1 □ Less than 1 hour  
2 □ Less than 24 hours  
3 □ Less than 48 hours  
4 □ Less than 72 hours  
5 □ 72 hours or more  

GO TO Q. 37

37. Does the chart contain any information indicating duration of deficit or coma?

1 □ YES  
2 □ NO

38. What was the duration?

1 □ Transient (probably 24 hours or less)  
2 □ Prolonged (probably more than 24 hours)  
3 □  

39. Specify wording used to indicate duration.

40. Was the patient discharged alive?

1 □ YES  
2 □ NO

GO TO QUESTION 43

41. Did death occur within 6 weeks of first documentation of deficit?

1 □ YES  
2 □ NO

42. What was the duration from first physician documentation to death? (CHECK ONE)

1 □ Less than 24 hours  
2 □ Less than 48 hours  
3 □ Less than 72 hours  
4 □ 72 hours or more  
5 □ Unknown
### HISTORY OR FINDINGS DURING HOSPITALIZATION

<table>
<thead>
<tr>
<th></th>
<th>A. Was there:</th>
<th>B. Was it present during this admission?</th>
<th>C. Specify condition and/or how it was documented</th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>Atrial fibrillation or flutter</td>
<td>1 YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 NR</td>
<td>NR</td>
</tr>
<tr>
<td>44</td>
<td>Mitral stenosis?</td>
<td>1 YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 NR</td>
<td>NR</td>
</tr>
<tr>
<td>45</td>
<td>Intracardiac thrombous or intracardiac tumor (myxoma)</td>
<td>1 YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 NR</td>
<td>NR</td>
</tr>
<tr>
<td>46</td>
<td>Systemic emboli</td>
<td>1 YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 NR</td>
<td>NR</td>
</tr>
<tr>
<td>47</td>
<td>Brain tumor</td>
<td>1 YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 NR</td>
<td>NR</td>
</tr>
<tr>
<td>48</td>
<td>Subdural hematoma</td>
<td>1 YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 NR</td>
<td>NR</td>
</tr>
<tr>
<td>49</td>
<td>Subarachnoid hemorrhage</td>
<td>1 YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 NR</td>
<td>NR</td>
</tr>
<tr>
<td>50</td>
<td>Severe metabolic disorder</td>
<td>1 YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>(SEE MANUAL FOR LIST OF DISORDERS)</td>
<td>2 NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 NR</td>
<td>NR</td>
</tr>
<tr>
<td>51</td>
<td>Trauma, seizure disorder, hypercoagulable state or hemorrhagic condition</td>
<td>1 YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 NR</td>
<td>NR</td>
</tr>
<tr>
<td>52</td>
<td>Another disease process, event, or peripheral lesion which might cause a focal neurological deficit</td>
<td>1 YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 NR</td>
<td>NR</td>
</tr>
</tbody>
</table>

*WHO/MNC/82.2 Appendix III Rev. 1 page 109*
53. Was there any evidence (e.g. history, physical, or laboratory) of an MI within 8 weeks prior to this admission or during this hospitalization?

1. YES, COMPLETE FORM 04
2. NO
3. NOT RECORDED

54. Was there a spinal tap?

1. YES
2. NO

55. What was the result of the spinal tap? (CHECK ONE)

1. CLEAR AND COLORLESS
2. BLOOD IN SPINAL TAP
3. "GROSSLY BLOODY"

56. Were there other abnormal CSF findings?

1. YES, specify
2. NO

57. Was there cerebral angiography?

1. YES
2. NO

58. Did it precede the neurological deficit?

1. YES
2. NO

59. By how many hours did the angiography precede the event? (CHECK ONE)

1. Less than 24 hours
2. Less than 48 hours
3. Less than 72 hours
4. 72 hours or more

60. Was there cardiac angiography?

1. YES
2. NO

61. Did it precede the neurological deficit?

1. YES
2. NO

62. By how many hours did the angiography precede the event? (CHECK ONE)

1. Less than 24 hours
2. Less than 48 hours
3. Less than 72 hours
4. 72 hours or more

63. Was there a radionuclide brain scan?

1. YES
2. NO
64. Was a Computerized Axial Tomography (CAT) Scan of the head completed during this hospitalization?

1 YES 46 2 NO 3 NOT RECORDED

ATTACH COPIES OF CAT SCANS

65. How many CAT Scans were completed during this hospitalization?

66. Was the first CAT Scan within 6 weeks after the event or after admission, whichever is later?

1 YES 2 NO 3 NOT RECORDED

67. If the patient died in hospital, was the first CAT Scan within 6 weeks before death?

1 YES 2 NO 3 PATIENT NOT RECORDED 4 NOT RECORDED

68. What was the date of the first CAT Scan?

MONTH / DAY / YEAR

69. What was the date of the last CAT Scan?

MONTH / DAY / YEAR

70. What did the CAT scan reports indicate?

A. FIRST CAT SCAN

First CAT Scan completed after symptom onset this admission

Report indicated definite or probable cerebral infarction or hemorrhage without other pathology

** Report indicated possible or equivocal cerebral infarction or hemorrhage only

Report indicated presence of brain tumor

Report indicated presence of subdural hematoma.

Report indicated presence of subarachnoid hemorrhage.

** Report indicated presence of other intracranial disease

Report indicated study was within normal limits

** Report cannot be classified as one of above by abstractor

B. LAST CAT SCAN

Last CAT Scan completed after symptom onset this admission

1 64

** IF YOUR ANSWER WILL INCLUDE THIS RESPONSE SEEK MD HELP IN COMPLETING Q. 70A OR 70B.

71. Reviewed by

MD ID#: 65

skip
STROKE
HOSPITAL ABSTRACT
FORM 06
CVA HOSPITAL ABSTRACT
STROKE
FORM 06

Q.1. Study I.D. Number
Attach study I.D. number label to cover sheet of Form 06.

2. Give a brief narrative description of the acute event that led to admission or occurred during this hospitalization. (Include time sequence and course of symptoms.)

(ATTACH COPY OF DISCHARGE/DEATH SUMMARY REPORT IF AVAILABLE)

PRE-ADMISSION HISTORY

3. Is there a history of a previous stroke?  

1 | YES  
2 | NO  
3 | NOT RECORDED

4. How long before admission was the last stroke? (CHECK ONE ONLY)

1 | Less than 3 weeks  
2 | 6 weeks or less  
3 | More than 6 weeks  
4 | NR

5. Was the patient hospitalized for this last stroke?  

1 | YES  
2 | NO  
3 | NOT RECORDED

6. Is there a history of previous hypertension?  

1 | YES  
2 | NO  
3 | NOT RECORDED

7. Is there a history of a previous TIA?  

1 | YES  
2 | NO  
3 | NOT RECORDED
8. Was this an elective admission?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>YES</td>
</tr>
<tr>
<td>2</td>
<td>NO</td>
</tr>
<tr>
<td>3</td>
<td>NOT RECORDED</td>
</tr>
</tbody>
</table>

9. What was the reason for this admission? (CHECK ALL THAT APPLY)

- a. Transfer from another hospital
- b. Cardiac angiography
- c. Cerebrovascular angiography
- d. Cerebrovascular surgery
- e. Other neurological problem
- f. Other non-neurological problem

**Q.2. Narrative**

The purpose of the narrative is to describe the specific circumstances surrounding the event that precipitated the patient's admission to the hospital. Using direct quotes from the hospital chart whenever possible, this description must include:

1. Speed of onset of the neurological deficit.
2. Time and date of onset.
3. Duration of the deficit
4. Any non-stroke cause for the deficit.

In addition, if you feel your responses to any of these questions misses an important aspect of the case, add this to the narrative. If the physician's discharge summary covers all of the above, it is still necessary to include items 1-4 above and attach copy of discharge death summary to form 06. If conflicting information is recorded in two or more of the sources, choose the information from the source according to the order listed below.

1. Resident/Intern
2. Attending Physician
3. Neurology Consultant
4. ER Physician
5. Nurse
6. Other (List medical students under "Other").

Focus on the speed of onset of the first "acute episode" of a neurological deficit to the hospital admission. Mention the neurological symptoms of weakness, clumsiness, paralysis, dimming or blurring of vision, slurred speech, dizziness, seizures, state of consciousness, but do not elaborate on these latter symptoms. Pertinent past historical information on physician's findings, tests, etc. prior to admission may be noted briefly. If there are several acute events, be sure to record information for each event.

**EXAMPLE:**

**Case History**

The patient is 60 years old with a history of hypertension and cardiac rhythm disturbances. He has had atrial fibrillation in the past but not in recent weeks. There is some mention second-hand information of a possible visual dimming although this was not clearly defined for today. The history is that of severe hypertension in addition to his cardiac
rhythm disturbances, but no history of prior CVAs. Yesterday he was found in the home with left-sided weakness and admitted in this state. It was not certain how long the patient was lying on the floor of his home. He had been well the evening before. It may have been hours or very suddenly.

An appropriate summary of the central points of our example case would include:

1. **Speed**: "He had been well the evening before." "Yesterday (11/7/80) he was found in the home with left-sided weakness and admitted in this state."
2. **Time and date of onset**: Sometime during night or morning before admission. "It may have been hours or very suddenly." Definitely less than 24 hours before admission (11/7/80).
3. **Duration of deficit**: Discharge summary (12/23/80) states "No real improvement in his neurological status". Essentially unchanged after 44 days of hospitalization.
4. **Any non-stroke cause for the deficit**: "He has had atrial fibrillation in the past but not in recent weeks."

### Q.3-18 Pre-Admission History

This information may be found in the history of the resident or intern, if any, the attending physician, the neurology consultant, the ER physician, nursing notes, medical students, in that order. "History" refers to information from the patient and his family.

**SYMPTOMS ARE COMPLAINTS EXPRESSED BY THE PATIENT OR RELAYED BY PATIENT'S FAMILY/FRIENDS. SIGNS ARE PHYSICAL FINDINGS THAT CAN BE OBSERVED BY A SECOND PARTY.**

#### Q.3. Is there a history of previous stroke?

This refers to events preceding the present acute illness and hospitalization. Synonyms for "stroke" may include some of the following: intracranial hemorrhage, cerebral thrombosis, cerebral artery occlusion, cerebral infarction, apoplexy, cerebrovascular accident, cerebral seizure, intracerebral hemorrhage, rupture of blood vessel in brain. Answer "Yes" if one or more of the sources listed above makes explicit mention of previous "stroke" (or synonym). Answer "No" if absence of stroke is explicitly mentioned. Otherwise, answer "NR". This information is needed to distinguish first events from recurrent events in subsequent data analysis. If answer to Q. 6 is "Yes", answer Q. 7 and Q. 8. If answer is "No" or "NR" go to Q.9.

#### Q.4-5 How long before admission was the last stroke?

If the phrase "old stroke" appears, but no specific date is given in the chart, check "More than 6 weeks". This information is needed to distinguish a new from a recurrent stroke. Check the lowest number possible.

#### Q.7. Is there a history of a previous TIA? (Transient ischemic attack)

Synonyms for "TIA" may include: acute cerebrovascular insufficiency, spasm of cerebral arteries, insufficiency of basilar, carotid, or vertebral arteries.
Q.8. Was this an elective admission?
   An elective admission is defined here as one that is scheduled in advance
   at the convenience of physician and patient, rather than an admission
   brought on urgently by the patient's acute symptoms. Generally, a
   non-elective admission will be through the ER or directly from a doctor's
   office. A transfer from another hospital is arbitrarily defined as elec-
   tive regardless of the circumstances. (In this case, mark 9a.)

Q.9. What was the reason for the admission?
   "Cardiac angiography" includes coronary arteriography and ventricu-
   lography. "Cerebrovascular angiography" includes the carotid arteries.

10. Were there new (within 6 weeks or since previous hospital discharge--whichever is shorter,) subjective neurological symptoms that led to this hospital admission or that occurred during this hospitalization? If the patient has been transferred from another acute care hospital, answer "NO", unless new symptoms developed during this admission.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Not recorded</td>
<td></td>
</tr>
</tbody>
</table>

Q.11. Was the onset of new symptoms during this admission?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td></td>
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</tbody>
</table>

Q.12. What were the patient's new symptoms? (CHECK ALL THAT APPLY)
   a. 1 | Weakness or clumsiness of face and/or limb(s) on one side of
   b. 1 | Difficulty speaking or understanding speech
   c. 1 | Visual disturbances
   d. 1 | Dizziness, unsteadiness of gait
   e. 1 | Seizures
   f. 1 | Prolonged unconsciousness (coma)
   g. 1 | Altered state of consciousness
   h. 1 | Brief unconsciousness (syncope or fainting)
   i. 1 | Other, (Specify)

Q.13. When did the above new symptoms begin?
   A. Date: MM DD YYYY
   B. Time: HH:MM

Q.10. Were there new (within 6 weeks or since previous hospital discharge, whichever is shorter,) subjective neurological symptoms that led to this hospital admission or that occurred during this hospitalization?
   This refers to subjective symptoms described by the patient, or observ-
   ations made by the family or a friend, if the patient was unable to talk.
   A transfer from another hospital is considered a discharge and read-
   mission. Thus, any symptoms occurring before discharge from prior hospi-
   talization would not be considered "new". For example, if a patient is
   transferred after admission to another hospital, answer "No" unless new
   symptoms developed during this admission.

Q.11-13. These questions refer only to new symptoms as defined in Q.10 instructions.
Q.12. What were the patient's new symptoms?
Check all boxes that apply to new patient symptoms prior to hospitalization (or first hospital physician's examination if in-hospital onset).

a. Weakness (unable to grasp firmly and hold onto items or walk as usual.)
   Clumsiness of face (drooping of mouth, eyelids, etc.)

b. Difficulty speaking (slurred or hesitant speech not normal to patient.)

c. Visual disturbance (blurred, double, loss of vision. Seeing objects, lights or other phenomena. Hallucinating.)

d. Dizziness (vertigo, lightheadedness. Room spinning possibly resulting in unsteady walk.)

e. Seizures (fit, or epileptic attack, uncontrollable movements of body, extremities with loss of consciousness.)

f. Prolonged unconsciousness (coma, any condition in which the patient cannot be aroused for more than approximately 5 minutes.)

g. Altered state of consciousness (disoriented to person, time or place. May include changes in personality.)

h. Brief unconsciousness (syncope, fainting, a period generally limited to less than 5 minutes.)

Q.13. When did the above new symptoms begin?
Fill in boxes with month, day, and year. Treat month, day, year as separate items. E.g., fill in year even if month and day not given. If there are multiple new symptoms, indicate the beginning of the first of the new symptoms.

<table>
<thead>
<tr>
<th>9</th>
<th>9</th>
<th>9</th>
<th>9</th>
<th>9</th>
<th>9</th>
<th>9</th>
<th>9</th>
</tr>
</thead>
</table>

B. What was the estimated time the symptoms began?
Fill in boxes with estimated time, using the 24-hour clock. If you are unable to estimate the time, fill in the boxes with 9's as shown above.

For patients whose neurological event began outside the hospital, indicate the duration from onset of new neurological symptoms to the hospital admission.

For patients whose event occurred in the hospital, indicate the time from onset to first physician examination.

14. Can you classify the duration from onset of new neurological symptoms according to the categories listed in Question 15?

1 | YES | 15. What was the length of the duration?
   (CHECK ONE)
   | 1 | Less than 24 hours | GO TO Q. 19 |
   | 2 | Less than 48 hours |
   | 3 | Less than 72 hours |
   | 4 | Less than 6 weeks |
   | 5 | 6 weeks or more |

16. Does the chart contain ANY information indicating the rate of development of new neurological symptoms?

1 | YES | 17. What was the rate of development?
   | 1 | Rapid (probably less than 48 hours) |
   | 2 | Not rapid (probably more than 48 hours) |

18. Specify wording used to indicate time.
Q.14-18. The purpose of these questions is to determine how rapidly the symptoms developed. Interval from onset of neurological symptoms to hospital admission (or to first physician examination if onset in hospital) is what we are looking for here. Since this interval is rarely given exactly in a chart, we are looking for the closest estimation possible.

Q.14. Can you classify the time from onset to hospital admission (or peak severity if in hospital) of neurological symptoms according to the categories listed in Q.15? If answer is "Yes" check appropriate box. If answer is "No", go to Q.16.

Q.15. What was the length of the duration (time from onset to admission)? Check appropriate box using the lowest number possible. Go to Q.19.

EXAMPLE (Symptoms):
History states: The patient is 60 years old with a history of hypertension and cardiac rhythm disturbances. He has had atrial fibrillation in the past but not in recent weeks. There is some mention second-hand information of a possible visual dimming although this was not clearly defined for today. The history is that of severe hypertension in addition to his cardiac rhythm disturbances, but no history of prior CVAs. Yesterday he was found in the home with left-sided weakness and admitted in this state. It was not certain how long the patient was lying on the floor of his home. He had been well the evening before. It may have been hours or very suddenly.

Answers to Q.10-15: 10. Yes
11. No
12. Check a. and c.
13A. NOT RECORDED
13B. NOT RECORDED
14. Yes
15. "Less than 24 hours"

Q.16. Does the chart contain ANY information indicating the duration (time of onset to admission) of the neurological symptoms? If you are unable to classify the length of time into one of the time frames given in Q.15, you might be able to pick out clues from the chart which tell you, in general terms, whether the time from peak to onset was rapid (probably less than 48 hours) or not rapid (probably more than 48 hours). If answer to Q.16 is "Yes" answer Q.17 and 18. If answer is "No" go to Q.19.

Q.18. Specify wording used to indicate time. Write down the exact words from the chart leading you to believe the symptoms were of rapid or not rapid onset.
19. Did a physician document a new localizing neurological deficit? (within 6 weeks or since previous hospital discharge, whichever is shorter) or did a CAT scan indicate definite or probable cerebral infarction or hemorrhage without other pathology?

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
<th>NR</th>
<th>GO TO PAGE 7, Q. 43</th>
</tr>
</thead>
</table>

20. Can you classify the length of time from symptom onset to physician exam in hospital according to the categories listed in Question 21?

21. What was the length of time from symptom onset?

<table>
<thead>
<tr>
<th></th>
<th>Less than 72 hours</th>
<th>Less than 3 weeks</th>
<th>Less than 6 weeks</th>
<th>6 weeks or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>YES</td>
<td>2 NO</td>
<td>3 NR</td>
<td></td>
</tr>
</tbody>
</table>

22. Does the chart contain any information indicating the length of time from symptom onset to physician exam?

23. What was the length of time from symptom onset?

<table>
<thead>
<tr>
<th></th>
<th>Probably less than 6 weeks</th>
<th>Probably 6 weeks or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>YES</td>
<td>2 NO</td>
</tr>
</tbody>
</table>

24. Specify wording used to indicate length of time

25. What was the conclusion from the pupil examination? (abnormal = "constricted" or "dilate or "unresponsive to light") (CHECK ONE)

<table>
<thead>
<tr>
<th></th>
<th>Both normal</th>
<th>One abnormal (anisocoria)</th>
<th>Both abnormal</th>
<th>Physician not sure/cannot determine</th>
<th>NOT EXAMINED (NR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>YES</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

26. What was the conclusion from the Plantar (Babinski) reflex examination? (Abnormal = "positive", "up-going toe", "extensor", or "present") (CHECK ONE)

<table>
<thead>
<tr>
<th></th>
<th>Normal both sides</th>
<th>Abnormal one side</th>
<th>Abnormal both sides</th>
<th>&quot;Equi vocal&quot; one or both sides</th>
<th>NOT EXAMINED (NR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>YES</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Q.19-42. These questions pertain to PHYSICIAN'S EXAM FINDINGS (not patient or family complaints) at the first physical examination performed in hospital after onset.

Q.19. Did a physician document a new (within 6 weeks or since previous hospital discharge—whichever is shorter) localizing neurological deficit? Obtain information from the first in-hospital physician's examination following onset, using the hierarchy on p. 1. If the onset of the neurological deficit occurred after admission, Q.19-42 should apply to the first examination after onset of symptoms.

This question deals with **objective signs** or findings observed by a physician.

An example of SIGNS: (The signs are underlined with referent questions numbers in parentheses.)

The patient since admission has been stable with **left-sided hemiplegia** (Q.28 a,c,e).

He was agitated last night and received Mellaril and he is quite lethargic this morning. (Q.27-3);

He has had blood pressure jumps up to 206/112 over the evening. Heparin has been started after I discussed the case with the resident on call who examined the patient.

The patient this morning on examination is lethargic, (Q.27-3) presumably from the effects of Mellaril as well as the stroke. He has conjugate eye deviation (Q.29e) towards the right although there is an occasional excursion of the left eye independently (Q.29e) toward the left side. Pupils are reactive at 3 mm (Q.25-1). The discs are seen on the left side and show no abnormalities. He has a left facial weakness (Q.28e). He does speak in sentences (Q.29a) and thinks he is in a foundry (Q.27-3) and is not oriented to the proper hospital. He obeys some simple commands. He does not move the left arm or leg (Q.28 a,c), but has poor insight into the reason for being in the hospital. The left Babinski sign is present (Q.26-2). He has visual field loss on the left (Q.29d) as judged from his eyes watching a flashing light. He ignores it in the left hemi field (Q.29). No bruits are heard in the carotid vessels. His heart rate now is regular sinus rhythm. No murmurs are heard in the heart.

Answers to Q. 19-29:

19. Yes
20. Yes
21. "Less than 72 hours"
25. "Both normal"
26. "Abnormal one side"

27. What was the patient's level of consciousness? (CHECK ONE)

1 [ ] Comatose (unresponsive to pain, voice, or other stimuli)
2 [ ] Unconscious but responsive to pain or other noxious stimuli
3 [ ] Conscious, but with abnormality of consciousness or orientation
4 [ ] Normal, conscious and oriented
5 [ ] NOT RECORDED
28. What were the motor function findings? Each item refers to the body region indicated or any parts thereof.

<table>
<thead>
<tr>
<th>Affected Region</th>
<th>UNAFFECTED (NORMAL)</th>
<th>AFFECTED, BUT CAN BE MOVED BY PATIENT</th>
<th>TOTALLY PARALYZED</th>
<th>NOT RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Arm</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Right Arm</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Left Leg</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Right Leg</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Left Face</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Right Face</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

29. Did the patient have any of the following neurological deficits? (SEE MANUAL FOR DETAIL): 

<table>
<thead>
<tr>
<th>Deficit</th>
<th>YES</th>
<th>NO</th>
<th>NOT RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aphasia</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Apraxia</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Dysarthria</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Visual field defects</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

specify:

27. "Conscious but with abnormality of consciousness"

28. a. 3.
   b. 1.
   c. 3.
   d. 1.
   e. 2.
   f. 1.

29. a. No.
   b. NOT RECORDED
   c. NOT RECORDED
   d. Yes
   e. Yes Specify: Not oriented to place. Poor insight into reason for being in hospital. Also, conjugate eye deviation with excursion of left eye independently.

Q.20-24. The purpose of these questions is to determine how long the subjective symptoms of a neurologic deficit were present prior to the first physician examination.

Q.22-23.

Does the chart contain any general information indicating the length of time from symptom onset to physician exam?

If you cannot answer Q.21 with the information provided in the chart, you might be able to pick out clues from the chart which indicate whether the onset of symptoms was RECENT (Probably less than 6 weeks) or OLD (probably more than 6 weeks).
### Q.24. Specify wording used to indicate length of time.

Write down exact words used in the chart that led you to the assumption either that symptoms were "probably less than six weeks" or "probably more than six weeks".

### Q.25-34. Babinski reflex (Abnormal = "positive", "up-going toe", "extensor", or "present"). Pupil examination (Abnormal = "constricted" or "dilated" or "unresponsive to light").

### Q.27. What was the patient's level of consciousness?

1. Comatose (unresponsive to pain, voice or any stimuli)
2. Unconscious but responsive to pain or other noxious stimuli
3. Conscious, but with abnormality of consciousness or orientation. This might be disorientation to person, place, or time; lethargy; or somnolence.
4. Normal, conscious and oriented to person, time and place.

If insufficient information is present to distinguish between comatose '1' and unconscious '2', and the patient clearly has more than a minor disturbance of consciousness, check '2'. Do not check 'NR'.

**EXAMPLE:**
A man is found unconscious and admitted to the hospital. He is described as not responding to voice, but his response to other stimuli is not noted. Thus, it is not possible to distinguish between coma '1' and unconscious '2', but is clearly not conscious '3' or '4'. So, the proper response is '2'. Unconscious, but responsive to pain or other noxious stimuli.

### Q.28. What were the motor function findings?

For comatose patients check "Totally paralyzed" (3).

Motor function is ability to move muscles. If "Paresis" is used, check '2', "Affected, but can be moved by patient". If "Plegia" is used, check '3', "Totally paralyzed".

### Q.29. Did the patient have any of the following neurological deficits?

#### 30. Was the patient's temperature recorded on this admission?

| 1 | YES  
| 2 | NO  

#### 31. What was this first temperature recorded in the hospital after onset of symptoms?

| 1 | °F  
| 2 | °C  

#### 32. How was this temperature obtained?

| 1 | Oral  
| 2 | Rectal  
| 3 | Axillary  
| 4 | Rectal  

#### 33. Was the blood pressure recorded on this admission (ER/WARD/ICU)?

| 1 | YES  
| 2 | NO  

#### 34. What was the first blood pressure reading recorded in the hospital after onset of symptoms?

| BP | SYSTOLIC  
|    | /  
|    | DIASTOLIC  

35. Can you CLASSIFY the duration of new objective findings of localizing neurological deficits according to the categories listed in Question 36?

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

36. What was the duration of the objective deficit from first physician documentation until last? (CHECK ONE)

<table>
<thead>
<tr>
<th></th>
<th>Less than 1 hour</th>
<th>Less than 24 hours</th>
<th>Less than 48 hours</th>
<th>Less than 72 hours</th>
<th>72 hours or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

GO TO Q. 37

37. Does the chart contain any information indicating duration of deficit or coma?

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

38. What was the duration?

<table>
<thead>
<tr>
<th></th>
<th>Transient (probably 24 hours or less)</th>
<th>Prolonged (probably more than 24 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

39. Specify wording used to indicate duration.

40. Was the patient discharged alive?

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GO TO QUESTION 43

41. Did death occur within 6 weeks of first documentation of deficit?

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

42. What was the duration from first physician documentation to death? (CHECK ONE)

<table>
<thead>
<tr>
<th></th>
<th>Less than 24 hours</th>
<th>Less than 48 hours</th>
<th>Less than 72 hours</th>
<th>72 hours or more</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Visual field defects involve the inability to perceive an object which would be visible if visual fields were normal.

(See Neurology Terms sheet for definitions for a. - c.)

Q.30-34. Record first temperature and blood pressure taken during this admission following onset of symptoms. Assume oral temperature if not designated otherwise.

Q.35. Can you CLASSIFY the duration of new objective findings of localizing neurological deficits according to the categories listed in Q.37? The purpose of this question is to determine, as accurately as possible, the duration of the deficit. Precise durations usually will not be present but we need your best estimate.
Q.38. What was the duration?
If the chart does not supply information adequate to select one of the
time frames given in Q.36, you might be able to determine, if the duration
was TRANSIENT or PROLONGED. TRANSIENT is defined as 'probably 24 hours or
less' PROLONGED is defined as 'probably more than 24 hours'.

Q.39. Specify wording used to indicate duration.
Write down the exact words used in the chart that led you to the assump-
tion that the duration was TRANSIENT or PROLONGED.

Q.40. If patient was alive at discharge, go to Q.43.

Q.41 Did death occur within 6 weeks of first documentation of deficit?
If the patient died in the hospital, did death occur within 6 weeks of
first objective physician documentation of deficit? This question only
applies if the patient died in the hospital.
## History or Findings During Hospitalization

### A. Was there:

<table>
<thead>
<tr>
<th>Condition</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrial fibrillation or flutter</td>
<td>YES</td>
<td>NO</td>
<td>NR</td>
</tr>
<tr>
<td>Mitral stenosis?</td>
<td>YES</td>
<td>NO</td>
<td>NR</td>
</tr>
<tr>
<td>Intracardiac thrombus or intra-cardiac tumor (myxoma)</td>
<td>YES</td>
<td>NO</td>
<td>NR</td>
</tr>
<tr>
<td>Systemic emboli</td>
<td>YES</td>
<td>NO</td>
<td>NR</td>
</tr>
<tr>
<td>Brain tumor</td>
<td>YES</td>
<td>NO</td>
<td>NR</td>
</tr>
<tr>
<td>Subdural hematoma</td>
<td>YES</td>
<td>NO</td>
<td>NR</td>
</tr>
<tr>
<td>Subarachnoid hemorrhage</td>
<td>YES</td>
<td>NO</td>
<td>NR</td>
</tr>
<tr>
<td>Severe metabolic disorder</td>
<td>YES</td>
<td>NO</td>
<td>NR</td>
</tr>
<tr>
<td>Trauma, seizure disorder, hypercoagulable state or hemorrhagic condition</td>
<td>YES</td>
<td>NO</td>
<td>NR</td>
</tr>
<tr>
<td>Another disease process, event, or peripheral lesion which might cause a focal neurological deficit</td>
<td>YES</td>
<td>NO</td>
<td>NR</td>
</tr>
</tbody>
</table>

### B. Was it present during this admission?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>NO</td>
<td>NR</td>
</tr>
</tbody>
</table>

### C. Specify condition and/or how it was documented

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
Q.43-53. Pertain to HISTORY OR FINDINGS DURING HOSPITALIZATION.

These questions attempt to detect non-cerebral thrombosis and hemorrhage causes of neurological deficits. Whenever the question "Was it present during this admission?" is asked, check appropriate box and go on to next appropriate questions. For the questions "How was it documented?" record specific information from chart indicating presence of the condition during the current admission.

EXAMPLES:
ECG report said "atrial fibrillation". (Q.43.C.)
MD says "murmur of mitral stenosis on physical exam". (Q.44.C.)

If not mentioned in physical exam by physician, check "NR".

Q.46. Were there systemic emboli?
Systemic emboli are emboli to the systemic arterial circulation, i.e., limbs, brain, kidney; they are to be distinguished from pulmonary emboli, which go to pulmonary circulation i.e., lungs only. So a renal embolus, or a femoral artery embolus is a systemic embolus. The origin of systemic emboli may be the heart. If a "paradoxical embolus" (a systemic embolus arising "paradoxically" from the systemic veins and travelling through a septal defect in the heart) is noted in the chart, check Q.46 "Yes".

Q.47. Was there a brain tumor?
Synonyms include neoplasm of brain, glioma, meningioma, pituitary adenoma, metastasis to brain.

Q.48. Was there a subdural hematoma?
A synonym would be a subdural hemorrhage. Note: Extradural or epidural hemorrhage should be indicated in Question 51. These are usually acute and associated with trauma.

Q.49. Was there a subarachnoid hemorrhage?
Synonyms include meningeval hemorrhage, ruptured berry aneurysm, ruptured (congenital) cerebral aneurysm.

Q.50. Was there a severe metabolic disorder? (SEE MANUAL FOR LIST OF DISORDERS).
Check "Yes" only if disorder was severe enough to cause altered consciousness, unconsciousness or coma. Examples of a severe disorder would include diabetes (with hyperglycemia, hypoglycemia, or abnormal blood sugar), renal failure, septicemia, hypocalcemia, hypercalcemia, hypomagnesemia, hypokalemia, or hypothyroidism. Metabolic disorders resembling strokes with coma could include acute drug intoxications or overdoses with barbituates, tranquilizers, pain killers, narcotics, etc., prolonged hyperglycemia in a diabetic on insulin, terminal kidney failure, etc.
Q.51. Was there trauma, seizure disorder, hypercoagulable state, or hemorrhagic disorder?
Examples of trauma include disc disease, carpal tunnel syndrome, compartment syndrome, lumbar strain, or blunt trauma to the head, spinal column. Hypercoagulable states would include promyelocytic leukemia or other blood conditions specifically termed hypercoagulable by a physician. Hemorrhagic conditions could include therapeutic overdose of anticoagulant drugs such as heparin, coumadin, warfarin, antplatelet drugs; blood diseases leading to defects in blood clotting such as thrombocytopenia, leukemia, aplastic anemia; liver disease, Vitamin K deficiency and anticoagulation therapy. Hemorrhagic conditions may also be side effects of the use of anticancer drugs which destroy the bone marrow. You may also see the term "hemorrhagic diathesis" which means a tendency to bleed. Examples of seizure disorders would be epilepsy or myoclonus, tonic-clonic seizures, petit mal or grand mal seizures. Toxin exposures including fumes, chemicals, or poisonous plants would also fit this category. Any co-existing chronic life-threatening condition that the patient may have should be listed if a stroke occurs in this setting.

Q.52. Was there a disease process, event or peripheral lesion present which might cause a focal neurological deficit?
Examples of a disease process are sarcoidosis, vasculitis, Parkinsonism, hemiballismus, rheumatic fever, meningitis, encephalitis, Guillain-Barre syndrome, multiple sclerosis, amyotrophic lateral sclerosis, polyarteritis nodosa. Examples of peripheral neuropathy include Bell's Palsy, Erb's Palsy, ulnar palsy, fractures, injury or tumor affecting the peripheral nervous system.

53. Was there any evidence (e.g. history, physical, or laboratory) of an MI within 8 weeks prior to this admission or during this hospitalization?
1 [ ] YES, COMPLETE FORM 04
2 [ ] NO
3 [ ] NOT RECORDED

54. Was there a spinal tap?
1 [ ] YES
2 [ ] NO

55. What was the result of the spinal tap? (CHECK ONE)
1 [ ] CLEAR AND COLORLESS
2 [ ] BLOOD IN SPINAL TAP
3 [ ] "GROSSLY BLOODY"

56. Were there other abnormal CSF findings?
1 [ ] YES, specify
2 [ ] NO
3 [ ] NOT RECORDED
57. Was there cerebral angiography?

<table>
<thead>
<tr>
<th>1</th>
<th>YES</th>
<th>58. Did it precede the neurological deficit?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>NO</td>
<td>1</td>
</tr>
</tbody>
</table>

59. By how many hours did the angiography precede the event? (CHECK ONE)

- 1 | Less than 24 hours
- 2 | Less than 48 hours
- 3 | Less than 72 hours
- 4 | 72 hours or more

60. Was there cardiac angiography?

<table>
<thead>
<tr>
<th>1</th>
<th>YES</th>
<th>61. Did it precede the neurological deficit?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>NO</td>
<td>1</td>
</tr>
</tbody>
</table>

62. By how many hours did the angiography precede the event? (CHECK ONE)

- 1 | Less than 24 hours
- 2 | Less than 48 hours
- 3 | Less than 72 hours
- 4 | 72 hours or more

63. Was there a radionuclide brain scan?

<table>
<thead>
<tr>
<th>1</th>
<th>YES</th>
<th>64. ATTACH COPIES OF TEST REPORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>NO</td>
<td></td>
</tr>
</tbody>
</table>

Q.54. Was there a spinal tap?

A synonym for “spinal tap” may be Lumbar Puncture (LP). Spinal tap results will usually be recorded in the progress notes, but in some hospitals may be on a separate sheet. Results of spinal fluid analysis often appear in the laboratory sheets. If there is no indication of a spinal tap, check “No” or “NA” and go to Q.57.

Q.55. What was the result of the spinal tap? (CHECK ONE).

This question deals with the findings of the CSF (cerebral spinal fluid). The purpose of this question is to obtain information about non-stroke conditions and about cerebral hemorrhage. If more than one tube of fluid was obtained, report findings of last tube. If more than one finding is reported, use the first one done. If more than 5 boxes are used, check grossly bloody (Form 06, Q.55-3).

Normal cerebrospinal fluid (CSF) is clear and colorless with no RBC or PMN and < 3 lymphocytes. If Q.54 is “Yes”, answer Q.55. Xanthochromic means “yellowish in color.” “Traumatic tap” results in blood from surrounding tissues contaminating the sample. Check “Other” and specify if these words were used.
Q.57. Was there cerebral angiography?
Attach copies of reports. Synonyms for "cerebral angiography" may include:
cerebral arteriogram, carotid angiogram/arteriogram, vertebral or basilar or posterior circulation angiogram/arteriogram, and four vessel study.

Q.60. Was there cardiac angiography?
Attach copies of reports. Synonyms include arteriography or aortic arch, angiocardiography, coronary arteriography, pulmonary angiography.

Q.63. Was there a brain scan?
Synonyms for "brain scan" that we may see include: Radionuclide brain scan, Technetium brain scan, Perfusion brain scan, Isotope brain scan, Isotope flow studies, and Nuclear flow studies. Attach copy of report.

64. Was a Computerized Axial Tomography (CAT) Scan of the head completed during this hospitalization?

1 [ ] YES 2 [ ] NO 3 [ ] NOT RECORDEDEND OF QUESTIONNAIRE

ATTACH COPIES OF CAT SCANS

65. How many CAT Scans were completed during this hospitalization?

66. Was the first CAT Scan within 6 weeks after the event or after admission, whichever is later?

1 [ ] YES 2 [ ] NO 3 [ ] NOT RECORDED

67. If the patient died in hospital, was the first CAT Scan within 6 weeks before death?

1 [ ] YES 2 [ ] NO 3 [ ] NOT RECORDED
68. What was the date of the first CAT Scan?

MONTH / DAY / YEAR

69. What was the date of the last CAT Scan?

MONTH / DAY / YEAR

70. What did the CAT scan reports indicate?

A. FIRST CAT SCAN

First CAT Scan completed after symptom onset this admission?

- Report indicated definite or probable cerebral infarction or hemorrhage without other pathology

- Report indicated possible or equivocal cerebral infarction or hemorrhage only

- Report indicated presence of brain tumor.

- Report indicated presence of subdural hematoma.

- Report indicated presence of subarachnoid hemorrhage.

B. LAST CAT SCAN

Last CAT Scan completed after symptom onset this admission.

- Report indicated definite or probable cerebral infarction or hemorrhage without other pathology

- Report indicated possible or equivocal cerebral infarction or hemorrhage only

- Report indicated presence of brain tumor.

- Report indicated presence of subdural hematoma.

- Report indicated presence of subarachnoid hemorrhage.

- Report indicated presence of other intracranial disease

- Report indicated study was within normal limits.

- Report cannot be classified as one of above by abstractor.

** IF YOUR ANSWER WILL INCLUDE THIS RESPONSE SEEK MD HELP IN COMPLETING Q. 70A OR 70B.

Q.64. Was a Computerized Axial Tomography (CAT) Scan of the head completed during this hospitalization?

EMI and ACTA are synonyms for CAT scan. If answer is "Yes", answer Q.65-70.B. If answer is "NO" or "NR", END OF QUESTIONNAIRE.

Q.65. How many CAT Scans were completed during this hospitalization?

Fill in the appropriate number. (99 = NR)

NOTE: Attach copies of CAT scans.

Q.70. What did the first CAT Scan completed after symptom onset during this admission indicate? (CHECK TO SEE THAT Q.20-39 ARE COMPLETED EVEN IF THERE WAS NO PHYSICIAN DOCUMENTATION OF A NEW LOCALIZING NEUROLOGICAL DEFICIT.)

The abstractor is to read the CAT Scan report(s) and assign one or more of the 8 categories listed. If you check starred responses (boxes 2, 6 or 8) seek M.D. assistance to complete Q.70.A/B. Possible synonyms for "cerebral infarction" are as follows: cerebral ischemic lesion, ischemic infarct, cerebral thrombosis, cerebral artery occlusion. Possible synonyms for "cerebral hemorrhage" are as follows: hemorrhage: basilar, bulbar, cerebellar, cerebral, cerebromeningeal, cortical, internal capsule, intrapontine, pontine, subcortical, or ventricular hemorrhage; rupture of blood vessel in brain.
NEUROLOGY TERMS

Acalculia: loss of ability to do math reckoning

Adiadochokinesia: inability to perform rapidly alternating movements

Agraphia: inability to write

Alexia or Visual aphasia: loss of ability to understand written word
  auditory - lack of comprehension of spoken word
  jargon or paraphasia - words may be fluent but inappropriate
  amnesic - loss of memory of special words with hesitant and
  fragmentary speed
  nominal aphasia (anomia, dysnomia) - loss of ability to name objects
  semantic aphasia - loss of meaning of words
  syntactic aphasia - loss of correct grammatical construction

Analgesia: loss of pain

Anisocoria: inequality of the diameter of pupils

Anopsia: disuse of vision (does not include blindness or weak sight)

Anosmia: loss of smell

Aphasia: inability to express oneself properly through speech or loss of verbal
  comprehension

Apraxia: Inability to perform certain movements without loss of motor power,
  sensation, or coordination

Astereognosis: loss of ability to recognize common objects by touching
  and handling them with eyes closed

Ataxia: muscular incoordination, especially when voluntary muscular movements
  are attempted

Babinski reflex: on plantar stimulation large toe extends upward on
  involved side

Ballism: wild, flinging movements of limbs

Bruit: blowing sound over aneurysm or murmur

Bulbar palsy: involvement of brain stem

Choreiform movements: quick, jerky, purposeless, unsustained involuntary
  movements jumping from 1 muscle group to another
  (gen. limbs and face) chorea-like

Choroid plexus: tuft of dilated vessels which project into ventricles;
  forms spinal fluid

Clonus: spasm with rapidly alternating rigidity, relaxation

Conjugate movement: extraocular muscles participate in binocular move-
  ment with precise integration of movement of 2 eyes

CSF: cerebrospinal fluid
Diplopia: double vision
Dizziness: sensation of unsteadiness with feeling of movement in head
Dysaphia: dullness of the sense of touch
Dysarthria: difficult and defective speech due to impairment of the tongue or other muscles essential to speech
Dysesthesia: spontaneously occurring unpleasant cutaneous sensation (burn, tickle, etc.)
Dysphagia: difficulty in swallowing
Dysphonia: difficulty with phonation
Dysstasia: difficulty in standing
Dyssynergia: failure of muscular coordination
Dystaxia: partial ataxia
Dystonia: slow, long sustained twisting activity - gen. of trunk
EOH: extraocular musculature
Fasciculations: irregular, inconstant, isolated contractions of fiber bundles within a muscle
Flaccid: weak, lax, soft
Hemiparesis: involving half of body (weakness)
Hemiplegia: paralysis half side of body
Hoffman sign: finger reflex - contraction of thumb and/or fingers when distant phalanx of middle finger (hand prone and relaxed) forcibly flexed by examiner
Holme's sign: excessive flexion rebound after muscle extension pressure released
Homonymous hemianopsia: impairment of half field of vision on lesion side
Homonymous hemianopsia: impairment of half field of vision of each eye on side opposite lesion
Hypalgesia: decreased pain, diminished sensitivity to pain
Hypesthesia: decreased tactile sensibility
Ipsilateral: situation on or pertaining to same side
LP: lumbar puncture
NAE: moves all extremities
Meninges: membranes covering brain
Meninges: membranes covering brain
dura - thick outer layer
pia - innermost layer - wrapped around brain
arachnoid - middle membrane - vascular layer
Nyoclonus: clonic spasm of muscle or group of muscles

Nyotonus: persistence of muscle contraction after stimulation has ceased

Neurological deficit: the absence of normal functioning of any nerve pathway, motor or sensory (Focal neurological deficit applies only if the deficit is one-sided and localized (confined to one side, one extremity, or one organ system)

Nystagmus: oscillating movements of the eye

Oriented X3: oriented to person, time, place

Paraplegia: paralysis of legs and lower part of body – both in motion and sensation

Paresthesia: unpleasant cutaneous sensation resulting from contact with object

Parosmia: any disease or perversion of the sense of smell

PERL: pupils equal, react to light

PM&R: physical medicine and rehab

Proprioception: deep sensation

Ptosis: dropping of upper eyelid

Quadriplegia: paralysis of all four limbs

Reflexes:

- N = normal reaction
- 1+ = slightly hyperactive
- 2+ = markedly increased unsustained clonus
- 3+ = one that shows sustained clonus
- 1- = reflex slightly decreased
- 2- = reflex markedly decreased
- 3- = reflex absent except on reinforcement
- 0 = reflex cannot be obtained at all

Romberg sign: patient unable to stand with feet placed close together and eyes closed

Scotoma: a blind or partially blind area in visual field

Scotomata: optic nerve lesion producing impaired vision in one eye only

Snout reflex: mouth puckers when chin tapped

Spastic: muscles stiff, movements awkward (of the nature of or characterized by spasm)

Syncope: faint, swoon

Synergistic: working together

Tic douloureux: triracial neuralgia

Tinnitus: ringing sound in ear
Trapezius: shoulder muscles

Tremors: involuntary movements resulting in rhythmic movement of a joint

Triplegia: hemiplegia with paralysis of one limb on opposite side

Vertigo: abnormal sense of movement

Visual field: the area within which objects may be seen when the eye is fixed. See homonymous hemianopsia, synonym. Visual field cut.
1. Study I.D. Number: Attach label here.
2. Report Status: Check appropriate box.
3-8. Cerebral Disease: Check appropriate box.

Q.3. Answer "yes" if the autopsy report states that there was a "recent" cerebral infarct or if it specifies 6 weeks or less prior to death. Answer "no" if the autopsy includes the head but does not specify a recent infarct. Answer "NR" if the head was not autopsied. HOWEVER, if the autopsy states that the infarct was caused by an embolism, Q.3 should be answered "no" and Q.6 "Yes".

Q.4. Answer "yes" if the autopsy states that there was a "recent" cerebral hemorrhage or if it specifies 6 weeks or less prior to death. Answer "no" if the autopsy includes the head, but does not specify a recent hemorrhage. Answer "NR" if the head was not autopsied.

Q.5. This includes "old" CI and CH or events specified to have occurred more than 6 weeks prior to death.

Q.6. Some of the items to be included under "Yes" are subarachnoid hemorrhage; atherosclerosis of cerebral arteries; atherosclerosis of pre-cerebral arteries, carotid arteries, or vertebral arteries; and cerebral infarct due to embolism as mentioned under Q.3.

Q.7. Self-explanatory.

Q.8. Examples are cerebral degeneration, atrophy, Alzheimer's disease, etc.

23. Operations and Procedures Codes Fill in as listed on the face sheet or discharge summary. See instructions for Form O2, Q.22.

24. Patient Status on Discharge Check appropriate box. If dead, attach autopsy report abstract (if autopsy was performed) and answer Form O2, Q.25.

25. Did the patient die in the emergency room? Check the appropriate box.
FORM 03
DEATH
CERTIFICATE
ABSTRACT

1a. Study I.D. Number Label:
   Attach label to form.

1b. Abstractor Personal Code Number:
   Fill in Abstractor Personal Code Number.

2. Death Certificate I.D. Number:
   Refer to top right-hand corner of death certificate. Fill in digits
   from left to right, starting with first box on left. The first three
digits of every number must be "122" (Minnesota State code). The fourth
and fifth digits are for year or death. The remaining six digits are the
certificate identifier.

3. County of Death:
   See County Code List.

4. Date of Death:
   Record month, day and year of death. Use "leading zeroes" if necessary.
   Refer to top line of death certificate.

5. Time of Death:
   Refer to either 23a or 23b on death certificate. If this time is
   marked as "found", fill in 9999. Time should be recorded according to the
   24-hour clock. If the time given on the certificate is from the 12-hour
clock, it should be converted to the 24-hour clock.

   EXAMPLE: 0100 = 1 a.m. 1200 = noon 1300 = 1:00 p.m.
   0200 = 2 a.m. 1230 = 12:30 p.m. 2400 = midnight

6. Check appropriate box. Refer to 7d on death certificate for this
   information. Answer "Yes" if person was DOA at the hospital.

7-8. Primary/Secondary Causes of Death:
   Record the nosologist's red code numbers from the death certificate in
   the appropriate boxes. The underlined code number is the primary cause of
death to be recorded in boxes for Q.7. Secondary causes of death are to
   be recorded in boxes for Q.8.

9. Check appropriate box.

10. Check appropriate box.

11. Check appropriate box. Refer to 21a. on death certificate.

12. Death Certified by:
    A signature under 23c. on the death certificate is the physician.
    (Check box #1). A signature under 23d. is the medical examiner or
    coroner. (Check box #2).
NOTE: A Form 41 must be completed by a physician for any Form 04 having photocopies of chest X-rays and/or coronary angiograms attached to it. It is the abstractor's responsibility to attach the appropriate study label to Form 41 and forward Form 41 along with photocopies of chest X-rays and/or coronary angiograms to the appropriate LPH physician for completion. When Form 41 is completed, the abstractor is to forward Form 04, Form 41 and Form 40 as a complete set to data processing.
DEATH CERTIFICATE ABSTRACT

1. ID LABEL

2. DEATH CERTIFICATE ID NUMBER

3. Date of Death:
   MONTH / DAY / YEAR

4. Time of Death:
   24 hour clock

5. Death certified by:
   1 ☐ Physician
   2 ☐ Medical Examiner
   3 ☐ Coroner
   4 ☐ NOT RECORDED

6. County of Residence:

7. Where was the death certificate completed:
   1 ☐ Minnesota
   2 ☐ Another state
   3 ☐ Another country
   4 ☐ NOT RECORDED

8. Where did the patient die:
   1 ☐ Dead on Arrival
   2 ☐ Hospital
   3 ☐ Nursing Home
   4 ☐ Other institution
   5 ☐ Home
   6 ☐ Other, specify________________________
   7 ☐ NOT RECORDED

9. Was an autopsy performed?
   1 ☐ YES ➔ GO TO Q. 10
   2 ☐ NO ➔ FINISHED
   3 ☐ NOT RECORDED

10. UNDERLYING CAUSE OF DEATH
    a. ____________________________
    b. ____________________________
    c. ____________________________

11. SECONDARY CAUSES OF DEATH
    a. ____________________________
    b. ____________________________
    c. ____________________________

12. Were there more than three secondary causes of death listed?
    1 ☐ YES  2 ☐ NO  3 ☐ NOT RECORDED IN CHART

[Form Fields]

[Form Title]

CUT-OF-HOSPITAL DEATH
PHYSICIAN INFORMATION FORM

I.D. Number

Case Source

DECEDENT'S NAME __________________________ Date of Birth ____________

Date of Death ______________ Age __________

Address __________________________ City ______________

PHYSICIANS'S NAME __________________________ Phone ______________

DATE OF FORM COMPLETION ______________________ (mo/day/yr)

1. How long before death did you last see the decedent? ______________

2. Did you witness the death?
   __ No
   __ Yes - If yes, what were the circumstances? Specifically, did the decedent have any symptoms prior to death and for how long/ (e.g. dyspnea, 30 minutes)

3. Did the decedent have any of the following?

<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th>NO</th>
<th>YES</th>
<th>MONTH</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary Heart disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td></td>
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<tr>
<td>Angina pectoris</td>
<td></td>
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<tr>
<td>Other cardiovascular disease</td>
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<tr>
<td>Specify:</td>
<td></td>
<td></td>
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<tr>
<td>Hypertension</td>
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<tr>
<td>Cerebrovascular disease</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cerebrovascular accident</td>
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</tr>
</tbody>
</table>

LPH-MUMP (07/1/80) 10-1
I.D. Number

<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th>NO</th>
<th>YES</th>
<th>MONTH</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transient ischemic attack</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td></td>
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<tr>
<td>Cancer (specify site)</td>
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<tr>
<td>Chronic bronchitis or emphysema</td>
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<tr>
<td>Cirrhosis or alcohol problem</td>
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<tr>
<td>Mental illness</td>
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<tr>
<td>Other fatal or serious condition</td>
<td></td>
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</tbody>
</table>

4. Was this patient being treated for an illness during the 30 days prior to death?
   ___ No
   ___ Yes - specify __________________________________________
   ___ Unknown

5. Was this patient taking any medications during the 30 days prior to his/her death?
   ___ No
   ___ Yes
   ___ Unknown

If yes, please check those which apply below:
   ___ Digitalis   ___ Nitroglycerin    ___ Antihypertensives
   ___ Diuretics   ___ Sedatives       ___ Other, specify
FINAL INTERVIEW STATUS

1. Completed Interview
2. Interview Refused
3. Not able to contact

MIDWEST HEART SURVEY
FAMILY INTERVIEW INFORMATION
MORTALITY SURVEILLANCE

DATE LETTER SENT TO INFORMANT

MONTH / DAY / YEAR

INTERVIEW SCHEDULED FOR:

MONTH / DAY / YEAR

1. IN PERSON
2. TELEPHONE

INTERVIEW COMPLETED:

MONTH / DAY / YEAR

1. IN PERSON
2. TELEPHONE

Time Interview begun:

Time Interview ended:

CALL RECORD

<table>
<thead>
<tr>
<th>DAY</th>
<th>DATE</th>
<th>TIME</th>
<th>COMMENTS</th>
<th>INT'W ID#</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

LPH/MMH-MORB 009(1-12) 8/82 Ver. 1
1. DEATH CERTIFICATE NUMBER

<table>
<thead>
<tr>
<th>ID LABEL</th>
</tr>
</thead>
</table>

2. NAME OF DECEASED

<table>
<thead>
<tr>
<th>Title</th>
<th>First Name</th>
<th>MI</th>
<th>Last Name</th>
</tr>
</thead>
</table>

3. LAST KNOWN ADDRESS:

<table>
<thead>
<tr>
<th>Address</th>
<th>City/State</th>
<th>Zip Code</th>
</tr>
</thead>
</table>

4a. Date of Death

<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>Year</th>
</tr>
</thead>
</table>

4b. Time of Death

<table>
<thead>
<tr>
<th>AM</th>
<th>PM</th>
</tr>
</thead>
</table>

5. NAME OF RESPONDENT

<table>
<thead>
<tr>
<th>Title</th>
<th>First Name</th>
<th>MI</th>
<th>Last Name</th>
</tr>
</thead>
</table>

6. ADDRESS:

<table>
<thead>
<tr>
<th>Address</th>
<th>City/State</th>
<th>Zip Code</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Area Code</th>
<th>Telephone Number</th>
</tr>
</thead>
</table>

7. Relationship to deceased:

1. Spouse
2. Child
3. Other relative
4. Other, specify ______________

LPH/MHP-MORB 009(2-12) 8/82 Ver. 1
FAMILY INTERVIEW INFORMATION

This is ____________ calling from the University of Minnesota about the letter that you received from us concerning our heart disease and stroke study. We'd like to get some more information concerning the illness and death of ____________. This involves a 15 to 30 minute interview over the phone, now if you have time, or would another time be better? Could you start by telling me if he/she had a long-term illness, or was the death a very sudden event?

(This question will usually start the informant giving the series of events. Be sure to get dates of the events and a timetable for the day of death).

OTHER PROBES MIGHT INCLUDE: Could you tell me something about the changes in ____________'s condition which led to his/her death? What occurred that indicated that something was seriously wrong?

NARRATIVE:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

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________________________________________________________________________

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________________________________________________________________________

LPH/MHHP-MORE 009(3-12) 8/82 Ver. 1
Thank you very much. This information you've given me will be very helpful. Now I would like to ask some specific questions. Some of them may cover information we've already touched on, but I have to make sure I have the exact information our researchers need.

8. Was someone with ______ when (he/she) died or was (he/she) found dead?

   1 [ ] Someone present
   2 [ ] Found dead
   3 [ ] DK

   Go to Q.32

9. Were you present when ______ died?

   1 [ ] Yes — go to question 14
   2 [ ] NO

10. Who was the person who was present when ______ died?

    Name
    Address

    RELATIONSHIP TO DECEASED, e.g., sister, policeman, etc.

   go to question 13

11. Who was the last person to see ______ alive?

    1 [ ] respondent
    2 [ ] other
    3 [ ] DK

12. How long before ______ was found dead did this person see him/her?

   (CLASSIFY BY CHOOSING UPPER TIME PERIOD IF RANGE GIVEN)
   1 [ ] within 1 hour prior to being found dead (< 1 hr.)
   2 [ ] within 24 hours (< 24 hrs.)
   3 [ ] more than 24 hours (>24 hrs.)
   4 [ ] DK

   go to question 13
13. When did you last see ______ alive? (CLASSIFY BY CHOOSING UPPER TIME PERIOD IF RANGE GIVEN)

1. [ ] within 1 hour prior to death/being found dead (≤ 1 hr.)
2. [ ] within 24 hours prior to death/being found dead (≤ 24 hrs.)
3. [ ] more than 24 hours prior to death/being found dead (> 24 hrs.)
4. [ ] DK

14. Was ______ conscious and able to communicate at any time... (CLASSIFY BY CHOOSING UPPER TIME PERIOD IF RANGE GIVEN)

1. [ ] within 1 hour prior to death (≤ 1 hr.)
2. [ ] within 24 hours prior to death (≤ 24 hrs.)
3. [ ] No, continuously unconscious for more than 24 hours prior to death (> 24 hrs.)
4. [ ] DK

Next we would like to ask you about some specific conditions or symptoms that ______ may or may not have experienced around the time of death. By a symptom we mean a feeling or occurrence so strong that it makes an individual stop or change what (he/she) is doing. Sometimes ill people have symptoms, sometimes they don't. By "around the time of death" we mean the period after which ______ first seemed to become ill and never returned to his/her usual state of health. I want to ask you about ______'s experience.

Did ______ develop any (symptom) to the extent that (he/she) had to stop or change what (he/she) was doing?

<table>
<thead>
<tr>
<th>A. Symptoms at the time of death:</th>
<th>B. Was the symptom:</th>
<th>C. How long prior to (death/being found dead) did (symptom) make an individual stop or change (his/her) activities?</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Chest pain or discomfort</td>
<td>1 Yes</td>
<td>1 [ ] &lt; 5 minutes</td>
</tr>
<tr>
<td></td>
<td>2 No</td>
<td>2 [ ] &lt; 1 hr</td>
</tr>
<tr>
<td></td>
<td>3 DK</td>
<td>3 [ ] &lt; 24 hrs</td>
</tr>
<tr>
<td>D. How did ______'s behavior change</td>
<td>4 [ ] &gt; 24 hrs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 DK</td>
<td></td>
</tr>
</tbody>
</table>

| 16. Pressure on chest            | 1 Yes               | 1 [ ] < 5 minutes                                                                                                    |
|                                   | 2 No                | 2 [ ] < 1 hr                                                                                                        |
|                                   | 3 DK                | 3 [ ] < 24 hrs                                                                                                       |
| D. How did ______'s behavior change | 4 [ ] > 24 hrs.     |                                                                                                                       |
|                                   | 5 DK                |                                                                                                                       |
Did develop any (symptom) to the extent that (he/she) had to stop or change what (he/she) was doing?

### A. Symptoms at the time of death:

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Yes</th>
<th>No</th>
<th>New</th>
<th>DK</th>
<th>Something he/she had had before</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shortness of breath</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td>2</td>
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<tr>
<td></td>
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<td></td>
<td>3</td>
</tr>
</tbody>
</table>

### B. Was the symptom (his/her) activities?

<table>
<thead>
<tr>
<th>Yes</th>
<th>New</th>
<th>&lt; 5 minutes</th>
<th>≤ 1 hr.</th>
<th>≤ 24 hrs.</th>
<th>&gt; 24 hrs.</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
</tbody>
</table>

### C. How long prior to (death/being found dead) did (symptom) make stop or change (his/her) activities?

<table>
<thead>
<tr>
<th>&lt; 5 minutes</th>
<th>≤ 1 hr.</th>
<th>≤ 24 hrs.</th>
<th>&gt; 24 hrs.</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>2</td>
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<td>3</td>
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<tr>
<td>4</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### D. How did (his/her) behavior change?

<table>
<thead>
<tr>
<th>No</th>
<th>New</th>
<th>Something he/she had had before</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td></td>
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<td>2</td>
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</tbody>
</table>

18. Fainting, passing out, or loss of consciousness

<table>
<thead>
<tr>
<th>Yes</th>
<th>New</th>
<th>&lt; 5 minutes</th>
<th>≤ 1 hr.</th>
<th>≤ 24 hrs.</th>
<th>&gt; 24 hrs.</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tbody>
</table>

19. Palpitations (pounding in the chest)

<table>
<thead>
<tr>
<th>Yes</th>
<th>New</th>
<th>&lt; 5 minutes</th>
<th>≤ 1 hr.</th>
<th>≤ 24 hrs.</th>
<th>&gt; 24 hrs.</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>2</td>
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</tr>
</tbody>
</table>

20. Marked or increased fatigue, tiredness or weakness

<table>
<thead>
<tr>
<th>Yes</th>
<th>New</th>
<th>&lt; 5 minutes</th>
<th>≤ 1 hr.</th>
<th>≤ 24 hrs.</th>
<th>&gt; 24 hrs.</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
</tbody>
</table>
Did ___ develop any (symptom) to the extent that (he/she) had to stop or change what (he/she) was doing?

<table>
<thead>
<tr>
<th>A. Symptoms at the time of death:</th>
<th>B. Was the symptom:</th>
<th>C. How long prior to (death/being found dead) did (symptom) make (his/her) activities?</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. Attack of indigestion</td>
<td>1 □ Yes</td>
<td>1 □ &lt; 5 minutes</td>
</tr>
<tr>
<td></td>
<td>2 □ No</td>
<td>2 □ &lt; 1 hr.</td>
</tr>
<tr>
<td></td>
<td>3 □ DK</td>
<td>3 □ ≤ 24 hrs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 □ &gt; 24 hrs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 □ DK</td>
</tr>
<tr>
<td>D. How did ___'s behavior change</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 22. Falling, collapsing, or slumping over | 1 □ Yes             | 1 □ < 5 minutes                                                                   |
|                                          | 2 □ No              | 2 □ < 1 hr.                                                                        |
|                                          | 3 □ DK              | 3 □ ≤ 24 hrs.                                                                      |
|                                          |                     | 4 □ > 24 hrs.                                                                      |
|                                          |                     | 5 □ DK                                                                            |
| D. How did ___'s behavior change        |                     |                                                                                   |

| 23. Other symptoms                   | 1 □ Yes             | 1 □ < 5 minutes                                                                   |
|                                     | 2 □ No              | 2 □ < 1 hr.                                                                        |
|                                     | 3 □ DK              | 3 □ ≤ 24 hrs.                                                                      |
|                                     |                     | 4 □ > 24 hrs.                                                                      |
|                                     |                     | 5 □ DK                                                                            |
| D. How did ___'s behavior change     |                     |                                                                                   |

| 24. Other symptoms                   | 1 □ Yes             | 1 □ < 5 minutes                                                                   |
|                                     | 2 □ No              | 2 □ < 1 hr.                                                                        |
|                                     | 3 □ DK              | 3 □ ≤ 24 hrs.                                                                      |
|                                     |                     | 4 □ > 24 hrs.                                                                      |
|                                     |                     | 5 □ DK                                                                            |
| D. How did ___'s behavior change     |                     |                                                                                   |
5. INTERVIEWER CHECKPOINT: IF SYMPTOMS ARE SPECIFIED IN QUESTIONS 15 THROUGH 24, IDENTIFY THE FIRST SYMPTOM OF THE TERMINAL EVENT

1. FOUND DEAD, LAST SEEN FREE OF SYMPTOMS
2. FOUND DEAD, HAD SYMPTOMS DURING TERMINAL EVENT
3. SOMEONE WAS PRESENT AT DEATH

26. How long after (was last seen free of symptoms: DEVELOPED FIRST SYMPTOM: was he/she found dead?
   1. ≤ 5 minutes
   2. ≤ 1 hour
   3. ≤ 24 hours
   4. > 24 hours or DK

28. How long after (first DEVELOPED FIRST SYMPTOM) was CPR started?
   1. ≤ 5 minutes
   2. ≤ 1 hour
   3. ≤ 24 hours
   4. > 24 hours or don't know

29. Was ever conscious and breathing on his/her own after CPR?
   1. Yes
   2. No
   3. DK

30. How long after (first DEVELOPED FIRST SYMPTOM) did he/she actually die?
   1. ≤ 5 minutes
   2. ≤ 1 hour
   3. ≤ 24 hours
   4. > 24 hours or don't know

In some cases when it appears a person is dying an attempt is made to resuscitate or revive him/her.

7. When it appeared that was dying was an attempt made to resuscitate or revive him/her, that is, administer CPR (DESCRIBE CPR)?

1. Yes
2. No
3. DK

Some cases when it appears a person is dying an attempt is made to resuscitate or revive him/her. In some cases when it appears a person is dying an attempt is made to resuscitate or revive him/her, that is, administer CPR (DESCRIBE CPR)?

1. Yes
2. No
3. DK

In some cases when it appears a person is dying an attempt is made to resuscitate or revive him/her. In some cases when it appears a person is dying an attempt is made to resuscitate or revive him/her, that is, administer CPR (DESCRIBE CPR)?
31. In the last few moments that (you/observer) saw did he/she show any signs of life, that is, appear to be breathing or moving?

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32. How long after first developed first symptom did he/she actually die?

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<tr>
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<td>$\leq 5$ minutes</td>
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<td>3</td>
<td>$\leq 24$ hours</td>
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<td>4</td>
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33. How long after first developed first symptom did he/she last show signs of life?

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<td>$\leq 24$ hours</td>
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<td>4</td>
<td>$&gt; 24$ hours or don't know</td>
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**MEDICAL HISTORY**

34. Was a resident of a nursing home at the time of (his/her) death?

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<td>1</td>
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Name of nursing home

Address

35. Was (he/she) confined to bed at any time within the two weeks prior to death? (that is, had to spend more than half of (his/her) waking hours in bed)

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36. How long had he/she been confined to bed?

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<td>1</td>
<td>$&lt; 2$ days</td>
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<td>3</td>
<td>$&lt; 2$ wks</td>
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<td>4</td>
<td>$&lt; 4$ wks</td>
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<td>5</td>
<td>$&lt; 6$ wks</td>
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<td>6</td>
<td>$&gt; 6$ wks</td>
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<td>7</td>
<td>DK</td>
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</table>
37. Had ______ had major surgery at any time within the 4 weeks prior to death?

1 □ YES
2 □ NO
3 □ DK

38. At any time after surgery was (he/she) able to resume his/her usual level of daily activities?

1 □ YES
2 □ NO
3 □ DK

39. In the past, had ______ ever had a heart attack for which (he/she) was in the hospital for a week or more?

1 □ YES
2 □ NO
3 □ DK

40. In the past, had ______ ever had a stroke for which (he/she) was in the hospital for a week or more?

1 □ YES
2 □ NO
3 □ DK

41. In the year prior to ______'s death, did a doctor ever tell ______ that he/she had the following or did the doctor treat ______ for any of these conditions?

A. angina pectoris or heart pains?.................
   (ANSWER "YES" IF DECEDEENT WAS TAKING NITRATES)

B. abdominal aneurysm (bulging of the aorta)?........

C. congestive heart failure?......................

D. high blood pressure?.........................

E. cancer?...........................................

F. emphysema or chronic lung disease?...........

G. cirrhosis of the liver (liver failure)?.........

H. diabetes?........................................

I. kidney failure requiring dialysis?.............

J. myocarditis, cardiomyopathy or inflammation of the heart muscle?....................

K. rheumatic heart disease which limited activities?..

L. mitral valve prolapse?...........................

M. Other, heart related problems, specify ______

LPH/MHHP-MORB 009(10-12) 8/82 Ver. 1
42. Thinking back, in the year prior to ___ 's death was (he/she) in the hospital and then discharged?

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<tbody>
<tr>
<td>43. VISIT 1</td>
<td>Date of admittance</td>
<td>Name of Hospital</td>
<td>City</td>
<td></td>
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<tr>
<td></td>
<td>MONTH</td>
<td>DAY</td>
<td>YEAR</td>
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<td>44. VISIT 2</td>
<td>Reason</td>
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<td>45. VISIT 3</td>
<td>Reason</td>
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<td>46. VISIT 4</td>
<td>Reason</td>
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47. Total number of hospitalizations in the past year: 1 DK

48. Did ___ have a regular physician? (PHYSICIAN WITH THE MOST INFORMATION ABOUT ___)

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<td>YES</td>
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49. Did (he/she) see this or any other physician within one year prior to death?

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<td>YES</td>
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(IF EITHER 48 OR 49 IS YES - OBTAIN:)

Physician's name: ______________________
Practice/Clinic: ______________________
Address: ______________________

Physician's name: ______________________
Practice/Clinic: ______________________
Address: ______________________
50. Would it be alright with you if I sent a short questionnaire to the doctor, and also requested some information from the hospital (or nursing home, or both)?

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I will send you a permission form to sign and then mail back to me in an envelope I'll enclose. You should receive it within a few days.

51. Is there anything else about _____'s death that you feel may be important to add?

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<th>Yes</th>
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Include this information in the narrative:

52. Is there anyone else who would be able to provide us with more information regarding the circumstances of _____'s death? (Specify name, address, telephone number)

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<th>Yes</th>
<th>No</th>
<th>DK</th>
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Title
First Name/MI/Last Name
Address
City/State Zip Code
Area Code Telephone Number
Relationship to deceased

Ask if they have any questions of you. Thank respondent.

RELIABILITY OF INFORMANT REGARDING EVENTS SURROUNDING DEATH

53. Did the respondent frequently contradict himself or give information that he/she would have no way of knowing?

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<th>Yes</th>
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54. Did the respondent seem to be reluctant to answer questions & thus might not have given all the information the interviewer would wish to know?

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<th>Yes</th>
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55. On the basis of these questions, give your rating of reliability of the interview.

<table>
<thead>
<tr>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
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</tbody>
</table>

56. Interviewer's Name

ID Code

WHO/MNC/82.2
Appendix III Rev. 1
Page 153
MIDWEST HEART SURVEY
FAMILY INTERVIEW INFORMATION
MORTALITY SURVEILLANCE
The Family Interview Information questionnaire will be attempted for every out of hospital death selected for MMNP Mortality Surveillance.

For Pre-test and training each interviewer will complete at least 3 interviews prior to certification evaluation.

Final Interview Status is to be checked when no more effort will be made on this assignment (i.e., the Interview has been completed satisfactorily, a respondent has given a final refusal or the interviewer has exhausted all efforts to contact an informant).

**ID Label** - The label with the ID number assigned will be attached.

**Date Letter Sent** - This form should be prepared the day the letters are mailed to the informants. The first attempt to reach the informant should be made within 5 days of mailing the letter.

**Interview Schedule** - If when you reach the informant and an appointment is made for an interview at a later date enter the date and time.

**Interview Completed** - Enter the date

**Call Record** - Keep track of every effort to reach the appropriate respondent on the Call Record form. Use this to check that you are trying to reach people on a variety of days and times. Include in the comments section any messages or information you get that may help in contacting the informant (i.e., "back from vacation 8/16," "works nights", etc.). Enter your ID number in the space provided. Since different interviewers may try to contact a respondent at different times it is important to know who wrote which comments.

Complete 1-4 before telephoning. This information can be obtained from the death certificate. Print in Block Capital letters using black ball point pen.

5-6 In order to determine who can provide the most accurate information about a death (i.e., who should be the respondent) the interviewer should check the death certificate. Every death certificate lists an informant. This is usually a relative of the deceased. If a relative is not the informant the Interviewer can contact the deceased's last known address to obtain the name of a relative.

7 Double check the relationship of the respondent to the deceased with the respondent. This can be done at any time during the interview.
SPECIAL INSTRUCTIONS FOR THE NARRATIVE

In certain instances, particularly in sudden or unwitnessed deaths, it may be necessary to ask additional questions in order to clarify the actual cause of death. Given below are some follow-up questions that should be used to make sure that all necessary information is obtained.

The Narrative is the key to providing information about an out of hospital death. The major points to remember are:

1. Record information verbatim (i.e., in the respondents own words) as much as possible. We are after the R's perceptions not the interviewers. A great deal of meaning can hinge on a choice of terms or phrases.
2. Get the sequence of events and the time intervals between them.
3. Get as much detail as possible about the period following the onset of final illness. Listed below are some follow-up questions to ask if certain situations are mentioned.

IF HE COLLAPSED

Was he conscious?
Did he make any sound?
Was vomiting or sputum present?
Did skin color change?
Did he fall forward or back?
Did he fall from a standing or seated position?
Was he perspiring heavily?
Was there shortness of breath?
Was he eating?

IF ALCOHOL IS MENTIONED

Was there any bleeding?
Was he drinking that day?
How much?
Was that unusual?

IF HE COMPLAINED OF PAIN

Where was the pain?
What did he do about it?
Did anything seen to relieve it?
If he lay down, was it in bed? Dressed or undressed?

IF TROUBLE WITH EYES

Did he complain of dimness, blurred or double vision?
Did he complain of feeling weak, dizzy, or faint?
Did he have difficulty with speech or memory?

IF SEDENTARY OR IMMOBILIZED

Had there been broken bones or surgery?
Was he unable to walk?

4. It is best to have a notebook for note-taking as you are interviewing. The Narrative should then be written out on the page provided as soon as possible after the interview takes place.

5. As is suggested in the Introduction to Mortality Interviewing, it is helpful to tape record each interview. This should be done with all pretest interviews to get the interviewer used to the recording procedure and devise ways to use it efficiently to get all the pertinent details.
After the narrative the series of specific questions is provided to 1) get more detail that might have been missed in the narrative and 2) put the most pertinent facts in a format that can be analyzed by the computer.

Thus the information about the onset of death will be in two places on the same questionnaire; one a free form narrative that will allow the respondent to give the details in the way that is most comfortable for him/her, the second in an arrangement that will make the information more accessible for data processing.

Because the second phase of this form is a repeat of the first the interviewer must read the introduction at the top of the page that explains this to the respondent.

Whenever the interviewer comes to a question that was discussed in the course of the narrative it is to be read as worded. The interviewer can add a reference to the information in the narrative.

ie., "You touched on this before-----?"
"You mentioned that Mrs. Smith's brother.....?"

Where ever a blank line is provided insert the deceased's name or relationship to the respondent.

ie., "Mr. Smith"
"Your husband"

DO NOT use overly familiar terms such as first names

Questions 8-13 are asked to determine who had the closest contact to the deceased just prior to death. In some cases this may mean that additional interviews may provide more information.

Q: 8  We want to know if there was a witness to the moment of death. If a spouse says his/her partner died during the night and was dead when the respondent awoke, record that as "found dead" but write a note in the margin describing the situation. However, if the respondent was awakened by the agonal event, e.g., a groan or gasp, the respondent is considered to be present at death.

Q: 9  For someone to be counted as "present" at the time of death they must have been in the same room and awake or have heard a noise(s) associated with the agonal event (ie., if the husband died in the bedroom when the wife was in the kitchen, and had found her husband dead and heard no noise, she was NOT present at the time of death). However, if she heard a noise, went in and found her husband dead, she was present.

Q: 10 If anyone else witnessed the death we want to have as much information about them as possible since we may need to contact them for information.

Q: 11 If a subject was found dead we want to know who was the last person to see him/her alive. Again we want as much identification as possible of someone who had contact with the deceased prior to death.
Q: 12 In order to assess the validity of information provided we need to know how close to the time of death or discovery of death the person had contact with the decedent. The shortest time interval volunteered is to be checked.

This also applies to questions 13 and 14, and 15-24.

If the respondent gives a time range, chose the upper limit of the interval the one that includes the entire range.

Examples: 1. John Smith says 15 minutes
   Check #1
2. Jane Doe says between an hour and an hour and a half
   Check #2
3. Jack Jones says somewhere between 45 minutes and an hour and one half
   Check #2
4. Mrs. Nelson says the day before yesterday
   Check #3

Q: 13 Even if another individual witnessed the death we want to know how soon prior to death the respondent saw the deceased. We'll use this to assess the accuracy of the information in the interview.

Q: 8-13 Two separate facts must be established in the interview: First, if the decedent was found dead or was observed at the time of death. Second, if the interviewee was present at the time of death. The 2 x 2 table presents the logic of the question flow.

<table>
<thead>
<tr>
<th>Decedent Found Dead</th>
<th>Yes</th>
<th>No</th>
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<tr>
<td>Yes 8, 11, 13</td>
<td>Yes</td>
<td>8, 9</td>
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<tr>
<td>No 8, 11, 13, 8, 10, 13</td>
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Q: 14 We want to know if the subject was able to communicate (and thus report symptoms or problems) at any point 24 hours prior to death.

Ask the question as a YES/NO reading each of the choices in turn. At whatever point the R says YES put an X in that box and go to the next question.

If a subject was only conscious and communicating for a short while during the time period it still qualifies as a YES and should be X'ed.

If the R says NO to both A and B double check by asking C.

"You mean that ______ was unconscious continually for more than 24 hours prior to death?" If the R agrees that that was so X C.
We are interested in finding out if the subject exhibited or complained of any symptoms that are associated with heart disease. Every respondent will be asked the specific list of symptoms. In most cases this information will have been mentioned in the narrative so the interviewer can make references to that when asking these symptoms.

We want to introduce the respondent to what we mean by a symptom before asking about the specific ones we're concerned about. For our purpose a symptom is defined as an event that is severe enough to make the subject stop or change his/her activity. If no symptoms were present we would call it an instantaneous death.

If the respondent was aware of deceased's symptoms we want to know within what time frame these developed prior to death.

For the first two symptoms ask the triggering question in its entirety.

"Did ______ develop any (symptoms)..." 

It must be clear to the respondent that in order for the symptom to be considered present it must have resulted in a stopping or changing of activity.

If the respondent asks, this change may be subtle (stopped reading a book and just stared off into space) or dramatic (had to stop jogging because of chest pain).

The respondent has to be the judge of whether a change occurred.

If the respondent answers "NO" to the presence of a symptom go on to the next one.

If a symptom was present, ask B, C, and D.

B We want to know if this was the first time that the deceased experienced or complained of this problem or if it was a chronic condition (something that he/she had had before). If the respondent answers don't know X the DK box.

C It's very important that we get the specific time frame for each symptom. Read questions C in its entirety for at least the first 3 times so it is clear to the respondent what is being asked.

D In the respondent's own words we want to know how the deceased's behavior or activities changed, i.e., what had he/she been doing and what he/she did after the symptom appeared.

If many of these symptoms are mentioned you may not need to keep repeating the questions, the respondent will pick up on the pattern.

Be sure to check if any other symptoms (besides the ones listed) were present and get the details on them.
Q: 25-36 The time period we are concerned about is the period between onset of symptoms and death. Read the introduction. A cardiovascular collapse is defined as the loss of consciousness with the apparent cessation of respiration and pulse. 'Sudden' means collapse within an hour of first becoming ill. Be sure to distinguish "can't decide" from "don't know."

Q: 27-31 We want to know where this happened to evaluate the type of medical help that could have been provided the victim.

We want to double check if the conditions that would necessitate CPR were present.

Describe CPR to all respondents.

CPR is helping a person to start breathing again after they have stopped by 1) blowing directly into their mouth in a rhythmic fashion (mouth to mouth resuscitation) and 2) applying pressure on the chest to get the heart started (pumping blood).

This can be done by one or two people.

Q: 28 A bystander is someone who initiates CPR immediately on the scene. A physician or other health professional with the patient in a non-professional capacity at the time would be counted as a bystander, health professional.

Q: 29-30 If the respondent says he/she is uncertain of the amount of time ask them to give their best estimate. If still unable to answer check DK.

Q: 31 For all deaths we want to know if the deceased was taken to a hospital or not. The type of emergency vehicle used will indicate the level of care the subject could have received. Describe the different types of transportation units to the respondent:

Paramedic (Advance Life Support)
This is usually printed on the side of the vehicle. The staff usually have machinery and equipment to help a patient and can use it and drugs and start IV's while taking the patient to the hospital.

Ambulance (Basic Life Support)
If it only says ambulance on the vehicle it is likely to be Basic Life Support. Staff can do CPR and have oxygen tanks but do not have advanced equipment or drugs at their disposal. Police and fire department units are Basic Life Support.

Q: 32 Records from nursing homes will be obtained if the deceased had been a resident.

Obtain a complete name and address (including zip code) if possible. If any information is missing you will have to look it up after the interview.

Q: 33-34 We want to know if any illness or symptoms kept the deceased confined to bed. Enter the number of days or number of weeks if known.

For example, if the decedent spent 5 days in bed the week prior to death, 33 would be 'yes' and 34 would be '1 wk'. If the decedent had spent 6 weeks in bed but was up and about in the week prior to death, 33 would be 'yes' and 34 would be '> 6 wks'. If the decedent was confined to bed for any length of time more than two weeks prior to death, 33 would be 'no' and the interviewer would skip to 35.
Q: 35-36 Because effects of surgery could have influenced a death we want to know if the decedent had had major surgery within a month prior to death. Major surgery is when person receives general anesthesia and is hospitalized for about a week or more.

If YES we want to know whether or not the subject had been able to resume his/her usual level of daily activities. We've used the example of return to work but since many subjects may have been retired that will not apply in all cases, so stress "return to usual activities".

Q: 37-38 We want to know if subjects had had a previous heart attack or stroke. The subject must have been hospitalized for a week or more in order for us to accept the event as a true heart attack or stroke.

Q: 39 Read the list of medical conditions and X the appropriate box. If the respondents have questions or difficulties with the terms write that down in the margins (we know we have to have more clarification about some of these terms and the doctors will be providing that).

If a respondent answers that they do not know what a term is make a note of that so we can separate those from the "don't know if the person had it but does not know what it is."

Did you notice or did her/she experience chronic shortness of breath, that is have difficulty breathing while walking up stairs or short distances, other than while exercising. Do not confuse myocarditis with pericarditis. If respondent answered "inflammation of sac around the heart" it was not myocarditis but pericarditis.

Q: 56 This question is necessary to determine if there were other heart related disease that the decedent may have had or ones that may shed a different light on the decedents condition at time of death.

By asking if a doctor ever told the decedent he had a condition, we are making it easier for the respondent to be more accurate and for the interviewer to run thru the diseases without lengthy technical definitions or descriptions of the diseases. The respondent's memory is being jogged, by the exact words, so repeat the disease and if they hesitate too long, or can't remember X DK.

We do not want the respondent's judgments as to the decedents medical problems, we want information that can be verified by a physician.

For example:

"He drank like a fish. He must have had cirrhosis of the liver!"

The interviewer should repeat the question did a doctor tell him he had cirrhosis of the liver or did he treat him for the condition.

If the respondent says "He was told ten years ago that he had cirrhosis," ask, "Did a doctor in the last year tell him that he had cirrhosis." The conditions listed here are serious chronic conditions, and if an old diagnosis is correct, the decedent will most likely have been followed or treated by a doctor for the condition within the last year.
Q: 40-45 In order to get complete medical records we want to know about any hospital admissions within a year prior to the subject's death.

There is no minimum stay. Any admission (even as an out-patient) is counted.

Try to get the date of admission even if it is a "best guess". This will be needed in order to obtain hospital records.

The name and city of the hospital is also necessary for obtaining records.

Also obtain the reason that the subject was admitted to the hospital.

Enter the total number of hospitalizations in the past year.

Q: 46-47 If the respondent reports that the deceased had a regular physician or had been seen by a physician in the past year we want to know his/her name and address in order to contact for a physician interview or access to records.

Any type of medical doctor "counts".

Q: 48-50 It may be necessary to do an additional selling job here. Stress the importance of the information the respondent has given you as well as the added benefit that can be derived from an interview with a doctor and/or information from hospitals and nursing homes. Most people will have no objections to providing this. Be sure you make clear that a stamped envelope will be provided so completing this request will take little additional effort on their part.

In terminating the interview we want to give the respondents an opportunity to add anything they think may be important. If they do have something significant to say this can be added to the notes for the narrative and incorporated when the full narrative is written out.

Q: 50 This is another effort to find out if there may be someone else we should interview. If someone else is given make sure to get full information on how to contact this person.

Q: 51-54 Each interviewer should give his/her assessment on the reliability of the interview information. Check YES or NO to the three questions (by "giving information he/she would have no way of knowing" we mean things like if the respondent describes the deceased's behavior and appearance the last few minutes of life but were unobserved).

The responses to items 67 and 68 will be looked over by the editors before the questionnaire information is entered in the computer. In the case of multiple interviews about one subject, this may be used to determine which information will take precedence.

Before closing the conversation with the respondent you must let him/her know there is a chance they may be recontacted on a validity check. Read the following explanation.

Thank you very much for your help. We appreciate all the information you have given us. It will be very helpful to our study.

Because this is the start of a large research project we will be recontacting a small percentage of those who participated. Therefore we may be recontacting you to ask some additional questions or to verify the accuracy of my report.

This effort is to make sure that all the interviewers ask the questions in the same way. As you know, this is very important for the accuracy of research projects.
## AUTOPSY REPORT ABSTRACT

(ATTACH COPY OF AUTOPSY REPORT)

### 2. REPORT STATUS:

<table>
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<th>Option</th>
<th>Description</th>
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<tr>
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<td>COMPLETE - Head not included</td>
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<tr>
<td>3</td>
<td>PARTIAL -</td>
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</table>

### FOUND ON EXAMINATION

#### CEREBRAL DISEASE

3. Cerebral Infarction (CI) within 6 weeks

4. Cerebral Hemorrhage (CH) within 6 weeks

5. CI or CH greater than 6 weeks old

6. Other Cerebrovascular Disease (includes old subarachnoid hemorrhage and cerebral embolus) specify

7. Cerebral mass lesion (includes cerebral tumor, abscess, subdural hematoma/hemorrhage)

8. Other cerebral nonvascular disease, specify

#### HEART DISEASE

9. Mitral stenosis

10. Pre-mortem intracardiac thrombi

11. “Recent” Myocardial Infarct (MI) (within 4 weeks before death)

12. Myocardial Infarct (MI) (>4 weeks but <8 weeks before death)

13. “Old” MI (>8 weeks before death)

14. Severe Coronary Atherosclerosis (50% or greater proximal narrowing of 2 or more major vessels or 75% of severe narrowing of 1 vessel)

15. Other Coronary Artery Disease, specify:

16. Other Heart Disease, specify:

OTHER CAUSES

17. Other causes, specify:

### 18. FINAL DIAGNOSIS CODES

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LPH/MEHP-MORB 21(1-1) 1/82 Ver. 1
WHO/MNC/82.2
Appendix III Rev. 1
page 164

FORM CODE 21
AUTOPSY REPORT
ABSTRACT

9-17. Heart Disease


Q.10. Answer "Yes" if any mention of pre-mortem intracardiac thrombi in the left atrium or left ventricle.

Q.11. This question should be answered "yes" if the autopsy mentions a "recent", "acute", "early", "evolving" MI, or if it states an MI occurred 4 weeks or less prior to death. Answer "no" if the autopsy does not specify that there were signs of a recent infarct. Answer "NR" if the heart was not autopsied.

Q.12. Answer "Yes" if report indicates the MI occurred within 8 weeks, but was not "acute" or definitely within 4 weeks.

Q.13. This should be answered "Yes" if the autopsy states there was an "old" infarct or an infarct greater than 8 weeks old. Answer "no" if the heart was autopsied, but no mention was made of an old MI. Answer "NR" if the heart was not autopsied.

Q.14. Coronary atherosclerosis should be called "severe" if the autopsy states it is "severe", or if the autopsy says there is a 50% or greater proximal narrowing of 2 or more major vessels, or 75% or greater narrowing of one vessel. The major arteries are:

1. right coronary artery (RCA)
2. left main segment of the left coronary artery (LCA)
3. left anterior descending artery (LAD)
4. left circumflex branch of the left coronary artery (LCF)

If the 50% or greater narrowing is in the segment of the left coronary artery before it branches (Q.14, item 2 above), this counts as 2 major arteries.

Q.15. This question is answered "Yes" if there is any other coronary atherosclerosis than that labelled "severe" in Q.11. Also for any other type of coronary artery disease, e.g. congenital, traumatic.


Q.17. After "Specify" list any non-heart, non-cerebral disease on the autopsy report. Record any codes on autopsy report in boxes for Q.18.

Q.18. Fill in final diagnosis code(s) by nosologist when available.
MORTALITY

A. Nosologist coding of death certificates to ICD9 Revision

In order to maximize comparability between countries and over time, all death certificates should be coded to at least three and preferably four digits for underlying cause of death. The Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death, Volume 1 contains the WHO nosological protocol for the 9th ICD revision (Medical Certification and Rules for Classification, pages 699 to 743).

B. Validation of hospitalized strokes, MI's and in-hospital deaths

Validation of in-hospital deaths will be based on the hospital record history, ECGs, serum enzyme and death certificate data. In the case that the patient died before adequate data could be collected, the death should be treated as an out-of-hospital death. The next-of-kin or another informant should be contacted to gather as much information as possible about the events preceding the death and the validation will be based on this interview plus the death certificate information.

C. Validation of out-of-hospital deaths

All study-area death certificates should be reviewed quarterly or semi-annually. Death certificates that are ineligible because the decedent was outside the age range can be excluded immediately, and those deaths that are clearly due to trauma (e.g., contain a sequence of events including accident, homicide, or suicide), chronic obstructive pulmonary disease, cancer, cirrhosis of the liver, or rheumatic heart disease without mention of atherosclerotic heart or vascular disease can also be excluded. However, if an atherosclerotic condition is mentioned in the sequence of events or if the cause of death is not attributed to one of the conditions listed above, the cause of death should be validated.

Validation is based on interview of the decedent's next-of-kin or another informant and any available medical records. The interview should establish the circumstances surrounding the decedent's death. Medical records for the period within a minimum of 28 days of death should also be examined for information that may elucidate the circumstances leading to the death.
COUNTY COURT HOUSE INFORMATION

1. Anoka County Court House
   325 E. Main Street
   Anoka
   Phone: 421-4760
   Helen Therres
   Clerk of Courts
2. Carver County Court House
   600 E. 4th Street
   Chaska
   Phone: 448-3435
3. Dakota
   Government Center
   1560 Highway 55
   Hastings, MN
   Phone: 437-3191
4. Hennepin County - Suburban
   Govt. Cr., Licensing Dept.
   Downtown Minneapolis
   Mary Ann Melberg
   Licensing Dept.
   Phone: 348-8240
   Hennepin County - City
   Mpls. Public Health Dept.
   250 So. 4th St.
   Minneapolis
5. Ramsey County - Suburban
   County Court House, 12th Fl.
   4th and Wabasha Streets
   Downtown St. Paul
   Virginia Bryone
   Clerk of Courts Office, Rm 1215
   Phone: 292-6544
   Dept. Head: Fran Reese
   (292-6544)
   Ramsey County - City
   City Health Dept.
   555 Cedar St.
   St. Paul
   Grace Selinski
   Vital Statistics, Main Floor
   Phone: 227-7741
   Dept. Head: Wm. Timms, Ex.34
6. Scott County Court House
   428 So. Holmes St.
   Shakopee
   Doni Miles
   Clerk of Courts
   Phone: 445-7750
7. Washington County
   Near Hwy 212, off N. Osgood St.
   Stillwater
   Rosemary Pozzini
   Vital Records
   Phone: 439-3220
Dear \( \mathcal{V} \):  

I am writing on behalf of the Minnesota Heart Survey to ask for your help in our study, which is designed to measure the rates of heart disease and stroke in the Twin Cities metropolitan area. Your name is given on the death certificate of \( \mathcal{A} \), who passed away on \( \mathcal{V}7 \).

In a few days an interviewer will be contacting you by phone to further explain the Survey and to ask a few medical questions. The information we need will be used for statistical purposes only, and will remain strictly confidential. It will contribute to our efforts to better understand heart disease and stroke and prevent their occurrence in the future. If you would like additional information before we contact you, please feel free to call K.C. Jenkins, R.N., Supervisor, at 376-8220 between 9:00 a.m. and 4:00 p.m.

Sincerely,

Thomas E. Kottke, M.D.  
Field Director  
Minnesota Heart Survey  
TK/bg
Dear

Thank you very much for taking part in the Minnesota Heart Survey. The information you have given us will be most helpful to the doctors who are working on this study.

In the interview we asked if you would be willing to sign a permission for release of information form. Enclosed is the permission form for your signature and a pre-stamped envelope.

Please return the form to us at your earliest convenience.

Thank you.

Sincerely,

Thomas E. Kottke, M.D.
Field Director
Minnesota Heart Survey

TEK:ssj
PERMISSION FOR
RELEASE OF INFORMATION

I hereby authorize persons engaged in the Minnesota Heart Survey
to gain access to the medical records on ____________________,
as was previously discussed over the phone. These records will be
reviewed only for research purposes, no names will be kept with
medical data, and none of the information will be released to any
individual other than the research team. This authorization
applies to hospital charts, nursing home charts, physician's office
records and autopsy report as applicable.

Date of death: ____________________

Date ____________________

Signature ____________________

Relationship to Deceased ____________________

Witnessed by ____________________

LPH-MHHP (9/10/82) 11-1
REQUEST FOR INFORMATION

TO:

(Hospital)

RE:

(Name)
(Social Security Number)
(Birth date)
(Date of Death)

Please provide the following records for any admission within a year of death:

1. Hospital admission history and physical examination
2. Hospital discharge summary
3. Laboratory reports
4. All electrocardiograms
5. Computerized axial tomography (CAT, CT) scan reports
6. Brain scan reports
7. Autopsy report

A COPY OF THE CONSENT FORM FOR RELEASE OF INFORMATION IS ENCLOSED ALONG WITH AN ADDRESSED STAMPED ENVELOPE FOR YOUR CONVENIENCE. THANK YOU FOR YOUR COOPERATION.

LPH-MMP (02/80) 12-1
In a longitudinal study such as the MGHP, multiple observers over time or change in the manner a single observer interprets data threatens the stability of the observations. A set of clear and concise data collection forms is the single most important intervention for insuring the collection of complete, stable and accurate data. The forms should be developed to reflect the criteria and a center should budget enough time to create and test multiple drafts. One test of the adequacy of the forms is to have a "naive" observer interpret the forms using the printed guidelines. To the extent that they can do this with sufficient accuracy to satisfy the investigators, the forms are adequate.

When developing questions, one particular problem that will arise is the use of adjustives and adverbs as modifiers; they usually only provide the illusion of concise definition. For example, in the question, "Was there a recent myocardial infarction?", "recent" implies different intervals to different people and will lead to inconsistent data recording. Therefore, it is suggested that either the modifier be dropped altogether to include all myocardial infarctions or an explicit interval, for example, 28 days, be used in its place.

A second problem is asking questions with multiple contingencies: for example, if the question, "Did the patient receive cardioversion for ventricular fibrillation?" is asked, and the abstractor responds with "Don't know" or "Not recorded", it is not clear for analysis whether the patient was cardioverted and the reason was unknown, or whether there was no record one way or the other about the cardioversion itself. To avoid this problem, the question should be divided into two separate questions: i.e., "Did the patient receive
cardioversion?", and, if the answer if "Yes", then ask, "Was the cardioversion for ventricular fibrillation?"

When preparing the guidelines for forms completion, those data elements which become labelled "self-explanatory" should be examined closely. It is our experience that the "self-explanatory" items usually involve implicit assumptions of meaning, and if the implicit assumptions are not made explicit, they create severe problems with reliability.

Hospital record abstracting

When training observers for the abstraction of hospital records it is more important to focus on the accurate completion of the forms rather than on the understanding of cardiovascular disease in general. A set of test records should be developed offering a broad range of examples and problems likely to be encountered by the abstractor. These records can be used both to train the abstractors and for abstractor recertification every three to four months.

The goal of the quality control effort is to detect and eliminate bias and errors. Bias, for example, appears when an abstractor answers "No" rather than "Not Recorded" to the question, "Was there a history of previous myocardial infarction?" even if no mention is made either way in the chart and the abstracting rules say that the chart must have an explicit statement about the presence or absence of a prior MI for the abstractor to answer "Yes" or "No". Errors will appear in the demographic data, and because large numbers of such data are collected from each chart, only a few charts need to be reviewed to detect unacceptable error rates.

Approximately one of thirty to one of fifty records should be reabstracted by a second observer to check for bias and unacceptable error rates on the part of the abstractor.
The ideal interviewer for this job is one who has had experience in interviewing but is not a health professional. The health professional is avoided to prevent the preconceptions which they bring with them onto a job. Interviewer training should begin with a review of basic interviewing techniques and with tapes of interviews which demonstrate these skills. Elizabeth Kubler-Ross' book: *On Death and Dying* may also be assigned to acquaint the interviewer with the grieving process and to help them understand that the interview will not cause unnecessary grief or emotional trauma to the respondent.

Role playing is also a helpful exercise. The trainee knows only the death certificate diagnosis and interviews the supervisor who has a scenario of the events surrounding the death of interest. If more than one interviewer is being trained, the other trainees can observe the session and participate in the discussion at the end of the interview.

It is also helpful to record the interviewer's voice during actual interviews. These are then reviewed with the supervisor to detect leading questions or missed opportunities for follow-up of leads given by the subject. Although it only contains the voice of the interviewer, this tape will also help the interviewer reconstruct the interview from his or her notes.

Faulty interviewing technique can generally be divided into the use of leading questions and the failure to probe into indefinite answers. To avoid leading questions, the interviewer should be taught to use general rather than specific probes. For example, when trying to establish whether the decedent became short of breath before he died, rather than asking, "Did you husband become short of breath before he died?", the interviewer can ask, "Could you describe your husband's breathing for me?"

A lack of adequate probing, on the other hand, leads to the collection of uninterpretable data. E.g., Respondent states, "His breathing got real funny
just before he died", and the interviewer fails to try to define "funny". In this case, "funny" has no explicit meaning, so the interviewer should probe with the question, "I'm not sure I understand exactly what you mean by "funny". Could you describe this for me.

Re-interview can also be used as a quality control procedure. At the end of the interview, the interviewer simply asks permission for the study to call the respondent back if clarifications are needed. The respondent will probably agree, and a sample of respondents can be re-interviewed by the supervisor at a later date.
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<tr>
<th>PLACE OF EMPLOYMENT</th>
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<tr>
<td>NEAREST RELATIVE</td>
<td>BETTY WIFE</td>
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<tr>
<td>RELATIVE ADDRESS</td>
<td>SAME</td>
</tr>
<tr>
<td>NAME OF FATHER AND MOTHER</td>
<td>ARTHUR X-GOLDIE</td>
</tr>
<tr>
<td>RELIGION</td>
<td>JEWISH NONE</td>
</tr>
<tr>
<td>MEDICARE</td>
<td>SUB 1C</td>
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**PROV. DIAG.** CEREBRAL VASCULAR ACCIDENT

**FINAL DIAGNOSIS**

<table>
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<tr>
<th>Name</th>
<th>Arthur X-Goldie</th>
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**COMPLICATIONS**

| OPERATIONS AND OR DIAGNOSTIC PROCEDURE | 4S.0 99.7 |

**DISCHARGE SUMMARY**

46 years old woman was found in her home unconscious found in death.

<table>
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<th>TIME</th>
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<td>2:30 AM</td>
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**DISCHARGE STATUS**

DISCHARGED ALIVE | TRANSFERRED TO | DEATH IN HOSPITAL |
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<td>4S.0</td>
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**SIGNED**

[Signature]

[Date] 11/19/76

[Authority] M.D.
EXTERNAL EXAMINATION: The body is that of a well developed and well nourished 46 year old male. There is no jaundice or edema. The scalp and body hair is normal in amounts and distribution. There are no abnormalities of the eyes, ears, nose, or mouth. No nodes are palpable. There is a well healed stump following amputation many years ago of the right arm. There is a recent incision at the site of a right carotid artery angiogram.

INTERNAL EXAMINATION: The subcutaneous fat is 3 cm. in thickness. The peritoneal surfaces are smooth and shiny and there is no fluid present. The liver is 2 cm. below the midportion of the right costal margin. The pleural surfaces are free of adhesions and there is no fluid. The pericardium is normal. The pulmonary artery is patent. The heart weighs approximately 350 grams. There are no abnormalities of the ventricles. The valves are normal. The auricular appendages and atria are normal. The foramen ovale is closed. The coronary vessels show very minimal arteriosclerosis. There is no evidence of myocardial infarction or fibrosis. The lungs are relatively light and fluffy. There is a minimal amount of frothy fluid in the bronchi. The vessels are patent. The liver weighs 1700 grams. The outer surfaces are smooth. The cut surfaces are unremarkable. The portal vein, hepatic vessels, gall bladder and bile ducts are normal. The spleen, pancreas, adrenals and kidneys are grossly normal. The bladder and prostate are grossly normal. No gastro-intestinal tract abnormalities are noted. The thyroid is normal. The scalp and calvaria show no abnormalities. The dura is bulging; the brain is swollen and presses against the cranial cavity. Gross configurations of the brain are often indistinct due to massive edema; the brain is markedly softened and difficult to remove intact due to almost total infarction of the brain. The brain stem is likewise softened. The cut surfaces show a massive hemorrhage throughout the mid-brain and Pons. The vessels at the base of the brain are grossly unremarkable. The right carotid artery is occluded but it is not dissected to further examine the site of obstruction; fluid can easily be injected through the left carotid artery and the vertebral arteries. Hemorrhage compresses the aqueduct. The ventricles are slightly dilated.

MICROSCOPIC: Sections through the mid-brain show diffuse hemorrhage and scattered irregular areas of acute infarction. Vessels are engorged and show beginning exudation of neutrophils; there is no vasculitis.

The lungs show evidence of chronic bronchitis and mild chronic interstitial inflammation. There is scarring about some bronchioles and some of the adjacent septal walls are slightly thickened and contain a light infiltrate of chronic inflammatory cells. In addition, there is...
70 3387

superimposed on this an acute inflammatory reaction with neutrophils present in some bronchioles and in the immediately adjacent pulmonary parenchyma appearing to be the beginning of a broncho-pneumonia.

Sections of the liver show some acute passive changes of central lobular congestion. There is prominence of some sinusoidal lining cells that contain dark rounded granules of pigment. Whether or not this indicates previous inflammation within the liver is not clear; there is no acute inflammation in the liver.

Scattered throughout the renal cortex are small irregular areas of condensation of renal parenchyma in which the glomeruli have been destroyed and are now hyalin rounded structures. Such areas also show a mild to moderate infiltrate of lymphocytes. Some glomeruli are slightly hypercellular but this does not appear to be a glomerulitis but probably represents an old inactive chronic pyelonephritis.

Sections of other organs examined are essentially histologically normal.

CONCLUSION: 1. Massive hemorrhage within mid-brain and Pons.

2. Swelling and softening of cerebral hemispheres.

3. Lungs, chronic bronchitis and interstitial inflammatory changes.

4. Lungs, acute bronchitis and beginning foci of broncho-pneumonia.

A.W. Waters, M.D.
Pathologist
### Patient Information

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### Social Security Number

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### Medical History

#### Past Medical History

- Unconscious - Right arm removed 10 years ago, CA

#### Allergy

- None

### Current Medical Condition

#### Chief Complaint

- Unconscious

#### History of Present Illness

- Unconscious - Right arm removed 10 years ago, CA

#### Family History

- Unconscious - Right arm removed 10 years ago, CA

#### Social History

- Unconscious - Right arm removed 10 years ago, CA

#### Review of Systems

- Unconscious - Right arm removed 10 years ago, CA

### Physical Examination

#### Vital Signs

- Temperature: 
- Blood Pressure: 
- Pulse: 
- Respirations:

#### General Appearance

- Unconscious - Right arm removed 10 years ago, CA

#### Head and Neck

- Unconscious - Right arm removed 10 years ago, CA

#### Eyes

- Unconscious - Right arm removed 10 years ago, CA

#### Ears, Nose, and Throat

- Unconscious - Right arm removed 10 years ago, CA

#### Cardiovascular System

- Unconscious - Right arm removed 10 years ago, CA

#### Respiratory System

- Unconscious - Right arm removed 10 years ago, CA

#### Abdomen

- Unconscious - Right arm removed 10 years ago, CA

#### Genitourinary System

- Unconscious - Right arm removed 10 years ago, CA

#### Neurological System

- Unconscious - Right arm removed 10 years ago, CA

### Diagnosis

- Unconscious - Right arm removed 10 years ago, CA

### Treatment

- Unconscious - Right arm removed 10 years ago, CA

### Disposition

- Unconscious - Right arm removed 10 years ago, CA

### Emergency Department

- Unconscious - Right arm removed 10 years ago, CA

---

### Additional Notes

- **Code 99**

---

**Signature:**

**Relationship:**

**Witness:**

**Medical Record Copy:**

**Emergency - Outpatient**
Patient comes in with a history of approximately 2 days of vomiting, headache, Acting strangely he had fallen out of the car door at home. He was speaking with his wife early this morning, however toward 6AM he lapsed into unconsciousness and had not been responsive since.

PAST MEDICAL HISTORY: Fairly good. He has had CA of the right ear removal approximately 10 years ago.

SOCIAL HISTORY, FAMILY HISTORY: His mother is a diabetic.

PHYSICAL EXAMINATION: Reveals a large male, unconscious, eyes dilated and fixed. No response to his name. Pressure 60 systolic. No pupils, no square pupils.

The funduscopes reveal no gross or square pupils.

Neck: somewhat bristly neck area.

Chest: clear although he is having a new thoracentesis. 1 cm. palpation breathing with deep sighing sounds revealing some respiratory obstruction.

Heart: normal sinus rhythm, no definite murmurs, a regular systole.

Abdomen: soft, no definite masses.

Back: palpable, no definite tightness of muscles.

Extremities negative, except for the absence of the right foot on the upper femoral level.

DIAGNOSTIC IMPRESSION: C/A.

Signature: [handwritten]

HISTORY AND PHYSICAL RECORD DATE 10-27-70
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<td>Other Orders</td>
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**Neurology notes:**
- History: Squint
- Pupils: Fixed
- Genie: None

**Interscinal Surgery:**
- Mass lesion
- Etiology
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<th>DOCTOR'S ORDERS</th>
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<td>Complete block at</td>
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<td>Extra cranial pressure angiogram</td>
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**Dr.** & **Pt.**

420 459 JEWISH
DR O TAVENCH ICU

HR 46

PROGRESS NOTES — DOCTOR'S ORDERS 17
REPORT OF RADIOLOGIST

CERVICAL ANGIOGRAM: With injection of contrast into the right common carotid artery, there is seen to be a block of the flow of contrast at the anterior clinoid process on the right consistent with the hemodynamic block, secondary to markedly increased intracranial pressure. The distribution of external carotid, internal carotid, and middle meningeal vessels is quite marked. Delayed films demonstrate no significant filling of any intracranial vessels.

CONCLUSION: Hemodynamic block, anterior clinoid process secondary to increased intracranial pressure.

Glen G. Crum, M.D.

DATE COMPLETED: 9-17-70

WHO/MNC/82.2
Appendix III Rev. 1
page 182
**ADMITTING NURSING NOTES**

**Patient Information**: 70 D 3387

- **Date & Hour of Admission**: 9-17-70 - 7:35 AM
- **Admitted For**: Ambulance
- **Money - Valuables**: Watch & Ring - (Watch given to friend)
- **Dentures**: Upper - Lower - Other Prosthesis at home
- **BP**: ____________ / ____________
- **TPR**: ____________ / ____________ / ____________
- **Weight**: ____________ / ____________

**Statement regarding reason patient is admitted and his general condition**: Was not on diet nor was wife called the Doctor & was told to bring his own

**Instruction Check List**

- **Signal card**
- **Calling speaker**
- **Privileges**
- **Urine spec.**
- **Last Chest x-ray**
- **Sidewraps**
- **Pillow speaker**

**Have you been hospitalized before?**

- **Death Memorial**: Hi. (No man brought sick)

**Do you have any difficulty other than your present illness that restricts your activities?**

---

**Were you on any special medication or diet before you came to the hospital?**

---

**Do you have any allergies?**

---

**Do you have any particular food habits or problems that will affect your hospitalization?**

---

**Do you have any difficulty sleeping?**

---

**Does anything special help?**

---

**Do you have any difficulty with elimination?**

---

**Bowel**

---

**Urine**

---

**Do you take laxatives regularly?**

---

**If yes, what?**

---

**Any special requests (TV, No Smoking, Visitors, Phone Calls, Care you would like)**

---

**General Observations**:

1. **Appearance - General**

2. **Skin (flesh, bruises, open areas, or other irregularities)**

3. **Facial Expression - Behavior during admission**

4. **Speech**

5. **Steadiness when up (if allowed)**

---

**420 459 JEWISH**

**DR O YETEN ICU**

---
<table>
<thead>
<tr>
<th>DATE</th>
<th>9-17-70</th>
<th>9-18-70</th>
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</thead>
<tbody>
<tr>
<td>Hospital</td>
<td></td>
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<tr>
<td>Day Hospital</td>
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<td>Day R.O. or F.P.</td>
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<tr>
<td>HOUR</td>
<td>AM 8-12</td>
<td>PM 4-8</td>
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<tr>
<td></td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Temperature</td>
<td>99°</td>
<td>98°</td>
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<tr>
<td>Pulse</td>
<td>86</td>
<td>137</td>
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<tr>
<td>Respiration</td>
<td>10</td>
<td>12</td>
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<tr>
<td>B.P.</td>
<td>140/90</td>
<td>120/70</td>
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<tr>
<td>Height &amp; Wt.</td>
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<tr>
<td>DOCTORS VISIT</td>
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<tr>
<td>Diet</td>
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<tr>
<td>AM, PM Care</td>
<td>181 G</td>
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<tr>
<td>H.S. Care</td>
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<td></td>
<td>5 Reis</td>
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<tr>
<td>INTAKE</td>
<td>11.7</td>
<td>7.3</td>
</tr>
<tr>
<td>Oral</td>
<td>17.2</td>
<td></td>
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<tr>
<td>24 hr IV</td>
<td>1600</td>
<td></td>
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<tr>
<td>Total Dial</td>
<td></td>
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<tr>
<td>TOTAL 24 m INTAKE</td>
<td>1600 cc</td>
<td>5,600</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>11.7</td>
<td>7.3</td>
</tr>
<tr>
<td>Urine</td>
<td>5.17%</td>
<td></td>
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<tr>
<td>Emesis</td>
<td></td>
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<tr>
<td>TOTAL 24 m OUTPUT</td>
<td>5175 cc</td>
<td>62</td>
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<td>Specimens</td>
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<td>Stools</td>
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</table>

120 459 JEWISH
Dk O Tveden ICU
<table>
<thead>
<tr>
<th>DATE</th>
<th>HOUR</th>
<th>NURSEING NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-17-70</td>
<td>9:00</td>
<td>Admitted to I.C.U. from c. M.D. Buc. 3/20 to 3/28 - 8/0 - R.12 maintained by respirator. Had good Foley output - (J. Billmo, R.N.)</td>
</tr>
<tr>
<td>3-11-70</td>
<td>11:30</td>
<td>BP 80/60 until 7/0. Chemotest no BP. Pulses 120. 64 - Lanezene, have a given at 7:00 for increased output. Rate down to 72 &amp; BP. Respirations maintained by respirator 6 per min. Ax temp 98. Pupil dilated &amp; non reactive to light. Responds to pain stimulation. IV inflowing, great output &amp; urine colored urine. 10:30 By R.R. After 8:12. Monitor shows stable rhythm &amp; blood pressure. Non-responsive. (T. Tresidder)</td>
</tr>
<tr>
<td>7-18-70</td>
<td>1:30</td>
<td>12:00 - No reaction, or responses whatever. No use in poor - feet are bluish &amp; black - face is black &amp; tough - vas cut. No respiration at all. Output is large, 1:30 - 1:40 &amp; head deformed. Small bed stool - No response whatever. Pupil dilated &amp; fixed - color poor. Body cold - stiffness. Straight line on monitor. Dr. Brian called. Pronounced dead by Dr. Brian. Family was at autopsy. Rig time by Dr. 8:10 a.m. 9:15. Family decided to have autopsy. Parents signed Body to morgue. Barbara Lany RN</td>
</tr>
</tbody>
</table>
INPATIENT ADMITTING RECORD

WHO/MNC/82.2
Appendix III Rev. 1

page 187

J. S. SMITH

INPATIENT ADMITTING RECORD

HOSPITAL: FREEWAY FORKLIFTS INC

PATIENT NO.: 592383-2

ADMIT DATE: 01/17/80

TIME: 06:50 PM

POST CARDIAC ARREST

HUSBAND'S FIRST NAME: J. S.

BIRTH DATE: 01/17/21

ADDRESS: 9700 NEWTON AV S

MINNEAPOLIS, MN 55431

RELATIONSHIP TO PAT.: WIFE

PHONE: 612-854-3919

TYPE OF PAT.: MECHANIC

ROOM & BED NO.: 5C085

ICU

ROOM TYPE: S

RELIGION: UND

CONCERNATION: COPIED/ER

ADDRESS: 8157 17TH AV S

MINNEAPOLIS, MN 55420

EMPLOYER: MINNEAPOLIS.. NN 55420

EMPLOYER ADDRESS: 9700 NEWTON AV S

MINNEAPOLIS, MN 55431

EMPLOYEE: HOWELL, J. L. (CBBHHM)

DOCTOR'S NO.: 552-5

AGE: 58

SEX: M

CONSULTANT: DAVIS, T. BALDWIN

CASE WORKER: LOCAL 49

FINAL DIAGNOSES

1. POST CARDIAC ARREST

2. CARDIAC ARREST

3. SUPPORTIVE Z.

4. TREATMENT

5. LOCAL 49

6. LOCAL 49

COMPLICATIONS: 1.

SECONDARY: 1.

ACTIVE (TREATMENT): 2.

2.

3.

OPERATION:

RESULT: DISCHARGED

DISCHARGE SUMMARY:

SEE DISCHARGE SUMMARY OR PROGRESS SHEET

2019-01-01

- 202 -
This 58 year old forklift mechanic and businessman was admitted to Fairview Southdale Hospital on 1/17/80 by the rescue squad. He had a sudden syncopal episode at home and was given cardiopulmonary resuscitation. The rescue squad found that he was in ventricular fibrillation and he was defibrillated. He was brought to Fairview Southdale Hospital. It was felt during subsequent workup that he had an acute myocardial infarct.

This was based on serial enzyme changes. His past history did include a Type IV hyperlipoproteinemia and presumable myocardial infarct in 1969 and abnormal EKG thereafter. Some two years ago he had been thought to have some transient ischemic attacks and for a time was on some anticoagulant and/or Persantine. His course in Fairview Hospital initially was complicated by some pulmonary rales and positive culture of Hemophilus influenza, so he was given some I.M. Penicillin and this did not prove to be an ongoing problem.

Over the next several days in the hospital he was in and out of various ectopic beats and rhythm disturbances with multiple PVC's and some supraventricular tachycardia. Lidocaine was not effective but these were controlled well by Digitalis and Inderal. Foley catheter was inserted.

Further features of this man's admitting physical exam revealed a chronic furunculosis over the occipital area for which he had been seen by dermatologist.

This man's hospital course was stable over the following week and then on the night of 1/24/80 he sustained an acute cerebrovascular accident with right hemiplegia and aphasia. He was seen in consultation by neurologist. It was felt that the pathological process was most likely an embolic phenomena from the heart in view of the recent myocardial infarct. He was treated with Decadron and Heparin. He subsequently regained his sense abilities but demonstrated some aphasia and the right arm and right leg hemiparesis. For a time he had a Foley catheter but pulled this out himself and subsequently was able to void by himself.

LABORATORY WORK: Initial hgb. 14.9, white count 14,200. UA had 1+ albumen and 2+ glucose and a repeat UA on 1/26/80 was negative. Initial SMA 12 showed the following abnormalities: Cholesterol 305, glucose 359, triglycerides 388. Initial SGOT was 37 but on two consecutive days rose to 80 and then to 77. Initial creatinine kinase MB was two units and the following day was 45 and the next day was 12. Repeat blood sugars on 2/2/80 showed fasting values of 106 mg.%. It was not felt that the diabetes was a significant problem. T4 and T3 uptake were normal. Urea nitrogen was normal. Serum electrolytes were normal on 2/2/80 with a sodium of 135, potassium 4.2. Chest x-ray was clear on 1/20/80. Prior chest x-rays on 1/17 and 1/18/80 showed some pulmonary congestion suggesting congestive failure. EKG on 1/17/80 showed myocardial irritability, LBBB, some evidence of left ventricular hypertrophy.

Followup EKG showed persistent abnormalities on 2/1/80. The pattern suggested anteroseptal infarct of indeterminate age with nonspecific T wave abnormalities and negative T waves in I AVL, V4, V5, and V6.

The patient's BP over the last several hospital days ranged around 110 to 120 systolic and 60-70 diastolic. He has been afebrile over the last several days and his only
medications have been Inderal 10 mg. q.i.d., Procainamide Penicillin 300,000 units b.i.d., Digoxin .25 mg. daily, and Sumadin 5 mg. daily. He has been on 1% Hydrocortisone and Bacitracin ointment b.i.d. to his scalp lesions.

Transfer date to MMC is to be 2/6/80.

Transfer dismissal diagnosis: 1. Acute myocardial infarct, 1/17/80.
2. Ventricular fibrillation and subsequent cardiac arrhythmias associated with myocardial infarct.
3. Acute cerebrovascular accident secondary to arteriolar embolus with result in right hemiparesis and aphasia, occurring on 1/24/80.
4. Underlying Type IV hyperlipoproteinemia.

POSITION: This man will be seen over the next several weeks at the rehab unit at MMC and I will follow him there.
This 58-year-old fork lift mechanic was admitted to FSH on 1-17-80 by the Bloomington Rescue squad. He had had some chest discomfort and arm pain on day before. He has had some increasing dyspnea on exertion in last week. Today he drove home with pain in his left arm. Sitting at the dinner table around 5:30 he suddenly slumped backward in his chair and was unconscious. The neighbors were called and a policeman came in and started CPR. The rescue squad came and found that he was in ventricular fibrillation. He was defibrillated at 400 watt seconds and achieved a normal sinus rhythm at a rate of 80. At that time he had a pulse. He was brought to FSH emergency room by ambulance and arrived here at 5:50 p.m. In emergency room he received some Lidocaine. In the ambulance he got Lidocaine and Decadron. I saw him in the intensive care unit. The patient was alert then, although he had been confused in the emergency room.

PAST HISTORY reveals a family history of coronary artery disease. This man smokes a pack a day and has an occasional drink, much as he said about a year ago. Past surgery does include bilateral herniorrhaphy. He has been taking no medications for last 2-3 months but for most of 1979 he was taking Isordil as prescribed by my associate Dr. Charles Meyer. He quit this because he thought it was causing a flare-up of some scalp infection (furunculosis). He was in this hospital approximately one year ago and he had an EKG then which showed an old anteroseptal myocardial infarct pattern. He had a cardiac stress test then which was felt to be positive. An SMA 12 was normal except for cholesterol of 310.

PHYSICAL EXAMINATION at this time reveals an articulate alert man who is somewhat anxious. Blood pressure is running around 120-115/80. His pulse rate is 125 and there seems to be a sinus mechanism mostly impaired. He has no lymphadenopathy. Pupils are equal and react to light. He has normal extraocular movements. His thyroid is not enlarged. His neck veins are distended at an angle above the clavicle of about 30 degrees. His lungs reveal a few rhonchi in both bases but no rales. The heart reveals a tachycardia with an S3 heard near the base. His abdomen is soft and not distended and I can feel no masses. Extremities revealed no peripheral edema and he does have normal pedal pulses.

Sodium and potassium are normal in hospital now. AN EKG shows the sinus tachycardia with evidence of anteroseptal infarction and diffuse decoloration abnormalities not so very much different from an EKG back in March 1979.

This man has had no digitalis or diuretics over last several months.

IMPRESSION: 1. coronary artery disease 2. cardiac arrest characterized by ventricular fibrillation which was cardioverted.

3. presumptive acute myocardial infarct, to be confirmed by enzyme tests.

This man is presently being maintained on Lidocaine and is being given some Lasix. He will be followed closely.

SIGNED

JOHN HOWELL, M.D.
<table>
<thead>
<tr>
<th>DATE</th>
<th>PROBLEM NUMBER</th>
<th>PROGRESS REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-30</td>
<td>589</td>
<td>Admitted after cardiac arrest at home for 24 hrs.</td>
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<tr>
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<td>Heart rate 108, blood pressure 120/80.</td>
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<td>Developed fluid in chest x-rays.</td>
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<td>Reassured patient's family in emergency.</td>
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<td>NP - convulsed.</td>
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<tr>
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<td>Math at last sign of congestion.</td>
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<td>BP 120/80, midline shifted.</td>
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<td>68 S/L.</td>
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<td></td>
<td>LP cleared old. Pho. shock of infarct.</td>
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<td>FBC: WBC 10,000. No leucocytosis.</td>
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<tr>
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<td></td>
<td>Lumen of aorta 35% open.</td>
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<tr>
<td></td>
<td></td>
<td>Lumen of aorta 15% open.</td>
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<tr>
<td></td>
<td></td>
<td>Lumen of aorta 10% open.</td>
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<tr>
<td></td>
<td></td>
<td>Lumen of aorta 5% open.</td>
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<tr>
<td>8-0</td>
<td>642</td>
<td>Pt. has had many episodes. Thought to be cardiac arrest.</td>
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<tr>
<td></td>
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<td>Lumen of aorta 25% open.</td>
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<td>Lumen of aorta 15% open.</td>
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<td>Lumen of aorta 10% open.</td>
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<td>Lumen of aorta 5% open.</td>
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<td>Lumen of aorta 2% open.</td>
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<td></td>
<td>Lumen of aorta 0% open.</td>
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</tbody>
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1-016 (12/12)
PROGRESS REPORT PAGE 192
<table>
<thead>
<tr>
<th>DATE</th>
<th>PROBLEM NUMBER</th>
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<tbody>
<tr>
<td>1/23/80</td>
<td>12 P.M.</td>
</tr>
<tr>
<td>1/23/80</td>
<td>5:30 A.M.</td>
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</tbody>
</table>

- **1/23/80 5:30 A.M.:** RA had a CVA at midnight. He left the sleeping room at 2 A.M. He found the man's side and was in need. The man became unconscious and diaphoretic. He became restless and asked to have RI serum and IC serum. He was given 100 mg of diazepam. RA was noted to have a left hemiparesis. He was kept by endotracheal tube.

- **MIN: 400/160**
- **Fundus: R = O.K.**
- **10:00 A.M.**
  - **Vision:** Clear R = O.C.
  - **Finger Inspection:**
  - **Visual Fields:**
  - **Ocular Movements:**
  - **Cranial Nerves:** Normal
  - **Motor Chin Loop:**
    - **Upper Extremities:**
    - **Lower Extremities:**

- **Imp.:**
  - 1) Acute CVA
  - 2) Post MI - Infarct - Small Area
  - 3) Hypertension - Hypertensive Encephalopathy

- **More work done:**
<table>
<thead>
<tr>
<th>Time (hr)</th>
<th>CVP</th>
<th>MISC.</th>
<th>ORAL INTAKE</th>
<th>OUT PUTS</th>
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<tbody>
<tr>
<td>1-7</td>
<td></td>
<td>11.7</td>
<td>7.3</td>
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<tr>
<td>3-11</td>
<td>24 hr</td>
<td>3.11</td>
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</table>

**Total Intake**

**Total Output**

**Daily Weight**

**Defecation**

**Urine**

**T.Tube**
<table>
<thead>
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<th>100</th>
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<th>120</th>
<th>130</th>
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<td>10</td>
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<td>130</td>
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</tbody>
</table>

**Allergies:**

- **Known:** None
- **Present:** None
- **Meds Brought in:** None

**Clothing:**

- Glasses: No
- Contacts: No
- Jewelry: No
- Billfold: No
- Watch: No
- Misc: No
- Other Values: No

**Medications and Dosage:**

- **IV Solution & Amt:** Per mask at 101/min
- **Area Needle Time D/C Amt:** Per mask at 101/min

**Laboratory Studies:**

- **CPU Rnt:** 1 EKG
- **X-Rays:**
  - **Intake:**
    - Oral:
    - Emesis & N.C.:
    - Minus Irrigation:
    - I.V.:
    - Sub Total:
  - **Output:**
    - Urine:
    - Est. Blood Loss:
    - Total:
  - **Blood Components:**
    - Est. Blood Loss:
    - Total:

**Procedures:**

- **By Whom:** 10/11

**Laboratory Studies:**

- **CPU Rnt:** 1 EKG
Patient Progress Record

<table>
<thead>
<tr>
<th>Time</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>11/5/80</td>
<td>This 84 yr old male was admitted to ER via Smith Amb. It apparently had no recent medical history. A nurse observed him in the ER, administration of an antacid and shortly thereafter collapsed at home. Police were notified, CPR started, depth x 1 by Smith Amb, began breathing on own. Awake and talking at this time. Nurses found. Skin warm and slight diaphoresis. BP 120/80, HR 70/min. Monitor as below. Freq: 89/min, no extrasystoles and short runs of V. F. Addr.: lidocaine bolus given.</td>
</tr>
<tr>
<td>11/5/80</td>
<td>Lidocaine gt 4:1 started at 4 mg/min. EP1 done. Exam per Dr. Swagman (EPPA). PR 91, ABP's drawn per Dr. Swagman (EP1) all 10 fert. 10:00 drawn. Purt. AST done.</td>
</tr>
<tr>
<td>11/5/80</td>
<td>Monitor shows: atrial no extrasystoles at this time. Report called to ICU - 8:00.</td>
</tr>
</tbody>
</table>
| 11/5/80 | Transferred to ICU-5 via cart E O/3. Monitor accompanied by R.N. and M. R. McCa
<table>
<thead>
<tr>
<th>TIME</th>
<th>NURSE'S OBSERVATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:30</td>
<td>Personal Belongings:</td>
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<tr>
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<td>Glasses:</td>
</tr>
<tr>
<td></td>
<td>;Watches:</td>
</tr>
<tr>
<td></td>
<td>;Rings (Describe):</td>
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<tr>
<td></td>
<td>Dentures: Upper:</td>
</tr>
<tr>
<td></td>
<td>;Lower:</td>
</tr>
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<td>Patient's Other Health Problems and Treatment:</td>
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<td>Allergies: Medications:</td>
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<td>Nursing Observations:</td>
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SPEECH AND LANGUAGE EVALUATION

Mr. [name] was seen for evaluation of his speech and language skills at the request of Dr. Thomas Davis while he was a patient in Fairview-Southdale Hospital.

Mr. [name] was admitted to Fairview Southdale Hospital on January 17, 1980, following a cardiac arrest. Upon admission he was aphasic and had right-sided weakness. Mr. [name] has a family history of coronary artery disease. Medical information on his chart revealed that in 1971 Mr. [name] was admitted to Fairview-Southdale Hospital with left-sided paresthesia and slurred speech. An angiogram administered at that time showed "both internal carotid arteries have atherosclerotic plaques near their origin - more narrowing of the lumen of the left internal carotid than the right". Mr. [name] was discharged from the hospital and continued to work as a fork-lift operator until his present hospitalization.

The Minnesota Test for Differential Diagnosis of Aphasia was administered. Test findings are as follows.

AUDITORY DISTURBANCES: Mr. [name] was only able to recognize objects named by the examiner with 45% accuracy. He could not recognize letters or identify items named serially. He answered 5 out of 12 comprehension questions accurately. For example, he erred on questions such as "Do apples grow on trees?"; "Are there seven days in a week?". He was able to follow most simple test directions. He had difficulty repeating sentences. His responses were usually jargon.

SPEECH AND LANGUAGE DISTURBANCES: He was able to initiate gross movements of the tongue and make rapid alternating movements of the oral musculature. He was able to repeat words without errors in articulation. He was able to complete some automatic tasks such as counting and naming the days of the week in order, however, he failed to grasp the directions for completing sentences. He does use some automatic phrases when conversing, i.e., "Don't ask me that". He could not name most objects accurately because of perseveration errors and also because of jargon. He could not answer most simple questions. It is interesting that he gave correct responses to the first item on each test, however, his responses to the remaining items in each area were incorrect.

VISUAL-MOTOR AND WRITING DISTURBANCES: There was evidence of visual-motor perceptual deficits in his copies of Greek letters and reproduction of a wheel. He has no functional writing skills. He could print his first name but he could not write words to dictation. He could print letters to dictation and write the numbers one through five. He reversed some numbers and letters.
BEHAVIOR: Mr. was mildly restless on occasion. He was cooperative. Perseveration was noted on all language tasks.

SUMMARY. Test findings are compatible with left hemisphere involvement characterized by reduced auditory comprehension, word finding problems, and reduced word recognition skills. However, some right hemisphere involvement was also noted because of visual-motor perceptual deficits. Prognosis is guarded due to a lack of neurophysiological stabilization. He would benefit from speech and language therapy geared toward increasing his skills in auditory and reading comprehension and oral expression.

If I may be of further help in interpreting these test findings, please call.

Susan Meneghel
Speech & Language Pathologist

CC: Chart
T. Davis, M.D.
## FAIRVIEW HOSPITALS
### LABORATORY RECORD

**Patient:**

**Date:** 02/06/80

### CHOLESTEROL

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<td>2/19/80</td>
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<td>2/22/80</td>
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### TYPE IV

**Units:**

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### ALBUMIN

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**CLINICAL LAB REPORT**

*CLINICAL LAB REPORT*

**REVIEWER:** Lyle

**DATE:** 02/06/80
### BLOOD

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<tr>
<th>Parameter</th>
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<td>Acid Phosphate</td>
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<td>Fractional Protein</td>
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<td>Alk. Phosphate</td>
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<tr>
<td>Alpha - Antithrombin</td>
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<td>Amylase</td>
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<tr>
<td>Bilirubin</td>
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<td>Total up to 1.5 mg %</td>
</tr>
<tr>
<td>Total Bilirubin</td>
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<tr>
<td>Calcium</td>
<td>8.8 to 10.6 mg %</td>
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<tr>
<td>Cholesterol</td>
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<td>0.1 - 0.3 Gm %</td>
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<td>Y - Globulin</td>
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<td>100 - 1600 mg %</td>
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<td>Males 3 - 37 I.U.</td>
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<td>Iron</td>
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<tr>
<td>pH (Venous)</td>
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<tr>
<td>Phosphorus</td>
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<td>Potassium</td>
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<tr>
<td>Plasma TOTAL</td>
<td>18.3 Gm %</td>
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*Higher values in children*

*Lower values in children*
Diagnosis: There are numerous ectopic beats of apparently multifocal origin. The QRS complexes show left bundle branch block and increased voltage of S in V2. The ST segments are depressed in V5, 6. T waves are inverted in V5, 6. Similar changes in I, AVL.

IMPRESSION: ABNORMAL EKG with myocardial irritability, left bundle branch block, some evidence for left ventricular hypertrophy, and ischemia as well. Compared to 3-12-79, the myocardial irritability has developed, and the voltage of S in V2, 3 has increased.
PORTABLE CHEST

Film was taken in AP projection.

Monitoring electrodes were present overlying the chest. The heart is moderately enlarged. There appears to be some mild bilateral pulmonary vascular congestion compatible with mild cardiac decompensation. No appreciable pleural reaction is seen. Bony structures are unremarkable.

CONCLUSION: Cardiomegaly and mild pulmonary vascular congestion compatible with mild congestive failure.

JM: In
PORTABLE CHEST

Comparison 1-17-80.

The heart is enlarged. The interstitial markings are prominent throughout both lung fields suggesting early failure. The appearance has not changed in the one-day interval.

RD: In
PORTABLE CHEST
Cardiac size is not changed appreciably from the study of 1-18-80. The lung fields appear clear at this time. The remainder of the chest is unchanged from the previous study.

JDM: cjb

J.D. Mac Gibbon, M.D.
Radiologist
Patient was a 64 year old male who entered the hospital with a history of tremors and abnormal movements at home. It was felt that this may have been a seizure disorder and he was hospitalized for a little more intensive evaluation and management. Initially he was responsive and was evaluated by Dr. Summit, neurologist in consultation, who felt he was having episodes of seizures. It was recommended that he be started on some Dilantin. On the third hospital day, he did have marked deterioration with total lack of responsiveness. It was felt initially that he did have some pulmonary edema and this was treated progressively with I.V. diuretics. This did not help things. He continued unresponsive and, over the next 24 hours, continued to deteriorate and finally died.
AUTOPSY REPORT

Patient: 

Time of death: 7:47 P.M., 1/10/80

Place of death: Lakeview Memorial Hospital, Stillwater, MN

Physician: Dr. Schulz

Autopsy permission granted by: 

Time of autopsy: 9:00 A.M., 1/11/80

Place of autopsy: Simonet Mortuary, Stillwater, MN

Pathologist: Dr. Johnson

GROSS AUTOPSY DESCRIPTION

EXTERNAL EXAMINATION:

The body is that of a well-developed, well-nourished, adult, white male appearing to be older than the stated age of 64 years. The body has been previously arterially embalmed and there is marked loss of pigment of the skin of the face and upper body secondary to vitiligo. There is marked edema of the dependent parts, and the skin of the legs is discolored. There are a few small crusted ulcerations on the legs.

INTERNAL EXAMINATION:

On opening the body, the abdominal fat measures 1.5 cm. in thickness. The abdomen contains approximately 1500 cc. of amber fluid with some fibrin clots. There are adhesions around the spleen and the gallbladder. The abdominal organs are in their normal relation one to another. The appendix is present and normal. The liver extends 4 cm. below the xiphoid process and 2 cm. below the costal margin in the right mid-clavicular line. The diaphragm arches to the right third intercostal space and the left fifth rib. On opening the chest, the right pleural cavity is obliterated by dense fibrous adhesions. The heart is pulled slightly to the right, and the left lung is adherent to the anterior lateral wall by two string adhesions. The left pleural cavity is dry.

Heart: The heart is markedly dilated but not enlarged. The coronary arteries are extremely atherosclerotic with essentially no lumen in any of the coronary arteries. The mitral and tricuspid rings appear to be slightly dilated, but the valves appear functional. There is an old healed myocardial infarct anterior-laterally at the apex with ventricular aneurysm and old organized neurothrombus, overlying the endocardial aspect of the infarct. The myocardium is a deep red-brown in color, fairly firm in consistency. There is no evidence of recent myocardial Infarct. The atrial and auricular appendages show nothing of note on gross examination. The foramen ovale is closed. The root of the aorta shows marked atherosclerosis with ulceration.

Lungs: The right lung is enclosed in thick fibrous pleura. After removal, the pleura measures from 2 to 5 mm. in thickness. The bronchi contain a frothy, yellowish material. The lung is approximately one-third the usual size. The cut
surface is dry and the bronchi in the lower lobe are markedly dilated and the bronchial walls are markedly thickened. They contain a yellowish, somewhat mucoid, material. The left lung is more nearly of usual size. It is rubbery in consistency and the cut surface is fairly dry. There is no evidence of consolidation or tumor.

Liver: The liver is of usual size. The surface is slightly granular and the edges are slightly rounded. The cut surface shows marked excess of blood and fluid, and there is definite darkening of the centers of the lobules.

Spleen: The spleen is approximately three times normal size. There is marked perisplenitis, and there is an old healed infarct on the superior aspect. The cut surface shows the pulp to be markedly firm.

Pancreas and Adrenal Glands: The pancreas shows nothing of note on gross examination. The adrenal glands show thinning of the cortex.

Kidneys: The kidneys are of usual size and configuration. The capsule strips with some difficulty leaving a granular brown surface. The cut surface shows a marked excess of blood and fluid, and the cortical-medullary junction is obscured. The cortices measure approximately 5 mm. in thickness. The pelvis, ureters, and bladder show nothing of note on gross examination.

Gastrointestinal Tract: The gastrointestinal tract shows a marked bluish-red discoloration with swelling in the first portion of the duodenum. This has the appearance of possible hemangioma or mucosal hemorrhage. The gastrointestinal tract otherwise shows nothing of note on gross examination.

Abdominal Aorta: The abdominal aorta consists of a fusiform aneurysm extending from the diaphragm to the pelvic rim and measuring up to 15 cm. in diameter. On section, it contains mostly plaque material.

Organs of the Neck: The pharynx, larynx and trachea show nothing of note on gross examination. The thyroid shows the left lobe to be absent. The Isthmus is much larger than usual and the right lobe appears to be essentially normal.

Head: On opening the head, the scalp and calvarium show nothing of note on gross examination. The brain is of usual size and configuration. The vessels at the base of the brain show marked atherosclerosis. There is a small area of encephalomalacia in the cortex in the left occipital area. The brain will be cut later and the brain diagnosis will also be dictated later.

GROSS IMPRESSION:

1. Marked generalized atherosclerosis.
   A. Fusiform abdominal aortic aneurysm.

2. Marked coronary atherosclerosis of all three coronary vessels.

3. Old healed apical, arterio-septal, myocardial infarct with aortic aneurysm and organized neurothrombus.

4. Chronic obstructive pulmonary disease, bronchiectasis of the right lower lobe.

5. Chronic fibrous pleuritis with obliteration of the right pleural cavity.
Autopsy Report

6. Acute and chronic congestion of the liver, spleen and kidneys.
7. Old healed infarct of the spleen.
8. Possible arterio and arteriolonephrosclerosis.
9. Possible hemangioma of the first portion of the duodenum.
10. Congenital absence of the left lobe of the thyroid.
11. Ascites.
12. Vitiligo, pronounced on the face.
13. Dependent edema, marked.

1/11/80

Aldridge F. Johnson, M.D.

GROSS BRAIN DESCRIPTION:

The brain is of usual size and configuration except for a small area of old encephalomalacia in the left occiput measuring up to 1.2 cm. in greatest dimension. The vessels at the base of the brain show marked atherosclerosis with extreme narrowing of lumina. On section of the cerebrum, there are multiple old healed infarcts with encephalomalacia in the right cerebral hemisphere involving the head of the caudate nucleus and adjacent white matter, the thalamus, the internal capsule, the lentiform nucleus, the claustrum, and enlarging the left lateral ventricle. There is a third healed infarct in the posterior portion of the occipital lobe and involving the gray and white matter at the tail of the lateral ventricle. There appears to be a rather small, recent infarct with some cystic degeneration in the right lentiform nucleus which measures 1.5 by 0.8 by 0.7 cm. Section of the cerebellum, pons, and medulla show nothing of note on gross examination.

GROSS IMPRESSION:

Cerebral arteriosclerosis, severe, with old multiple infarcts and encephalomalacia of the right cerebellar hemisphere and of a recent infarct involving the left lentiform nucleus.

1/16/80

Aldridge F. Johnson, M.D.
Autopsy Report

MICROSCOPIC:

Sections of the myocardium show fibrosis, scarring, and marked congestion. Attached to the endocardial surface of one of the sections of the left ventricle, there is an old organized thrombus. There is no evidence of recent myocardial infarction.

Sections of the coronary arteries show marked medial and intimal thickening with extreme narrowing of the lumen.

Sections of the lungs show the bronchi to be rather irregularly dilated, the lumen to contain a somewhat blueish-staining mucoid material containing numerous eosinophiles, neutrophiles and mononuclear cells. The bronchial glands are markedly hypertrophied, and the bronchial stroma contains a chronic inflammatory infiltrate. The bronchial muscles are hypertrophied. The smaller and middle-sized pulmonary arteries have markedly thickened walls, and there is a proliferation of small blood vessels within these thickened walls. Many of these smaller blood vessels have rather plump endothelial lining. Some of these are associated with these abnormal bronchi. The alveolar capillaries are markedly dilated. Some of the alveoli are enlarged and show fracture and clubbing of the alveolar septa. One section of the left lower lobe shows a small hyalinized infarct associated with an obliterated small artery. Some of the alveoli contain pigmented macrophages, and, where these occur, they are numerous.

Sections of the liver show acute and chronic congestion.

Sections of the spleen show acute and chronic congestion. One section shows a hyalinized area of infarction.

Sections of the kidneys show rather marked atherosclerosis involving the larger and middle-sized arteries. Small arteries and arterioles appear to be spared. The kidneys are markedly acutely congested.

Sections of the brain show multiple areas of infarction with loss of brain substance. The old infarcts and the apparently recent infarct are indistinguishable microscopically, except that the older ones have a more intense gliosis.

Sections of the duodenum show superficial ulceration with a floor consisting of hemorrhagic crusting.

DIAGNOSIS:

1. Marked generalized atherosclerosis.
   A. Fusiform abdominal aortic aneurysm.

2. Marked coronary atherosclerosis of all three coronary vessels.

3. Old healed apical, arterio-septal, myocardial infarct with aortic aneurysm and organized neurothrombus.

4. Chronic obstructive pulmonary disease, vesicular emphysema and bronchial asthma, generalized, with bronchiectasis of the right lower lobe.

5. Chronic fibrous pleuritis with obliteration of the right pleural cavity.
6. Acute and chronic congestion of the liver, spleen and kidneys.
7. Old healed infarct of the brain.
8. Arterionephrosclerosis.
9. Superficial stress ulceration of the first portion of the duodenum.
10. Congenital absence of the left lobe of the thyroid.
11. Ascites.
12. Vitiligo, pronounced on the face.
13. Dependent edema, marked.
14. Multiple old arteriosclerotic infarcts with encephalomalacia of the left cerebral hemisphere.
15. Recent infarct of the left lentiform nucleus.

Aldridge F. Johnson, M.D.
1/24/80
C.C.: Spells.

F.I.: This 64 year old gentleman has been having deteriorating course over the last eight to nine years at home. His problems initially started about eight years ago when he had a CVA with partial paralysis of the left side. At that time, he was seen in consultation by Dr. L. Towne at St. Mary's Hospital and went through extensive physical therapy. He also had carotid arteriograms that did not show anything that was amendable to surgery at that time. He did return home but never did return to work after this CVA. He has slowly deteriorated and over the last year has been having increasing difficulty especially with C.N.S. and pulmonary problems. He has been treated with rather large doses of diuretics and with this respiratory status and cardiovascular status have remained fairly stable, but he has also slowly deteriorated becoming less active and unable to move around. Particularly well. He has also been seen in consultation by urologist because of chronic urinary retention and he has had a catheter in place for the last 4-5 months and this has remedied the situation fairly well.

Over the last month or so, he has been having increasing difficulty with "spells". These are characterized by some marked coughing initially. He seems to then become somewhat red and blue in the face. His eyes roll back. His daughter, who is an LPN, has seen these spells and denies any actual shaking or tremor. He seems to lose consciousness for about 30 to 60 seconds. Following this, he does not have any memory of the episode.

F.H.: Hospitalizations and surgery - CN approximately eight years ago several hospitalizations over the last year for congestive failure and general deterioration.

Approximately one year ago, he did attempt suicide and at that time was admitted to Mounds Park Hospital. An EKG scan at that time was non-diagnostic. Medications - Lanoxin 0.125 mg. q.d. Isordil 10 mg. q.i.d., Metralol 50 mg. h.s., Slow-K 2 b.i.d., Lasix 120 mg. daily. Allergies - none known.

Review of Systems:

HEENT - denies any headache or double vision.
RESP - cough which has been persistent for the last month or two.
When he has a coughing spell, seems to more or less choke with these.
CVS - denies anginal symptoms but has had marked shortness of breath and dyspnea with any exertion.
G.I. - normal appetite and is eating fairly well. Is incontinent of stool.
G.U. - does have a catheter in place and of chronic problems with this.

EXTREMITY - slight swelling of the legs.
SKIN - marked pigmentation that has been increasing over the last year of two.

NEURO - spells as above. Residual left-sided weakness.

P.E.: Patient is fairly alert male that did have episode of rather marked coughing during the exam. He did turn somewhat red-faced with this but did not roll his eyes back or have any other activity other than just a rather severe cough.
HEENT _ pupils are somewhat constricted. Tympanic membranes and throat are clear.
NECK _ no palpable masses.
LUNGS _ rales bilaterally _ more pronounced on the right side. WHEEZES also audible over the chest.
HEART _ tachycardia with no murmur.
ABDOMEN _ somewhat voluntarily rigid making it difficult to evaluate.
EXTREMITIES _ slight puffiness of the lower legs and complains of some calf tenderness.
SKIN _ deep pigmentation around the face.
NEURO _ residual left sided weakness with positive Babinski on the left. Slight hyper-reflexia on the left.

IMPRESSION:

1. Spells _ questionable seizure disorder or epoxic episodes.
2. Old CVA with probable general cerebral arteriovascular disease.
3. Severe congestive heart failure with marked cardiomegaly, stably in the past.
4. Diabetes mellitus in the past.
5. Urinary retention with catheter in place.
6. Deep pigmentation of the face of questionable etiology.

jn 1-7-80-

J. E. SCHULZ, M.D.
X-RAY REPORT

Submitted for X-ray film: Treatment: Filed:

Anatomical part or region: CHEST

Attending Physician

Findings: CHEST:
The heart remains enlarged, but is smaller than on previous films. Some vascular congestion is still present in both lung fields. There are also some platelike atelectatic changes over the right hemidiaphragm. The right costophrenic angle is obscured as was present previously.

CONCLUSION: Cardiomegaly. Residual chronic pulmonary changes at right lung base.
X-RAY REPORT

Age __________________ Rm. No. __________________ Hosp. No. __________________
Address __________________ Date __________________ X-ray No. 31789A
Submitted for X-ray film __________________ Treatment __________________ Filed __________________
Anatomical part or region: LUNG SCAN

Attending Physician __________________

Findings: LUNG SCAN:
Four millicuries of TC99-MAA was given. The left lung field is negative. On the right, there is poor opacification of the total lung. This would suggest that there is a pulmonary embolus which is probably occluding pulmonary artery.

CONCLUSION: Pulmonary embolus.

Dr. M.R. GILCHRIST, M.D. 1/9/80 sb
Patient is a 64 year old white male with a history of a right hemispheral CVA on 9 July 1974, admitted at this time by Dr. Schulz because of episodes of apparent loss of consciousness in the last month. History obtained from he and his family suggest that these episodes tend to occur after coughing spells and often occur while he is eating. His daughter relates that he seems to stop ventilating, turns red, and eyes roll back and he is unresponsive for a matter of 30 seconds to 1 minute and then begins ventilating again and then becomes responsive with no postictal state. There have been no convulsive movements noted or symptoms suggestive of posterior circulation problems. The patient does relate that he notices difficulty breathing, numbness in hands and some racing of his heart at the time of these episodes.

P.H: Illnesses - CVA in July 1974. Angiogram done at that time showed an occluded right internal carotid artery at its origin and collateral filling of the left anterior cerebral. EEG's in July 1974 and December 1977 showed some swelling over the right hemisphere. 1977-patient hospitalized here for questionable posterior circulation insufficiency, and was put on Coumadin for a time without apparent improvement in symptoms. 1979-hospitalized here with right lower lobe pneumonia and subsequent right pleural effusion. Patient attempted suicide by carbon monoxide inhalation. February 1979 - hospitalized here with CHF. Lung scan at that time did not suggest pulmonary emboli.

MEDICATIONS - Digoxin-0.125 mg. q.d.; Laxix-120 mg., Isordil-10 mg. q.i.d., Slow-K - 2 b.i.d.

ALLERGIES - none.

DIET - regular.

ALCOHOL - occasional. SMOKING - occasional in the past but never heavy.

FAMILY MEDICAL HISTORY:
Both parents died of CVA's. Otherwise non-contributory.

REVIEW OF SYSTEMS: - not done

PULSE - 110, regular.

B.P. 108/80

ALERT older male, with an obvious Cheyne-Stoke respiratory pattern.

SKIN - few crusted lesions over the pretibial surface.

LYMPH - 1 x 1 cm. rubbery mobile node in the right supraclavicular area.

HEENT - Pupils small but equal and reactive. Fundi not well seen secondary to myosis. Upper plate.

NECK - somewhat decreased range of motion. No goiter.

CHEST - rales at the right base.

CARDIOVASCULAR - regular rhythm, no JVD. No murmur, S-r or gallop. Questionable soft S-3.

ABDOMEN - distende and firm. Diastasis recti. Liver approximately 14 cm. by percussion but do not feel good edge. No oj

BACK - 1+ presacral edema.

EXTREMITIES - pulses absent below the femorals. Trace lower extremity edema and knees. No synovitis.

NEUROLOGIC - spastic left upper extremity. Left knee jerk slightly greater than the right. Normal Babinski's signs. Positive Hoffman's on the right.

GENITALIA - mild swelling of the prepuce. RECTAL - not done. (OVER)
HEMOGLOBIN - 13.2  
SED RATE - 35
+  
UA 4+ albumin, 13 to 18 wbc's.

CHEST X RAY - gross cardiomegaly. Bibasilar alveolar infiltrates which appear to be chronic, right lower lobe pleural changes which also appear to be chronic.

EKG - IVCD. Old anteroseptal M.I. Intra-atrial conduction defect. Decreased voltage.

Arterial blood gases - pH-7.50, PO2-52. PCO2-22. PCO3-16. TSH-done in the office recently was 13 which was slightly elevated. T-4-6.4. 

ASSESSMENT:
1. Apparent syncopal episodes - no good history of the common causes of syncope such as seizures, arrhythmias or posterior circulation problems. Would wonder if these episodes are not a primary ventilation disturbance secondary to the patient's Cheyne-Stokes respiration which is likely secondary to diffuse bihemispheral arteriosclerotic disease.

Patient's blood gases suggest a marked alveolar/arterial oxygen gradient and it might also be that during the apneic phase of his respirations, his hypoxemia becomes quite severe that he has a secondary bradycardia.

The etiology of his hypoxemia is unclear but may be merely secondary to a respiratory apraxia with marked ventilation perfusion in mismatching. Pulmonary emboli would certainly be another consideration.

2. Albuminuria - no obvious cause - may be secondary to nephrosclerosis.

3. Slightly elevated TSH. Suggests early hypothyroidism. With his vitiligo, this may be an autoimmune phenomenon.

4. Cardiomegaly - apparently on the basis of ischemic cardiomyopathy. No gross congestive heart failure at this time.

PLAN:
1. Consider lung scan.
2. Consider Holter monitor.
3. Quantitate albuminuria.
4. Discuss case with neurologist.

jn 1-7-80
HART, H.D.
This is a 64 year old man who had a right hemisphere CVA in 1974 secondary to occlusion of the right carotid artery. Since then, he developed congestive heart failure and difficulties with ventilation. The problem at hand now are episodes in which he loses consciousness and his eyes roll up. Some of these are associated with hyperventilation and some of them associated with coughing. However, his wife also notes that one or two of these have occurred in the absence of either of these episodes. It is important to note that he has had gradual deterioration of mental state over the last few months.

Examination of the head today reveals a confused face and furrowed brow. EOM are full. There is no nystagmus or squint. Fundi show no papilledema. He has spastic left upper extremity. He denies if there is anything wrong with it on questioning. There are no Babinski's. DTR's are generally hyperactive with ________ bilaterally.

I am reasonably certain that he is having seizure like episodes. Will start him on small amounts of Dilantin to see if that will help. I experimented by increasing his oxygen from about 1 to 2 liters to 6 liters and found that he perked up mentally. He had an episode of hyperventilation when I was talking with him which I was able to interrupt by distraction. It may be that very careful attention to his pulmonary function and perhaps more regular use of oxygen might benefit his sensorium.

Apparently an EEG was performed today but the record is not available. No report is available. Whether or not the EEG is abnormal or shows seizure activity, I think he should be placed on 300 mg. of Dilantin a day and blood level drawn in three or four weeks. It would be nice to keep him around 10 to 12 and see if this has any effect on the episodes of loss of consciousness. If the Dilantin does not help and the oxygen does not help and the EEG is normal, we will have to get together and discuss the problem more in detail. In any case, I would like to have a follow up on him to know what happened. This could be done as an outpatient in the River Valley Offices or perhaps you could just give me a phone call when you see him next.

Thanks for asking me to see him.

jn 1-8-80

ROBERT G. GUMNIT, MD.
### RESPIRATORY THERAPY DEPARTMENT

### PERIODIC ROUNDS RECORD

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<td></td>
<td>2) 9 hr 1/2 humid cannula 3 PM</td>
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<td>3) STOP</td>
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<td>2) 9 hr 1/2 humid cannula 3 PM</td>
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<td>1) 9 hr 1/2 humid cannula 3 PM</td>
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<td>2) Stop 4 pm Cannula on this 6 pm</td>
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**Place in chart after service is stopped**

**Stamp patient information here**
<table>
<thead>
<tr>
<th>E &amp; Time</th>
<th>Progress of Case, Symptoms, Complications, Consultations, Condition on Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/20</td>
<td></td>
</tr>
</tbody>
</table>

- Tinea: He of T for 3 weeks of head, loc. exfoliation of scalp. Pat. I atop he
- C. o. o. c. with p. s. simple @
- Central scalp. P. T. limited to head.
- gradually, spread of plant lichen @.

- Initial episode according to number:
- No chronic - type permanent @.

- Pulmonary: C. O. C. Exudation, exudate, pink
- Upper @ basal : Hygiene - R. G. - C. O. C. of head.
- Lower: C. O. C. of throat.
- D.M. - Pneumococci.
- - Constitutional.


- Fix.: Saw to full B.O.P. type.

- No reported: St. V. A. Control.

A

1) H. @. - - - -

2) External respiration - ? Control

3) P. C. C. or activity.

4) Low flow.

- Comments:
6/18
Breathing better on O₂, no further episode.

7/20
O. Cough - cold change & back c. fluid
minor fissures
P. Throat clear, lip pem.
I. Consid. lung exam Am

7/21
S. Raked cough & very, constant with cough today. Day's just fill.
A. Lined, singularly slight, during 5 am
D. Not at protein but not seizure
A. Not filling. Seizure or hypoxic
B. "" "" "" "" hypoxic
P. Will get neurology + medical advice
evaluation + cage scheduled today

17 Int. med.

Would wonder if syncope spells
may not be related to ventilation
disturbance - 50% to hypoxia, or hypoxia
during apneic phase. Could also be it is a syncope, but do suggest that cough
is not a constant feature. Note dictated.

J. H.
11/10/80

5 - 5 p.m. - Waking up now - did not sleep well last night. Well on top of sleeping well.

6 - d - E - S - C - D - D

7 - 1 p.m. - No appetite.

8 - 1 p.m. - No appetite.

9 - 1 p.m. - No appetite.

10 - 1 p.m. - No appetite.

11 - 1 p.m. - No appetite.

12 - 1 p.m. - No appetite.

13 - 1 p.m. - No appetite.

14 - 1 p.m. - No appetite.

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46 - 1 p.m. - No appetite.

47 - 1 p.m. - No appetite.

48 - 1 p.m. - No appetite.
DO NOT USE THIS SHEET UNLESS A RED NUMBER SHOWS

DOCTORS' ORDERS & TREATMENT

12/31/74

Dr. Schulz, MD

25743-6

Dr. Schulz, 100

54985  4-21-15-64

CHART COPY
LAKEVIEW MEMORIAL HOSPITAL
Stillwater, Minn.

DO NOT USE THIS SHEET UNLESS A RED NUMBER SHOWS DOCTORS ORDERS & TREATMENT

TIME

MAY 25 1963

[Handwritten notes]

Change Foley.

24 hr. urine for protein.

Hc. 24 hr. 100 710 for 3 days.

128/80; IC. 40 peripheral.

EOG scan.

F. 33.7. 33.4. 22.4.

EKG: 1. Sinus tach., 2. on lead II.

Blood gases:

PH 7.38

Base excess 3.6

O2 85.5% HA 3.5

Check for atrial fib.

Notify drs. if any change.

Tolbutamide on 11th floor.

Tolbutamide on 11th floor.

Interview with patient.

No significant recent history.

Weight of patient is 160 lbs.

2/7/63-6

DR. SCHULZ 10B

5/15/64 4-21-64
DO NOT USE THIS SHEET UNLESS A RED NUMBER SHOWS

E & TIME DOCTORS ORDERS & TREATMENT

LAKEVIEW MEMORIAL HOSPITAL
Stillwater, Minn.

9/30 10. 11,12,000 U HEPARIN q6h IV in Hub lock
52. 20 mg Garamycin Nov. 21
3. No. I.V. + PT + PTT 10/11

Schulz /December 21

DC Q12 Heparin Sub Q

Lowe 40 mg IV every 6h

10 1/18 40 mg. Heparin q12.5 1/18

10 1/19 20 mg. Heparin q10 9:00 9 6h 1x
LAKEVIEW MEMORIAL HOSPITAL
919 W. ANDERSON STREET
STILLWATER, MINNESOTA 55082

GRAPHIC RECORD

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<table>
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### PATIENT CARE—TREATMENTS—TEACHING—CONFERENCES—ACCOUNTABILITY

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<tr>
<th>ACTIVITY</th>
<th>TIME AND INITIALS</th>
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### Teaching

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<tr>
<td>Medication</td>
<td>Dose, Frequency, Route</td>
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<td>Heparin 5000 u</td>
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<td>Lanoxin 0.25 mg</td>
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<td>Lasix 120 mg i.v.</td>
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<td>Ativan 1 mg</td>
<td>120 mg p.o.</td>
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<td>Slow K</td>
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<td>Kaopectin 1:10,000</td>
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<tr>
<td>Halvedol 1 mg</td>
<td>1000 i.m.</td>
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<td>IV Laks</td>
<td>20 mmol</td>
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<td>Castradin</td>
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<td>IV Lasix</td>
<td>20 mmol</td>
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<td>a Heparin</td>
<td>1000 i.m.</td>
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<td>Lanoxin 0.25 mg</td>
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At the end of 7 days or at discharge send Copy to Pharmacy.
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HEALTH INSURANCE CLAIM NO.:

ATTENDING PHYSICIAN:

3/3/64

4-21-64
LAKEVIEW MEMORIAL HOSPITAL

Date: 1-4-68
Time of Interview: 2:30 P.M.
How arrived: Car

Patient:
Wants to be addressed as: Mrs.

Accompanied by: None
Given to relative (Name):

Sex: F
P 58 R 160/100 Wt. 158 Chair X Standing

Introduction to or explanation of:

Articles with Patient:

Check:

<table>
<thead>
<tr>
<th>Articles with Patient</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>Upper Denture</td>
<td>X</td>
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<tr>
<td>Lower Denture</td>
<td></td>
<td>X</td>
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<tr>
<td>Loose bridge</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Partial plate</td>
<td></td>
<td>X</td>
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<tr>
<td>Ring</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Watch</td>
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<td>X</td>
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<tr>
<td>Glasses</td>
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<td>Contact Lenses</td>
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<td>X</td>
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<tr>
<td>Hearing Aid</td>
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<tr>
<td>Artificial Eye</td>
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<td>X</td>
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<tr>
<td>Limb</td>
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<td>X</td>
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<tr>
<td>Other</td>
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<td>X</td>
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</tbody>
</table>

Crutches
Walker
Can
Brace
Wheelchair

Disposition of Meds: X

Birth Control Pills

Allergies — medications, foods, others:

Kind of reaction

Food habits — likes, dislikes, restrictions

Bowel and bladder habits: Last B.M. 11/12
Does anything help?

Sleep habits: Do you take anything for sleep? 11/12: Do you get up at night? Why? 11/12:

5. Smoking: Yes or No

Are you bothered by smoke?

NURSING DATA BASE

- 250 -
Reason for hospitalization, precipitating factors, initial observations. What type of treatment did you and
your doctor plan for?

Past hospitalizations: When — Why — Any special memories?

Do you have any difficulties other than present illness for which you are being treated?

Significant personal family and social factors (relatives, friends, legal guardian, etc.) Special discharge
planning needed.

Nursing observations: Appearance, behavior, skin, speech, steadiness:

Problem List — Current:

1.
2.
3.
4.

Admitting Nurse
Informant
## PROBLEM LIST

**DIAGNOSIS:** Syncope episodes

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>GOAL</th>
<th>NURSING PLAN</th>
<th>INI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Backing out &amp; home</td>
<td>Help Dr. find etiology &amp; + prepare for</td>
<td>• Osmed q6h</td>
<td>KP</td>
</tr>
<tr>
<td>2. Leg edematous &amp; edema</td>
<td>1) Diet as Dr. 2) Med as Dr. 3) Elevate</td>
<td></td>
<td>KP</td>
</tr>
<tr>
<td>3. CHF - coughing &amp; congestion</td>
<td>• Coughing &amp; congestion</td>
<td>1) Restrict as Dr. 2) Elevation as Dr. 3) Diet as Dr.</td>
<td></td>
</tr>
<tr>
<td>4. Incontinence</td>
<td>Prevent skin breakdown</td>
<td>1) Keep skin dry 2) Elderly care</td>
<td>KP</td>
</tr>
</tbody>
</table>
NURSE'S NOTES

1-6-80. Sunday. Admission

5:30. Pt. had coughing spell while eating supper.
Color: purple, eyes rolled back, and apnea for 1 min. Pt. position changed and of breathing returned and color improved. Conscious and responding. Aware of choking episode. It takes this to happen at home.
F 38. P 32. Dr. Donaker notified. (Bill Mark)
7:30 Am. X-ray ordered. Sputum very viscid.

7-80. Monday. 1st hospital day.

Mr. Martinez\(\text{X}\) holds himself very rigid especially seems able to move when requested.
Super ventilate then seems to hold his breath. Tension very red then cyanotic. Will breath correctly when instructed.
No response to Lasix. Attempted iv. of ephedrine.

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7 am</td>
<td>Total 24 hr output: 1780 cc (estimated)</td>
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<tr>
<td></td>
<td>Subject awake then to feel at supper time</td>
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<tr>
<td></td>
<td>Subject has left leg tone = 1 +</td>
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<td></td>
<td>color good, no hyperpotassium episodes</td>
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<td>Subject remains fairly calm</td>
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<tr>
<td>11:40</td>
<td>Tuesday, 2nd hospital day</td>
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<tr>
<td>6 am</td>
<td>Pt. has been confused and disoriented throughout night, calling out</td>
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<tr>
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<td>for help but denies any need for assistance when asked. Hyperventilates</td>
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<tr>
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<td>frequently. No choking episodes throughout night. Gastrostomy patent</td>
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<tr>
<td></td>
<td>&amp; draining well. Bp 120/80. P 92 at 61/min throughout night. Unable to</td>
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<tr>
<td></td>
<td>decrease amount due to pt. remaining awake most of night. 17:30</td>
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<td></td>
<td>No leg. Snow in columba. Pt. keep SO-2Y</td>
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<tr>
<td></td>
<td>Hyperventilating ABC to tell a pt. to slow</td>
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<tr>
<td></td>
<td>Oxygen breathing. Problem = choking on food</td>
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<tr>
<td></td>
<td>Instructed to eat slowly, 40 cc water, 30 cc Kyd in 5 min</td>
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<tr>
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<td>He, a line, doing collected. No Black out</td>
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<td>Seizure activity seen. I Buttefield 7 pm</td>
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<td>Continued to have difficulty swallowing</td>
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<td>Supposed feeds &amp; liquids - 1 fast inhaler</td>
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<td>Has been awakening but has difficulty thinking, when often awake</td>
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<td>when asked &amp; provided assistance. He just wanted to know whether the</td>
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<td>baby is breathing. Help with breathing.</td>
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<td>Numerous hyperpotassium episodes</td>
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<td>that if  I am speaking to the baby, then he is breathing.</td>
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<td></td>
<td>2nd leg &amp; arm there were never the minute fluid.</td>
</tr>
</tbody>
</table>
NURSE'S NOTES

NAME

DOCTOR

ROOM NO

DATE AND TIME

1/9/69

3rd hospital day

Pt. has been awake throughout night, rolling over and

sitting up, confused and drowsy, hyperventilating frequently.

Went up in chair at beginning of shift. Pt. was gagging, cyanotic,

shaking, unable to lift legs. Pt. being up in chair again.

Rested up in chair after breakfast, Pt. well & helped to

confuse.

Hyperventilating when had Pumla into paper bag. AD admitted

at attempted to discuss and expect. Pt. seemed very

1:30 short of breath. So discussion was brief. Pt. seems

1:00 congested & food his receiving said he doesn't

have many feel饮食. Dawa, evidenced

2:15 up in chair for lunch. Appetite

good. Still hyperventilating. Pt.

out of blue. Pt. sat on the

bed & became totally calm.

Pt. started to talk very slowly; started

to sleep. Pt. said he

wasn't feeling well.

Bath took Pt.

Pt. became incoherent & tight red medication

Other wound's. Cigarettes on the bed.

12:30 Pt. fell asleep, Pt. said he

wouldn't be comfortable.

1:30 Pt. fell asleep, Pt. said he

had a headache. Pt. said Pt.

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had a headache. Pt. said Pt.

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NURSE'S NOTES

Doctor:  70-80 Thursday  4th hospital day

Nonresponsive to verbal stimuli. Nail beds, lips, ear lobes extremely cyanotic. Labored respirations. Unable to hear BP or Pulse at this time. Minimal urine output. Basix injection. Condition appears to be deteriorating rapidly. Family notified immediately and have been here throughout night. Respiration seem more shallow but still somewhat labored. Color remains unchanged. Urine output 40cc throughout night.

Intravenous, intramuscular, no pulse. Color dusky, unable to hear BP, pulse too rapid, seems irregular. 40cc of very noisy, lower extremities cold, edematous.

Nursing Notes: Given IM supportive care given.

Worshipful: Given 40cc I.V. IVR # 38 et I. et, I. et. Unable to count very accurately.

Dr. Schuler aware of status as stated above.

Seem sound more congested rate @ 58, extremities cool & dry. Urinary output in this shift is nil. BP absent. No initial pulse. Unable to obtain oral pulse due to noise. Shivering control quiet. Family here. F.A. seems to be experiencing labored breathing. Color dusky, diaphoretic. Appears to be increasing sleep, severe cop, no rest, rapid respirations. F.A. dusky, loud, general convulsion, later rapid respirations. Became more aware. Unable to speak. Urinary output nil. 120 cc given Waf. I.V.

BP blood pressure: 85/40. 

Physical exam: 7/10 S. S. J. 8/10 respirations. 

Urine: 50 cc. 

Body temperature: 38.7