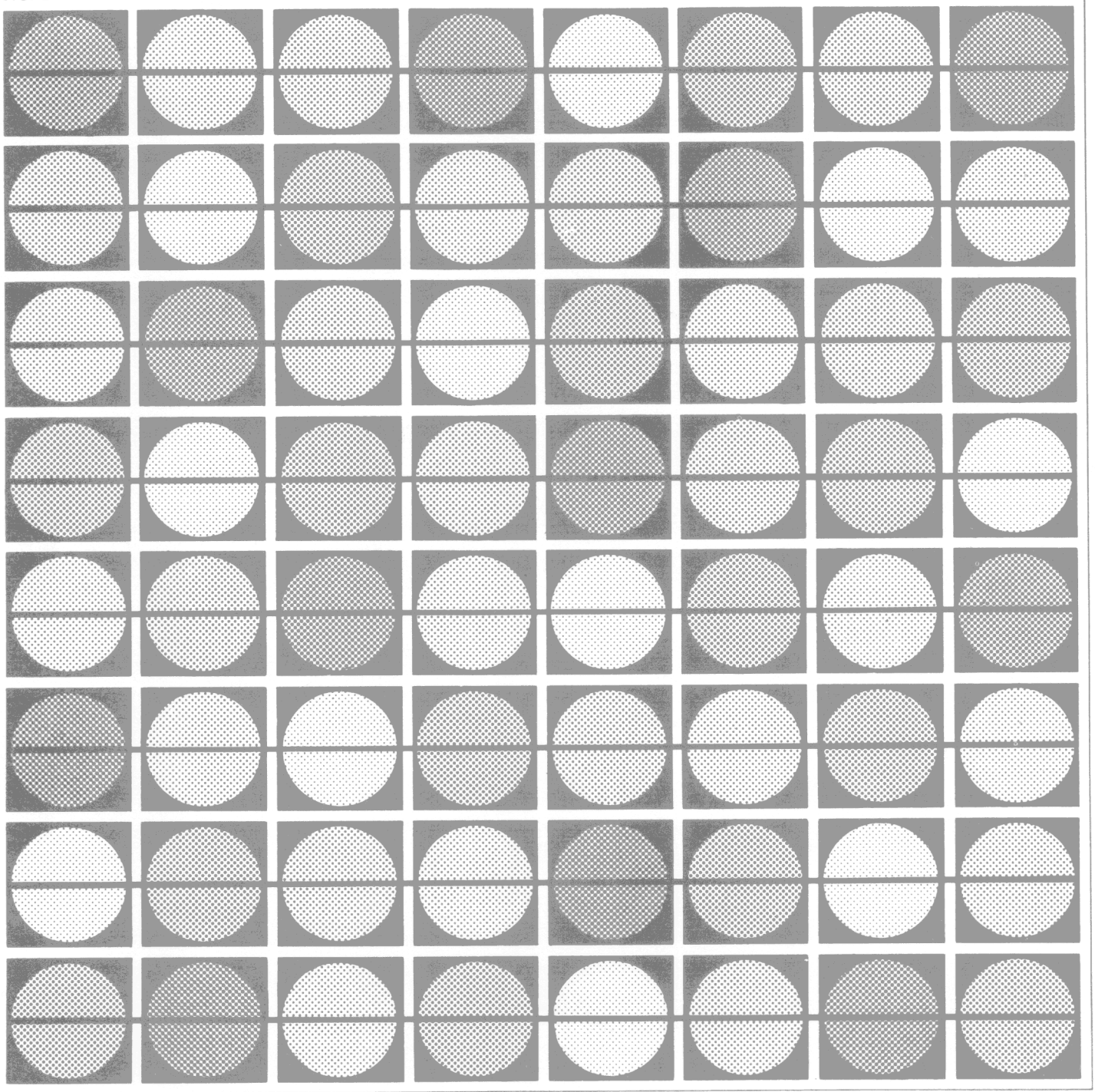
Instruction Manual Part 15e

Physician's Examination Manual for the Hispanic Health and Nutrition Examination Survey, 1982-84

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES • Public Health Service • National Center for Health Statistics



This manual was prepared by Westat with assistance from Development Associates.

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Hispanic Health and Nutrition Examination
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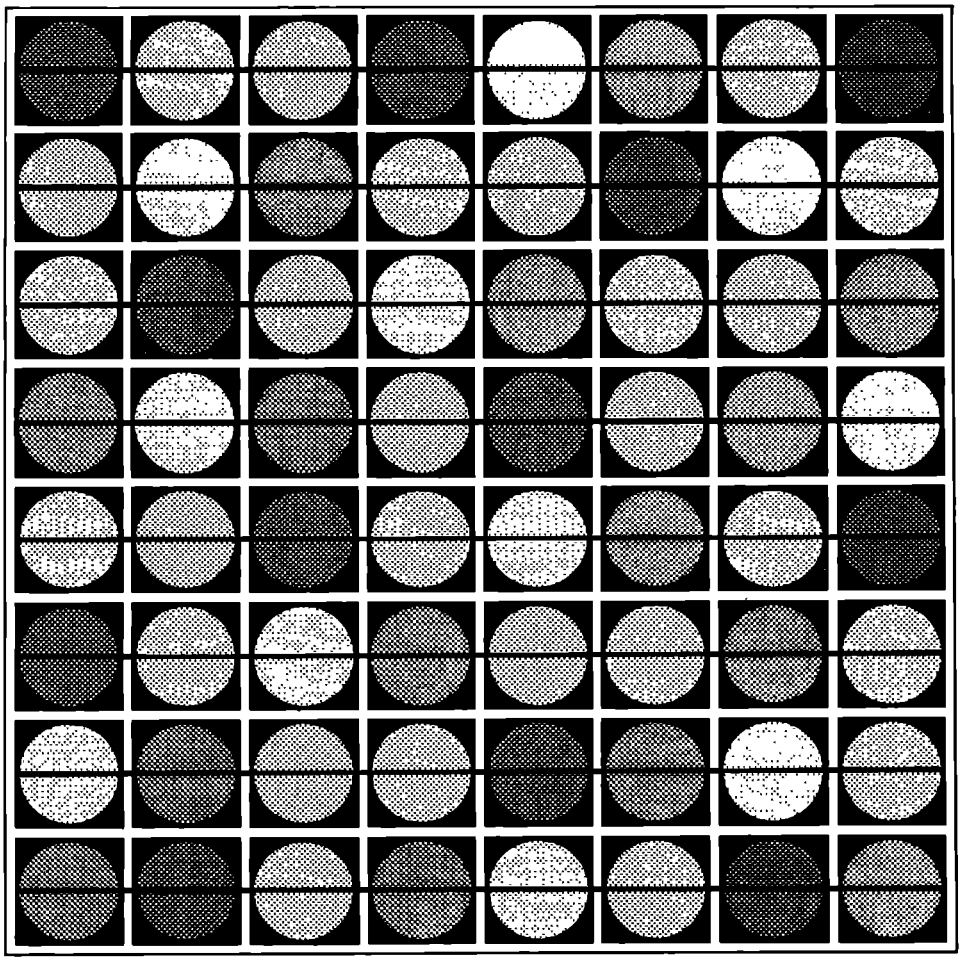
HHANES
Data Collection



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
National Center for Health Statistics

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EXHIBITS

PREFACE

This is the Physician's Manual for the Hispanic Health and Nutrition Examination Survey (HHANES). The manual contains an overview of the study, detailed directions for conducting the physician's examination, a description of the responsibilities of the physician and selected examination staff members who interact with the physician, and instructions on the nonexamination procedures. This manual is designed to serve both as a training device and as a reference source while you are in the field.

As you read through the manual you will notice that you will have responsibilities for tasks other than conducting the actual physical examination. The successful completion of this study requires that you work together with other mobile examination center (MEC) staff members as part of a team to see that all necessary tasks are completed.

Chapter 1

OVERVIEW OF THE HISPANIC HANES

1.1 Introduction

The Hispanic Health and Nutrition Examination Survey (HHANES) is being conducted by the National Center for Health Statistics (NCHS), U.S. Public Health Service. The survey will involve a sample of approximately 16,000 persons with Hispanic backgrounds who are 6 months through 74 years of age. Information will be collected about each sample person through interviews. In addition, about 12,000 of these sample persons will participate in the examination part of the survey.

The Physician's Manual is intended to serve as a training text as well as a reference source for your use throughout the survey. The manual describes the survey in detail, specifies the role of the physician, explains the procedures to be followed before, during, and after the physician's examination, and suggests resolutions for problem situations.

1.2 History of the National Health and Nutrition Examination Survey Program

The National Health Survey Act, passed in 1956, provided the legislative authorization for a continuing survey to provide current statistical data on the amount, distribution, and effects of illness and disability in the United States population. In order to fulfill the purposes of this Act, it was recognized that at least three types of information should be collected: commentary about the health status of a sample of people themselves by direct interview; clinical tests, measurements, and physical examinations of sample persons; and abstracts of records and interviews with staff at places where persons received medical care such as hospitals, clinics, and doctors' offices.

Between 1959 and 1980, NCHS conducted five separate examination surveys. The first National Health Examination Survey (NHES I) focused mainly on selected chronic diseases of adults aged 18-79. NHES II and NHES III, conducted between 1963 and 1970, focused primarily on the growth and development of children. Information was also collected on height, weight, and other body measurements, dental health, vision, and hearing ability. These examinations were conducted by highly trained teams of health personnel using carefully calibrated equipment in specially equipped Mobile Examination Centers (MEC's) which provided a standardized environment.

The fourth survey introduced a new emphasis. The study of nutrition and its relationship to health status had become increasingly important as researchers began to discover links between dietary habits and disease. In response to this concern, under a directive from the Secretary of the Department of Health, Education and Welfare, the National Nutrition

Surveillance System was undertaken by NCHS. The purpose of this system was to measure the nutritional status of the U.S. population and changes over time. However, a special task force recommended that a continuing surveillance system include clinical observation and professional assessment as well as the recording of dietary intake patterns. Thus, the National Nutrition Surveillance System was combined with the National Health Examination Survey to form the National Health and Nutrition Examination Survey, NHANES.

NHANES I, the first cycle of the NHANES studies, was conducted between 1971 and 1975. This survey obtained information on a national sample of over 30,000 persons between the ages of 1-74 years. Extensive data on health and nutrition were collected by interview, physical examination, and a battery of clinical measurements and tests from members of the sample. Emphasis was placed on dental health, skin problems, eye conditions, and nutritional status. For adults 25-74 years of age, detailed examination components for determining the prevalence of chronic lung disease, disabling arthritis of the hip or knee, and cardiovascular disease were included. In addition, information on health care needs and general well-being was obtained.

The planning process for NHANES II was carried out in 1974 and 1975 in collaboration with other Federal agencies. Throughout the planning stage there was continual awareness of the necessity of making the data collection for NHANES II comparable to the first NHANES so that NHANES I could provide baseline data for assessing changes over time. This meant that many of the same measurements had to be taken the same way on the same age segment of the U.S. population in both surveys.

The NHANES II began examinations in February of 1976 with the goal of examining 21,000 persons between the ages of 6 months and 74 years. This survey was completed in 1980. NHANES II assessed many of the same conditions as did NHANES I. In addition, in NHANES II, measurements of the population's exposure to pesticides were made along with determinations of blood levels of certain trace elements in an effort to study some of the relationships between the environment and health. A detailed diabetes component was also included. A comparison of NHANES II data with the earlier survey data will provide the first look at changes in the health and nutritional status of the population over time.

In addition to the NHANES I, NHANES II, and Hispanic HANES, a fourth NHANES project is now underway. This study, the NHANES Epidemiologic Follow-up Survey, is an attempt to conduct follow-up interviews with the sample population, now aged 35-84, who were interviewed and examined in NHANES I between 1970 and 1974.

1.3 Purpose of the Hispanic HANES

Despite the size, cultural and historical uniqueness, and disadvantaged status of the Spanish-heritage population in the U.S., few studies have been made of their health and nutritional status. Although in recent years health

data have been collected on Hispanics in national surveys, Hispanics were sampled according to their proportion of the total population. Because that proportion is relatively small, the number of Hispanics included in these surveys has been insufficient to permit reliable estimates of various health parameters to be made. Additionally, earlier studies did not include sufficient numbers of people of Mexican, Cuban, and Puerto Rican background to make detailed estimates of health characteristics for each of these groups.

Policy makers in the health field have therefore identified the need to direct special efforts towards the Hispanic population. Additionally, in P.L.94-311, (Roybal Act), Congress mandated the collection of social, health and economic data on Hispanics at the national level.

To accomplish this end, two official groups identified the need for a Health and Nutrition Examination Survey for Hispanics. The National Academy of Public Administration several years ago recommended that following NHANES II, NCHS should undertake studies of subpopulation groups, beginning with Hispanics. At the same time, the Department of Health and Human Services identified goals for a Hispanic Initiative, which included Hispanic HANES.

The objectives of the Hispanic HANES are to produce and publish health and nutritional data required to assess the status of health and health care needs of Hispanics, as an aid to policy makers in the health field. More specifically, the Hispanic HANES will provide information about diagnosed conditions including those which persons may fail to report or may be incapable of reporting in a survey based upon individual interviews and previously undiagnosed, unattended, and nonmanifested diseases. All procedures, tests, and measurements will be carried out in a uniform and standard manner so that data from this study will be comparable to data collected in previous NHANES. Hispanic HANES data will also be used to create a baseline of statistical information which can be used for comparison with corresponding information gathered from future surveys. Furthermore, Hispanic HANES will use a methodology designed to produce data which can generate reliable estimates for the three major Hispanic subgroups in the U.S.: Mexican-Americans, Puerto Ricans, and Cuban-Americans.

1.4 Method of Data Collection

The mobile examination center or MEC for Hispanic HANES will be set up as in previous NHANES. The examinations will be conducted in specially equipped MEC's consisting of three mobile trailers each. The trailers will be drawn by detachable truck tractors when moving from one sample location to another. At the examination sites, which will be centrally located areas within the Hispanic communities (such as hospital or shopping center parking lots), the three trailers will be set up side by side and connected by enclosed passageways. The MEC's will provide a standardized environment in which the MEC team will conduct physical and dental examinations, laboratory and physical measurements and tests, and medical and dietary interviews.

The MEC examination team will consist of a variety of interviewing and medical personnel. Although MEC personnel will be composed of NCHS, Westat and Development Associates employees, the MEC will operate as a totally unified team effort. For the Hispanic HANES each MEC team will consist of the following members:

A Coordinator will have complete authority concerning all administrative matters within the MEC. The primary responsibility of the Coordinator will be to regulate the flow of examinees through the MEC examination process. S/he will set up the examination folders and verify that all exams have been conducted and recorded before each examinee leaves the MEC.

A Physician will conduct the medical examinations. S/he will record and edit the results on Physician Examination Forms.

A Nurse will draw blood for blood tests and will assist the Physician in conducting medical examinations.

A Dentist will conduct dental and vision examinations and will have administrative duties associated with conducting those examinations.

Three Health Technicians will take body measurements, sonograms, X-rays, ECG's, and administer auditory exams. The Health Technicians will also be trained as Dental Recorders. The duties of the Health Technicians will be assigned on a rotating basis.

Two Lab Technicians will conduct medical laboratory tests and record and edit the results.

Two Dietary Interviewers will administer, edit and transmit questionnaires on 24-hour recall of types and frequency of foods consumed. They will assist with the examinee flow if needed and will be responsible for studying the local Hispanic dietary patterns.

A MEC Interviewer will administer, edit and transmit the SP Questionnaire on mental health, alcohol consumption, drug abuse, pesticide exposure and reproductive history.

In the event of illness or other emergency, backups will be provided for all MEC team members who are directly involved in conducting examinations or interviews. Together, the MEC examinations and interviews are expected to take up to three hours for each examinee. Transportation to and from the MEC will be provided for examinees.

The examination components for all examinees will include:

A review of the medical history and a physical examination by a physician

A dental examination

Body measurements, including height, weight, and skinfolds, made by trained technicians

A dietary interview, conducted by experienced nutritionists, covering food consumption and dietary habits

Numerous laboratory tests on blood and urine specimens

Depending on the age of the participant, the rest of the examination will include some or all of the following:

Diagnostic ultrasound for detection of gallstones

A glucose tolerance test

An electrocardiogram

Tests for hearing and vision

Tests for liver disease

Questionnaires on mental health, alcohol consumption, and drug abuse

Tests for venereal disease

Urine and blood tests to check for the presence of lead, carbon monoxide, and pesticide body burdens

Chest X-rays

Hair tests for trace elements

MEC days of operation are Tuesday through Saturday. There are three possible exam sessions per day: 8:30 a.m. - 12:30 p.m., 1:30 p.m. - 5:30 p.m., 6:00 p.m. - 10:00 p.m. Only two sessions will be scheduled each day. Tuesdays and Thursdays will have morning and evening sessions; Wednesdays, Fridays and Saturdays, morning and afternoon sessions. There are 10 examinee slots per session, so about 20 SP's will be examined in the MEC each day.

The overall role of the MEC team members is to collect data through examination, tests, measurements and interviews. It is absolutely essential that the data collected be consistent within and across the MEC's, as well as with earlier NHANES studies; and these data must be complete and accurate. Each individual staff member is the first and best guarantor of the quality of the data being collected. As such you have a responsiblity for quality in every single step of the examination process. The most obvious methods of assuring quality are to perform precedures with accuracy, precision and in a uniform manner according to the specifications provided to you during training and to record completely, accurately, uniformly and legibly. You are urged to suggest areas where quality control procedures need to be instituted and methods for their implementation.

1.5 Confidentiality

For the Hispanic HANES names of sampled persons will be entered into the NCHS computerized database. However, NCHS data tapes are protected under Section 308(D) of the Public Health Service Act (42 U.S.C. 242m). This law states that NCHS data tapes cannot be given to any other agency or individual, nor can they be subpoenaed by local, state or federal courts.

All information obtained in the Hispanic HANES will be held strictly confidential. Westat and Development Associates are firmly committed to the principle that the confidentiality of individual data obtained through surveys must be protected. This principle holds whether or not any specific guarantee of confidentiality was given at the time the data were collected or whether or not there are any specific contractual obligations with the Federal agency who is sponsoring the study. Westat and Development Associates adhere to the provisions of the U.S. Privacy Act of 1974 (PL-93-579) with regard to surveys of individuals for the Federal government. Therefore, employees and consultants of Westat and Development Associates are required to sign a pledge of confidentiality. This pledge states that the person understands that s/he is prohibited by law from disclosing any information obtained while working on the study and pledges to abide by the Assurance of Confidentiality.

1.6 Informed Consent

A letter will be sent to each household which falls into the screening sample explaining that an interviewer will call on that family shortly. After a determination has been made by the interviewer that at least one person in the household is eligible to participate in the survey, and after the household questionnaire material has been administered, the interviewer will discuss the examination phase of the survey with each sample person and give them a copy of the Sample Person Brochure. This brochure has been developed as a means of conveying the contents of the examination, the voluntary nature of participation in the survey, the purpose of the study, and the confidentiality with which any information collected must be treated.

After the sample person has had a chance to review the brochure and ask any questions, the interviewer will read the consent form to the sample person and ask that person to sign the form as an indication of their willingness to participate in the study. If the sample person does not wish to sign the form then they may bring the signed form with them when they come to the exam center, or they may have additional questions answered at the exam center before they sign. Generally, a refusal to sign the consent form will be considered a refusal to participate in the examination phase of the study and examinations will not be done on sample persons who do not sign the consent form. However, should an occasion arise when a sample person is willing to consent to participate in the survey, but refuses on principle to sign any document, the interviewer will, in the presence of a witness, go over the contents of the Sample Person Brochure with that person and note on the form that this has been done. In this instance, the actual participation in the examination phase of the survey will be used as indication of consent.

For minors the signature of a parent or guardian is required on the consent form. Additionally, minors over the age of 12 years will be asked to sign as an indication of assent.

The same form will be used to secure permission to forward the results of the examination to the sample person's own physician or source of health care. A list of clinics and other health care organizations which will accept referrals from the Hispanic HANES will be drawn up during the advance arrangement phase of the field operation and made available to those sample persons who do not have a regular source of health care.

The SP letter, brochure and consent form are printed in both English and Spanish. The interviewer will read the consent form to the SP in the same language that was used during the home interview.

1.7 Professional Ethics

The members of the examining team are professionals who are conducting research as employees of Westat or Development Associates under the sponsorship of the National Center for Health Statistics. Westat and Development Associates strive to maintain and project a sense of professional integrity and honesty to all participants in survey research and expect that all their employees will do the same.

Each person involved in the collection, processing, and analysis of survey data must be continuously aware of the responsibility to safeguard the rights of all survey respondents. Primarily this means protecting the confidentiality of all participants in the study. But in addition, this implies professional conduct both on and off the job. Cooperation from the public is essential to the success of survey research. Westat and Development Associates have expended a great deal of effort in developing and maintaining cooperation from the Hispanic community and the general public. It is the responsibility of each person working for Westat and Development Associates to build on the companies' reputation of integrity so that we can continue to have access to study participants during current and future surveys.

As you travel about the country for the Hispanic HANES you may find yourself to be very much in the public eye, particularly in the smaller stands. Sampled persons are justifiably concerned about who will be conducting the examinations. As a result, it is important that you be discreet in speech and actions. The Public Health Service Act requires that you refrain from any discussions about an examinee or the survey which might be overheard and unfavorably misinterpreted. You should exercise good judgment in any discussion of controversial subjects. You should be conscious of the customs of the area and should avoid any actions which might reflect unfavorably upon Westat, Development Associates, and the U.S. Public Health Service or interfere with the work of the survey. Your personal appearance and behavior must be governed by these same considerations.

1.8 MEC Procedures and the Physician

An overview of MEC procedures that relate to the physician helps to put the physician's examination in context. Upon arrival at the MEC, each examinee will check in with the coordinator who will be positioned just inside the MEC entrance. The coordinator will assemble an examinee's folder of relevant data forms to be completed, including a copy of the examinee's consent form and complete background information on a master control record which she uses to track the examinee's process through the various MEC stations. The physician will have received a list of the names of persons to be examined for each of the two examination sessions for the day. The physician should go to the coordinator's station and meet each examinee. The coordinator will give the examinee's folder to the physician so s/he can complete the necessary forms while and after conducting the physical examination. The physician will briefly describe the physical examination to the examinee before reviewing the notes s/he made on the examinee's medical history. As the exam is proceeding, the physician should record the results on the Physician's Examination Form. The physician will also fill in information on the Control Record and Report of Physical Findings I. When the physical examination is completed and when relevant forms have been filled in and edited, the physician will return the examinee and the examinee folder to the coordinator.

1.9 Medical Policy Regarding the Examination

The purpose of the Hispanic HANES is to collect data on the health status of the Hispanic population. Unfortunately, health care for minorities is frequently substandard; the role of the MEC team members is to document the effects of such care (or lack of it). Treatment is not within the role of the MEC dentist or physician, and although concern for proper treatment is admirable, such concern should never be allowed to interfere with data collection. We are not set up to treat or manage medical problems. In most instances the examining dentist and physician will not be licensed within the state in which the examinations are being conducted. The malpractice insurance obtained for the Westat dentists and physicians does not cover any type of treatment procedure.

It is also important to keep in mind that we as individuals and as a health research organization have no control over local health care systems. Any involvement beyond routine referral is ineffective and interferes with the purpose of the study. Referral of examinees has been included in the MEC procedure for ethical reasons even though referral is <u>not</u> within the purpose of the study. Instead we anticipate that the Hispanic HANES data analysis will provide documentation of any substandard care being delivered to the Hispanic population and that this evidence may ultimately provide the impetus for the improvement of local health care systems.

Generally it is not necessary to discuss findings with the examinees unless referrals are needed. A single examination often does not allow an adequate interpretation of findings or provide a solid foundation for giving

specific advice to an examinee. Furthermore, providing the examinee with the findings may be contrary to what his/her personal or clinic physician has decided to do. Only the examinee's personal physician or community clinic physician who has the individual's long-term records available should interpret the findings and decide what to tell the person. For these reasons, reports of findings are routinely sent to the physician or clinic the examinee indicates or to an appropriate referral medical facility. Reports of findings include a physical findings report summary, a Centers for Disease Control (CDC) laboratory report, and if done, an ECG tracing and a copy of the chest X-ray. The examinee is encouraged to contact his/her physician/clinic or referral medical facility for results.

Based on the physician's examination and a review of the medical history provided by the examinee, the physician should place the examinee in one of three categories:

Level I — Major medical findings that warrant immediate attention by a health care provider; emergencies.

Level II — Major medical findings that warrant attention by a health care provider in the next month because they are expected to cause adverse effects within this time period and they have previously been undiagnosed, unattended, nonmanifested or not communicated to the examinee by his/her personal health care provider.

Level III — No medical findings; minor medical findings that an examinee already knows about, is under care for, or do not require prompt attention by a medical provider.

If the examinee is placed in the Level III category, no special steps are required. For such an examinee and, in fact, for all examinees who have consented to releasing the findings, reports of findings will be sent out by NCHS to the examinee's designated or referral health care provider.

If the examinee is placed in the Level II category, thus requiring early medical care, the examining physician should ask for and get oral consent from the examinee to contact his/her personal physician or clinic as named on the written consent form, verify that his form has been signed by the examinee, then contact that health care provider. When no health care provider has been listed on the signed consent form, the physician may transmit the information to a referral medical facility with the examinee's oral consent. Detailed procedures are presented in Section 3.5.

If the examinee is placed in the Level I category, thus requiring immediate medical attention, the physician should ask for and get oral consent from the examinee to contact an emergency medical service in the area such as a hospital ambulance service or a fire rescue squad, then contact that service.

If the examinee refuses to give oral consent, the physician should ask an available MEC staff member to serve as a witness while the physician tries to convince the examinee of the seriousness of the situation. If the examinee still refuses, the physician should terminate the MEC examination and have the examinee leave the center expeditiously. Section 3.6 presents details for handling medical emergencies, including those where an examinee suffers a medical problem requiring the immediate emergency procedures while in the MEC.

The examinee should be treated courteously as a person, not as a sample number. Exchanges of information between staff members for the better understanding of an examinee must be discreet.

As a matter of policy, when male physicians are examining female examinees either the nurse, if female, or another adult female should be present in the examining room.

1.10 Interrelationships Among All MEC Staff Members

Participation in the Hispanic HANES carries with it many responsibilities. Not the least of these is your responsibility to recognize that you are the member of a team of professional and paraprofessional persons upon whom certain demands have been placed in order to accomplish the overall task of the Hispanic HANES. You should be aware of and respect the job demands placed upon other staff members, maintain an attitude of tolerance and consideration for fellow members of the team, and willingly perform the extra tasks that may occasionally be assigned to support other staff members in the performance of their duties.

MEC staff members may be requested to perform tasks not directly related to their specific professional skills in order to implement the overall data collection plan. Staff members are responsible for appropriate care and safeguarding of sensitive data and expensive portable equipment used during the examination, including storing and locking in instances where applicable.

1.11 Your Role as the Physician on Hispanic HANES

As the physician in the MEC, you are responsible for the following tasks:

1. Setting up and checking equipment and supplies at the beginning of a stand

   The physician should complete the beginning of a stand inventory for the physician's room. This includes inventory of new supplies and equipment brought from the last stand. If supplies are needed for the physician's examination, the physician should notify the Field Operations Manager (FOM) immediately. The physician should set up the physician's room for use, making sure all equipment works. A detailed description is given in Section 3.7.

2. Participating in "dry runs"

   A one-session dry run with all members of the MEC team will be held at the start of each new stand. As a member of the MEC team, the physician will participate in this rehearsal of the examination and study procedures to be used with examinees. Problems identified in the tryout will be discussed with the MEC staff as well as ways to correct and alleviate such problems. Further description of this task is given in Section 3.12.

3. Reviewing the medical history

   The physician will review the medical histories before the exam session and make notes on significant items. The physician is responsible for obtaining the medical history forms from the Field Management Assistant in the field office. After reviewing the medical histories s/he must turned them over to the MEC interviewer before the beginning of the session.

4. Conducting the physician's examination

   As described in Chapter 2, the physician should conduct the examination in a uniform manner, ensuring complete data collection. Before beginning the examination, the physician should review the examinee's medical history with the examinee and obtain clarification and amplification of the history as necessary.

5. Completing the Control Record

   A Control Record accompanies each examinee's folder as s/he proceeds through the various stations in the MEC. The physician is responsible for noting the start and end times of the physician's examination, entering his/her examiner number, and if relevant, recording the reason why the entire physician's examination or part of it was not performed. Specifications for completing the Control Record are provided in Section 3.4.

6. Recording the results of the physician's examination

   The physician should record the results of each part of the examination on the Physician's Examination Form. In addition, the physician should provide diagnostic impressions and implications for health care needs based on the physical examination and the medical history of the examinee. Specifications for the completion of the Physician's Examination Form are included in Chapter 2.

7. Checking X-rays and ECG's

   The physician should check all X-rays and ECG's for clarity and pathology before the examinee leaves the examination center. As they

are available, a health technician will place X-rays in a box located in the hallway of the MEC near the X-ray room and will place ECG's in a box mounted on the door to the physican's room. Specifications for reading these are included in Section 3.3.

8. Completing the Report of Physical Findings I

   The physician should complete the physician's section of the Report of Physical Findings I, reporting both blood pressures and highlighting medical findings. Specifications for completing the physician's section of this report are included in Section 3.1.

9. Completing the Physician's Log

   The physician should enter information about each examinee in the daily Physician's Log. Specifications for completing this form are included in Section 3.2.

10. Completing the Medical Contact Log

    When the examination results indicate one or more significant medical conditions that should receive prompt medical attention, the physician designated by the examinee should be contacted about such findings. When no physician has been designated, contact should be made with an appropriate medical facility that is accepting referrals from the MEC according to already established arrangements. Specifications for completing the Medical Log and the form letter are included in Section 3.5.

11. Responding to medical emergencies

    If an examinee becomes ill or disabled for any reason during the examination session the physician should render only the level of care necessary to keep the examinee out of immediate danger, than arrange transportation to an appropriate medical facility. If indicated for the disabled examinee or if a potentially lifethreatening condition seems indicated based on the examination, the physician should call an ambulance, then accompany the examinee to the source of adequate medical care. Further details about medical emergencies are included in Section 3.6.

12. Maintaining equipment

    The physician should maintain the appearance of the physician's room and maintain the equipment for the physician's examination. Details about equipment maintenance are included in Section 3.10. The physician should also check the emergency kit at the beginning of a stand and after any use to be sure that all equipment like the cardiac resuscitation apparatus and the oxygen unit meet all guidelines and that an adequate supply of emergency drugs is

available. Details about the emergency kit are included in Section 3.6.

13. Sterilizing instruments

    The physician has primary responsibility for sterilizing all instruments used in the physical examination. Sterilization of instruments is discussed in greater detail in Section 3.8.

14. Being in the MEC when any testing procedures are being carried out by others

    The physician should report for duty not later than 15 minutes before examinations are scheduled to begin. The physician will need to arrive earlier to review medical histories if they were not reviewed on the previous day. S/he may leave only when all procedures except questionnaires have been completed and no adverse reactions are expected to occur.

15. Dealing with examination procedure problems

    The physician should consult the chief health technician and the coordinator about any contraindications to the examination procedure discovered by himself/herself or any other examination staff member. The physician is the final arbiter in all purely medical matters.

16. Handling examinee flow through the MEC

    The physician should defer to the coordinator on decisions pertaining to examinee flow.

17. Performing duties at the end of a stand

    The physician is responsible for four major duties at the end of a stand. These include (1) completing the physician's room inventory; (2) packing the physician's room and emergency kit for travel; (3) giving copies of the Physician's Log, the Medical Contact Log and form letters to the coordinator; and (4) mailing copies of these same materials to Westat.

Chapter 2

PHYSICIAN'S EXAMINATION PROCEDURES

2.1 Introduction

The objectives of the Hispanic HANES are to produce and publish health and nutritional data required to assess the status of nutrition, health and health care of Hispanics who are between the ages of six months and 74 years. All procedures, tests and measurements will be carried out in an objective, uniform and standard manner. Data from this study will be appropriate for the following major uses:

- To compare to the data collected in previous NHANES;
- To create a baseline of statistical information on nutrition and certain chronic diseases which can be used for comparison with corresponding information to be gathered in future studies; and
- To produce data which generate reliable health status estimates of the three major Hispanic subgroups, Mexican-Americans, Puerto Ricans, and Cuban-Americans.

In order to fulfill these purposes, the physician's examination must be conducted and recorded in as uniform a manner as possible. Instead of the general clinical examination performed in the manner familiar to examining physicians, this is a physical examination which is highly structured in order to collect consistent data on conditions pertinent to nutrition and certain chronic diseases. This is an examination designed to obtain information that is objective, measurable, and related to specific major physical diseases and defects. Neither the survey objective nor the structure and flow of the examination allow for definitive diagnosis. They do require consistency and speed for coordination with other examinations and measurements carried out in the MEC. This chapter of the manual provides the specific procedures to be followed for conducting and recording the examination.

2.2 Approach to Training

As indicated in the previous section the HHANES is an epidemiologic study. It is designed to determine the prevalence of certain diseases in the Hispanic population in the United States. Since its purpose is epidemiologic rather than diagnostic, the criteria used to determine a particular symptom or clinical sign may differ from those used in clinical practice.

However, since these data will be compared with data collected in the future to determine trends in the prevalence of disease and nutritional status, it is critical that explicit definitions and criteria be used and that these criteria be documented so that they can be used in the future.

Otherwise, differences found over time in the prevalence of disease that might be attributed to changes in nutritional status may actually be due to differences in criteria used. Similarly, because different examiners will be conducting the exam it is critical that they all use the same procedures and criteria. Otherwise, differences found between age groups or geographic locations may actually be due to examiner differences.

The training of the physicians involved in conducting and recording results of the physical examinations has a dual purpose. First, it provides the standardized methods for the examination; and second, it provides a consistent base of information for review of relevant physical examination procedures and definitions of physical conditions.

We have tried to stress those areas of the examination with which examiners may have had less experience. For example, heart sounds, particularly the identification and classification of murmurs, are described in detail. The WHO classification of goiters is described. Standardized blood pressure measurement techniques are stressed.

As in other epidemiologic studies, it is essential that the instructions for collection of information be clearly and completely presented and that these instructions be followed exactly.

2.3 Examination Goals and Format

The physician's examination for the survey has two goals:

- To obtain information on the presence or absence of the physical signs listed on the form; and
- To list and code conditions indicated by the physician's examination and the history.

The Physician's Examination Form is central to the Hispanic HANES data collection process. Several aspects of data collection should be considered before specifications for the completion of the form are discussed. There are two sources of error that may enter into a sample survey, sampling error and nonsampling error. The sampling error, error due to making measurements on a sample rather than on the entire population, can be quantified and is the concern of statisticians in sample survey design. Of equal importance is nonsampling error which is introduced during data collection and processing. Quality control centers on the control of nonsampling errors. Much time and effort in the HHANES will be invested in reducing nonsampling error and collecting data of high quality. Because examiners may inadvertently introduce variability and bias, all MEC examiners will be trained to conduct examinations and reach findings using standardized procedures and indices.

Just as uniformity and standardization are important in performing the procedures of the examination, these same characteristics are vital in

recording the observations or measurements. Accuracy and precision again are important, as well as an additional characteristic -- legibility. An entry that cannot be read is lost data.

There will be some unavoidable loss of data; for example, X-rays will be contraindicated for some examinees, and children may not cooperate for certain procedures. The examining staff are expected to use discretion regarding these unavoidable losses, to stop procedures occasionally when it is apparent that examinees cannot cooperate. It is the avoidable loss of data that is the responsibility of each staff member to prevent.

General specifications for completing the Physician's Examination Form are as follows:

- Before the examination session begins, review the medical histories (the Sample Person Questionnaires) for all persons scheduled to be examined during the session and make any necessary notes. There are two versions of the questionnaire; one is for adults 12-74 years old and one is for children 6 months-11 years. They are printed on colored paper, yellow for adults, blue for children. If there are any significant findings, or questions, these may be reviewed with the examinee for additional clarification or amplification. The Sample Person Questionnaire contains numerous sections. The most significant sections for the physician to review are the Health Services, the Conditions List, and the Medically Prescribed Drug List. See Exhibits 2-1 and 2-2 for a summary of the medical history items to review. Return the Sample Person Questionnaires to the Supplement Interviewer who will use them during the session.

- Fill out the Physician's Examination Form completely. There are 13 pages to the form. There are five additional forms used for tracking and documenting aspects of examination procedures.

- Enter all information using a No. 2 black pencil. If an incorrect entry is made, circle the incorrect answer and fill in the correct response. Accuracy of the data is the most important consideration. Print legibly and <u>do not</u> use medical shorthand.

- Note that the format of the form is similar to a check list in which the presence or absence of specific conditions and basic descriptive items are noted. Also, there is space to describe any additional findings or to expand on checked findings within each subsection of the form.

Exhibit 2-1. Summary of Medical History Items from the Child Sample Person Questionnaire, Ages 6 Months - 11 Years

PAGE	QUESTION	TOPIC
1	A 11, 12, 13	Birth
2	B 1, 3, 4	Health Services
4	B 14	
5	B 22	
6	B 28	
7	B 35, 36	
8	C 9-12	Dental and Anemia
8	D 1, 5, 6	Vision and Hearing
9	D 14, 15-21	
10	D 29	
10	E 1, 2, 5, 6	TB/Weight/Immunization/Pesticides
12	F 2-9	Functional Impairment
13	F 10-14	
14	G 1-4, a-n	Condition List
16	H 5-7	School Attendance and Language Use
21	K 5	Medicine/Vitamin Usage
22	K 6	
28	M 8, 9-13	Sample Child Self-Response
29	N 1, 2	Medicine/Vitamin MEC

Exhibit 2-2. Summary of Medical history Items from the Adult Sample Person Questionnaire, Ages 12-74 Years

PAGE	QUESTION	TOPIC
1 2 3 4 6	A 1-6 A 9, 14 A 17, 21 A 27 A 33-35	Health Services
6	B 1-6	Selected Conditions
8-10	C 1-27	Diabetes
10 11	D 1-7 D 11-17	Vision and Hearing
11 12 13 14	E 1-3 E 7, 8 E 22, 23 E 25-28	Hypertension
14-17	F 2-35	Gallbladder Disease
18-20	G 1-21	Cardiovascular Conditions
20	H 2-5	Smoking
22-25	J 2-42	Functional Impairment
25	K 1-3	Conditions List
35 36	P 5 P 6	Medicine/Vitamin Usage
43	R 1, 2	Medicine/Vitamin MEC

- o Notice that certain procedures are to be deleted from the examination on the basis of the age of the examinee. Leave the item on the form blank when the procedure is deleted due to age. These procedures are indicated on the form and are listed below:

  - Blood pressure - only measured on persons six (6) years and older.

  - Breast mass(es) - only examined for persons ten (10) years and over.

  - P.M.I. - only measured on persons eighteen (18) years and older.

  - Gallbladder questions - only asked of examinees who are given the ultrasound examination.

  - Tanner Staging - only determined on examinees between the ages of ten (10) and seventeen (17).

  - Ortolani's Maneuver - only performed on examinees less than age three (3).

  - Joints - only performed on examinees ten (10) years and over.

  - Epiphysial enlargement, wrists - only examined on persons under age eighteen (18).

  - Straight leg raising test - only performed on examinees age eighteen (18) and over.

- o In some cases certain parts of the examination will not be applicable. This will occur when, for example, the examinee has had the part of the body removed that is to be examined. Since there is no code on the form for these situations, write N.A. to the immediate right of the appropriate "No" box but not inside the box.

- o If the examinee is uncooperative (for example, is a crying child), or cannot perform some portion of the examination (for example, is an eight month old infant who cannot walk and cannot have gait evaluated), then make a note in the column on the right side of the form and leave the coding boxes blank.

- o Notice that the position of the examinee for each procedure is stated on the form.

- o Record positive findings as soon as they are discovered. The physician does not have to stop to record any normals until the next

recording point. If the examinee has no abnormal findings the points for recording are:

- just before the first pulse and blood pressure measurement,
- after completing the first pulse and blood pressure measurement,
- after completing the heart examination,
- just before the second pulse and blood pressure measurement,
- after completing the second pulse and blood pressure measurement,
- after checking the gait of the examinee at the end of the exam.

o Complete the form while the examinee is in the examining room to allow for any necessary corrections.

In this section of the manual, instructions for conducting the examination are organized as follows:

o 2.x - Body Part or System,

o 2.x.1 - Procedure -- explaining the position of the examination and how to examine the particular body part or system, and

o 2.x.2 - Recording of Findings and Definitions -- explaining how to complete the form and giving criteria for the conditions listed on the form.

This format is used for the remainder of this chapter.

2.4 Examinee Identification

2.4.1 Procedure

This information appears on the Control Record. It should be the same as that for the Sample Person Questionnaire and for the Control Record and it should be verified. The sample number is stamped on the bottom of the form.

2.4.2 Recording of Findings and Definitions

o Examiner No. - Insert your three digit identifier.

o Reviewer No. - Leave blank.

o Copy the following from the Control Record and verify with examinee:

- Age - Month or years. Record in months if examinee is less than

twelve months old; record in years if one year old or older. Use the age on the household interview day.

- Sex - Check the appropriate box, Male or Female.

2.5 Skull and Ears

2.5.1 Procedure

With examinee seated, inspect skull for bossing. Examine right ear first and then left ear:

- o Inspect external ear and canal for discharge, swelling or redness.
- o Inspect ear canal and eardrum using an otoscope. Use the largest speculum the examinee's ear canal will accommodate.
- o Inspect ear drum fully by sliding speculum slightly down and forward. Check color, shape and position of ear drum.

2.5.2 Recording of Findings and Definitions

- o Bossing of skull - Record abnormal prominence or protrusion of frontal or parietal areas by checking "Yes" box. If normal, check "No."
- o Check "Right" and/or "Left" ear under "Otitis externa" if evidence of inflammation is found in external ear canal. Check "No" if both canals are normal.
- o If there is a "Purulent discharge," check "Right" and/or "Left" as appropriate. If abnormality is not found in either ear canal, check the "No" box.
- o Under Ear Drums, check "Not Visualized, canal completely occluded" in the right and/or left ear if the canal is totally sealed by cerumen or any other substance and skip to A4 to give the reason for the occlusion. This item will be used in interpreting the Tympanic Impedance Test results.
- o Check "Not visualized, other" in right and/or left ear if there is not sufficient tympanic membrane visible to characterize the membrane. For positive responses skip to A4 and write the cause of the obstruction under "Other."
- o Check as many structured responses as apply in the description of the membrane, e.g., "Dull," "Bulging," and "Fluid" may all be checked under right ear. If there is a healed perforation check "Right" and/or "Left" under "Scars" as appropriate. If abnormality is not

found in either ear drum check the "No" box for each condition. If the membrane is perforated, check either "With discharge," or "Without discharge."

- o "Fluid" refers to an observable level of fluid behind the ear drum.
- o "Transparent" refers to an abnormally thin ear drum.
- o Write in under "Other" a description if the structured responses for the skull, auditory canal, and tympanic membrane need to be supplemented. Describe any causes of obstruction, e.g., cerumen, foreign body, discharge, or swelling.

2.6 Nares

2.6.1 Procedure

With examinee still seated, examine right naris first, then left:

- o Test patency of each nostril with inspiration (mouth closed) during alternate unilateral occlusion of other nostril.
- o Examine vestibule for inflammation and anterior septum for deviation.
- o Gently insert the short wide nasal speculum of the otoscope. Inspect mucosa, septum and turbinates for abnormalities.

2.6.2 Recording of Findings and Definitions

- o Obstruction is defined as the inability to breathe adequately through a single naris. Check "Right" and/or "Left" naris as appropriate if obstruction is present. If no obstruction is present in either naris check the "No" box.
- o For deviated septum check as "Right" or "Left" according to the direction of the deviation.
- o Nasal polyps are soft, smooth, pale, movable tumors, usually multiple.
- o Check additional boxes "Right" and/or "Left" as appropriate. Check "No" if the abnormality is not found in either naris.
- o Describe other significant findings under "Other" such as enlarged adenoids.

2.7 Lips and Pharynx

2.7.1 Procedure

Continue with examinee seated.

- Inspect lips and tongue for symmetry, color, ulcers, fissures or masses.
- Using tongue blade to depress tongue and asking examinee to say "ah" or yawn, look at anterior and posterior pillars and observe tonsils for enlargement, redness or exudate.

2.7.2 Recording of Findings and Definitions

- Check "Yes" box if condition is present. Check "No" box if not.
- Cheilosis - Reddened appearance of lips with fissures at the angles of the mouth.
- Cyanosis of lips - Slightly bluish, grayish, slate-like, or dark purple discoloration of the lips.
- Tonsils are considered enlarged for adults if they protrude one centimeter beyond the fossa. For children, tonsils are considered enlarged if they protrude two centimeters beyond the fossa.
- Describe other findings under "Other" such as abnormality of tongue, buccal mucosa, uvula or parotid glands.

2.8 External Eyes

2.8.1 Procedures

Carry out all eye tests with the examinee seated. If the examinee wears glasses, have them removed for the following examinations. Contact lenses may be left in place.

- Check for strabismus, muscle coordination or imbalance. Cover one eye while examinee looks at light, then uncover it. Note if each eye holds its position or if the eye that was covered swings back into position after being uncovered. Inspect eyelids, conjunctiva and sclera for redness, dryness, or other lesions.
- Inspect cornea of each eye for opacities or other abnormalities.
- Compare size of pupils and check with pen light for pupillary reflex.

With the examinee seated, examine the fundus of each eye using an ophthalmoscope.

- o Set ophthalmoscope to 8+ diopters.
- o Tell examinee to look straight ahead at a specific point on wall.
- o Use your right hand and right eye to examine examinee's right eye.
- o Place your left hand on examinee's forehead.
- o Shine light beam on examinee's pupil.
- o Locate red reflex noting any opacities interrupting the reflex.
- o Move in toward examinee and when the retina is seen, focus carefully and follow a blood vessel centrally to optic disc.
- o Check optic disc for normal color and shape and optic cup-to-disc ratio.
- o Follow vessels from disc into each of 4 quadrants.
- o Observe relative size of smaller arterioles to larger veins.
- o Check for changes such as nicking at arteriovenous crossing.
- o Examine surrounding retina for hemorrhages or exudates.
- o Lastly, examine macula which is about 2 disc diameters lateral to optic disc.
- o Repeat procedures on examinee's left eye using your left eye and left hand with your right hand on examinee's forehead.

2.8.2 Recording of Findings and Definitions

Indicate the presence of any of the following by checking the appropriate "Yes" box. If not present, check the "No" box for that condition.

- o Strabismus (squint) - A disorder in which optic axes cannot be directed to same object, due to lack of muscular coordination. Check "Yes" box if test is positive (eye moves into position when uncovered) or if there is an obvious squint. Check "No" box if no abnormality in muscle imbalance is seen.
- o Conjunctival injection (bilateral) - Generalized increase in the vascularity of the bulbar conjunctivae in the absence of obvious infection.

- Pale conjunctiva - Conjunctivae do not show the normal brightness and color, usually associated with anemia.

- Xerophthalmia - Xerophthalmia is recorded when the bulbar conjunctiva and cornea are dry and lusterless with a decrease in lacrimation. It is rarely associated with evidence of infection but in extreme cases is associated with keratomalacia.

- Keratomalacia - Corneal softening with deformity, either localized (usually central part of lower half of cornea) or total.

- Pterygium - Triangular thickening of the bulbar conjunctiva.

- Corneal lesions - Any such lesions of the cornea as abrasions, ulcers, thickening, or opacities. Check the box corresponding to the eye(s) involved or the "No" box if not present.

- Unequal pupils - Check larger pupil if pupils are of unequal size or "Equal" if they are the same size.

- Pupillary light reflex - Check normal if on shining the light into the eye the iris contracts quickly and equally for both eyes, resulting in a smaller pupil. The pupil should return to normal quickly after light is removed.

- Record positive findings by checking "Right" and/or "Left" box for each condition noted. Check "No" box if the condition is not present in either eye.

- Globe absent - Recorded when the eye has been enucleated, regardless of the presence or absence of a prosthesis. If globe is present but examinee is blind in that eye note in "Other."

- Red reflex - Through the ophthalmoscope, pupils appear to be red at a distance of one foot from the eye. If the red reflex is decreased or abnormal, check the box corresponding to the eye involved. If the red reflex is normal (that is, not decreased) check the "No" box.

- Lens opacities - Well advanced cataracts appear as gray opacities in the lens. They will be seen with the ophthalmoscope held about 12 inches away. Small ones stand out as dark defects in the red reflex. A large cataract may obliterate the red reflex.

- Papilledema (choked disk) - A swelling of the nerve head from increased intracranial pressure or interference with venous return from the eye. It is usually bilateral.

2.9 Neck

2.9.1 Procedure

Continue with examinee seated.

- o Palpate the neck lymph nodes in the following areas:
  - In front of and behind the ear,
  - Occipital,
  - Submental,
  - Submaxillary,
  - In front of and behind the sternocleidomastoid muscle, and
  - Supraclavicular.
- o Inspect and palpate the thyroid gland for goiter as follows:
  - Stand in front of the examinee,
  - Observe the neck for thyroid gland visability with head in normal position and then have examinee extend his neck to expose the thyroid area by tipping his chin upward,
  - For each of these positions, observe the gland at rest and as the examinee swallows two or three times,
  - Palpate the gland with both hands simultaneously, the fingers on the occiput and the thumbs on the thyroid gland.
  - Palpate at rest and as examinee swallows two or three times for thyroid gland contour, tenderness or nodes.

2.9.2 Recording of Findings and Definitions

- o Check "Yes" box as appropriate if abnormality is found. Check appropriate "No" box if abnormality is not present.
- o Thyroid gland evaluation - classify size of goiter using the World Health Classification as follows:
  - Grade 0 - Persons without goiter. By definition these are persons whose thyroid glands are less than 4 to 5 times enlarged.
  - Grade 1 - Persons with palpable goiters. The thyroid gland is considered to be more than four to five times enlarged although

not visible with head in normal position. Most of such glands will be readily visible with the head tilted back and neck fully extended.

- Grade 2 - Persons with visible goiters. Persons with goiters that are easily visible with the head in normal position, but that are smaller than those in Grade 3.

- Grade 3 - The goiters of persons in this category can be recognized at a considerable distance. They are grossly disfigured and may be of such size as to cause mechanical difficulties with respiration and the fit of clothing. Palpation may be helpful in determining the mass of the gland but is not needed for diagnosis.

o Check "Right" and/or "Left" box(es) if tenderness or nodule is found. Check "No" box if either of these conditions is not found.

o Describe other abnormal findings such as tracheal deviation and distended neck veins under "Other."

2.10 Pulse and Blood Pressure Measurement

The pulse and blood pressure will be measured by the physician. Although these tests appear quite simple, accurate and standardized measurements depend on many factors. Because the measurements must be obtained in a uniform manner for each examinee, it is critical that you always follow these procedures.

For examinees who are age six and older the pulse and blood pressure are measured at two specified points in the physician's examination. Both blood pressure measurements are made with the examinee seated. The measurements are taken at specified points during the examination when the examinee is as quiet and undisturbed as possible.

For examinees who are age five and younger only the pulse is measured. This one measurement should be made at the time when the second blood pressure would be measured for older examinees.

Be sure that the examinee does not smoke or drink coffee during the examination since these could affect the blood pressure. If the examinee has had any alcohol, coffee, or cigarettes thirty minutes before the examination, record this on the form but still take the measurements.

There are some situations where taking the blood pressure is contraindicated. For example, if there are any rashes, bandages, casts, puffiness, paralysis, tubes, open sores or wounds on both arms do not take the blood pressure. If these conditions prevent measuring pulse, do not attempt taking the blood pressure. Give the reason why the blood pressure cannot be taken on the form.

The blood pressure is to be measured in the right arm. If the examinee indicates any reason (such as needles or tubes in the arm during the last week) why this procedure should not be done in the right arm, use the left.

2.10.1 Procedure

There are five parts to the pulse and blood pressure measurement. These are:

- o Locate the pulse points,
- o Select and apply the cuff,
- o Determine the maximum inflation level,
- o Measure the pulse, and
- o Determine the blood pressure.

Each of these is described below. For each of the procedures the arm should be placed at the level of the fourth intercostal space. The arm should be supported by the adjustable instrument table which should be elevated to the height necessary to bring the arm to this level.

2.10.1.1 Locate the Pulse Points

- o Locating the radial pulse: With the examinee's right palm turned upward, place the first two fingers of your hand on the outer part of the crease of the wrist.
- o Locating the brachial pulse: Again, with the right palm of the examinee turned up, and the arm straightened (slightly bent at the elbow), place the first two fingers of your hand on the innermost (side toward the body) part of the crease of the elbow. If the brachial pulse is not felt, move your fingers slightly closer to the center of the arm, again press firmly in and hold. Continue this to the center arm. If the brachial pulse is still not felt, begin again from the center of the arm and work your way to the innermost (toward the body) part of the crease of the elbow.
- o Both pulse and blood pressure will be measured in the same arm. The right arm will always be used unless specific conditions prohibit its use. Use the following guidelines:
  - If the radial pulse is apparent, whether or not the brachial pulse can be felt, proceed with the measurement of the pulse.
  - If the radial pulse cannot be felt in the right arm, use the left arm.
  - If the radial pulse cannot be felt in either arm, terminate the pulse and blood pressure procedure and note this on the form.

2.10.1.2 Select and Apply the Cuff

- Select the proper cuff size. The five cuffs to be used are the infant cuff, child cuff, adult cuff, large arm cuff, and thigh cuff. The size of the cuff and bladder used influences the accuracy of the blood pressure readings. If the cuff is too narrow, the blood pressure reading will be too high, and if it is too wide, the reading will be too low when compared to measurements taken intra-arterially. The size of the arm, not the age, determines the size cuff used.

  The inside of the cuff is marked with an index line and range lines. If the index line along the edge of the cuff fits completely within the range lines inside the cuff, the cuff is the correct size. If the cuff is barely large enough, the next larger cuff will be used. If no cuff fits, the blood pressure will not be measured.

  Each cuff size will have a complete inflation system. These are easily attached by a twist connection to the manometer. It will not be necessary to exchange inflation bulbs and valves with the various cuffs.

- After locating the pulse points, apply the cuff to the examinee's arm. Observe the examinee's arm and begin with the cuff that appears appropriate. Check the size before applying the cuff by making sure that the index line falls completely within the range lines. If the cuff is barely large enough, use the next larger size. The procedure for applying the cuff is as follows:

  - In selecting the proper cuff size, check the index line to determine if it lies completely within the size range lines marked on the cuff.

  - Position the rubber bladder over the brachial artery at least one inch above the natural crease across the inner aspect of the elbow. Place the marker on the inner part of the cuff directly over the brachial artery.

  - Wrap the cuff smoothly and snugly around the arm in a circular manner. No spiral direction of the cuff should be used.

  - Check the fit by placing both thumbs under the cuff and tugging gently.

  - For very large arms use the thigh cuff. Wrap the thigh cuff around the upper arm, not the thigh. If the thigh cuff covers the brachial artery at the arm crease, do not measure the examinee's blood pressure.

  - If a proper fit cannot be obtained with any of the cuffs, do not measure the blood pressure. Explain the reason to the examinee and note the problem on the form.

2.10.1.3 Determine the Maximum Inflation Level (MIL)

To measure the maximum inflation level (MIL), connect the inflation tubing to the manometer by twisting the two ends of the tubing together. The MIL is obtained to determine the highest level to which the cuff should be inflated. If the cuff is underinflated and the examinee has an auscultatory gap, a falsely low reading will result. If the cuff is overinflated a falsely high reading could result.

The MIL will then be determined as follows:

- Locate the radial pulse pressure point in the arm to be used.
- Close the thumb valve. Palpate the radial pulse and watch the center of the mercury column of the manometer.
- Inflate the cuff quickly to 80 mm Hg, then inflate in increments of 10 mm Hg until the radial pulse disappears noting the reading of the mercury column at that point. Continue inflating the cuff at increments of 10 mm Hg, pausing briefly to make sure the pulse is absent. Continue 30 mm Hg higher to make sure the radial pulse has disappeared.
- Rapidly deflate the cuff by opening the thumb valve completely and disconnecting the tubing.
- The MIL is the reading at the point the radial pulse disappeared plus 30 mm Hg.
- Wait 30 seconds before making a second attempt if the first is unsatisfactory. If the second attempt is unsatisfactory, terminate the procedure and note the problem on the form.

This value is the maximum level to which the cuff should be inflated for measuring this examinee's blood pressure.

If the examinee reports significant discomfort from the cuff during determination of the MIL, recheck the fit of the cuff and remeasure the MIL. If the discomfort persists, terminate the procedure and note the problem on the form.

If the radial pulse is still felt at a level of 230 mm Hg or higher (MIL 260 mm Hg or higher) repeat the MIL. If the MIL is still 260 mm Hg or higher, terminate the blood pressure measurements and write in "260/MIL" on the Physician's Exam Form. On the Report of Findings I indicate the blood pressure as 230 palpated.

Repeat the MIL if the first attempt was unsatisfactory or you have had to readjust the cuff after measuring the MIL. Wait at least 30 seconds after measuring the MIL and before starting the blood pressure measurement.

When the MIL has been satisfactorily determined, do not remove or reapply the cuff. Wait at least 30 seconds before measuring the blood pressure; during the waiting period take the pulse.

2.10.1.4 Measuring the Pulse

The pulse will be measured by feeling the radial pulse point at the wrist. The pulse measurement should be taken in the interval between the MIL measurement and the blood pressure measurement.

With the elbow and forearm resting comfortably on a stable surface and the palm of the hand turned upward, the radial pulse is felt and counted for 15 seconds exactly. The number of beats in 15 seconds is multiplied by 4, and the result recorded as the pulse on the form.

2.10.1.5 Determine the Blood Pressure

The following procedure will be used for the measurement of blood pressure:

- Position the stethoscope ear pieces comfortably in your ears, turning them forward toward the nose.
- Be sure the examinee's arm is positioned at the level of the fourth intercostal space at the sternum.
- Feel the brachial pulse and place the stethoscope diaphragm directly over the pulse beat just below the cuff. The diaphragm should be applied with light pressure so there is no air between it and the skin. If the brachial pulse is too faint to be felt, place the stethoscope diaphragm over the innermost part of the crease of the elbow and proceed. If possible, avoid allowing the cuff, the tubing or diaphragm to touch. Also avoid allowing the stethoscope to touch the cuff, any tubing, or the gown.
- Close the thumb valve. Rapidly and steadily inflate the cuff to the MIL. (If you inflate the cuff more than 10 mm Hg above the MIL open the thumb valve, rapidly deflate the cuff and disconnect the tubing. Discontinue this reading and wait 30 seconds before inflating again.)
- When the MIL is reached, open the thumb valve and smoothly deflate the cuff at a constant rate near 2 mm Hg per second (one mark per second).
- Be sure your eyes are level with the center of the manometer. Watching the top of the mercury column, note the reading at the point when pulse sounds first appear using the mark at or just above the top (meniscus) of the mercury column. Listen for at least two beats to eliminate recording a single erroneous sound. Note the reading at the point the first pulse sound appears, not at the second beat.

- Continue deflation at 2 mm Hg per second. Note the reading when the sounds finally disappear, using the mark at or just above the top of the mercury column.

- Continue steady deflation at 2 mm Hg per second for at least 20 mm Hg below the second reading; then open the thumb valve completely and disconnect the tubing. Let the cuff fully deflate. If you need to repeat the measurement, wait 30 seconds between measurements.

- Use the first reading (appearance of sounds, first Korotkoff sound) as the systolic pressure and the second reading (disappearance of sounds, fifth Korotkoff sound) as the diastolic pressure. Use the nearest even digit. If the column fell between two digits, use the mark at or just above the top of the mercury column. If pulse sounds continue to be heard down to zero pressure, record the diastolic reading as "000."

- If you have difficulty hearing the blood pressure sounds, there are two methods which can be used to increase the intensity and loudness of the sounds:

  - Have the examinee raise his/her arm and forearm for at least 60 seconds. Inflate the cuff, lower the arm, and take the blood pressure immediately. If raising the arm is difficult for the examinee, use the next method.

  - Instruct the examinee to open and close his/her fist 8-10 times AFTER the blood pressure cuff is inflated to the MIL, but before deflation is begun.

If it was necessary to use one of these enhancement methods make sure you record this fact on the Physician's Examination Form in the space designated for comments.

2.10.2 Recording of Findings and Definitions

For each of the two pulse and blood pressure measurements the same recording instructions apply.

- Record the pulse rate as beats per minute.

- Check the appropriate box to indicate whether or not the pulse was irregular.

- Check the box corresponding to the cuff width used.

- Record the systolic pressure (point when sounds appear) and the diastolic pressure (point when sounds disappear) using the nearest even digit.

- o Write in any variation, such as "left arm used," in the space for comments.
- o If the pulse and/or blood pressure are not measured, record the reason in the space for comments.
- o If the MIL is 260 then you should not take the blood pressure. Write "260" in the space for the systolic pressure and "MIL" in the space for diastolic pressure.

Use the guidelines in Exhibit 2-3 for reporting the blood pressure measurement and MIL to the patient. The examinee should be told his/her blood pressure and what it means. Refer to the "Statement" column of Exhibit 2-3 for the recommended interpretation of the blood pressure reading.

Use good medical judgment and observation when recommending that any action be taken in relation to these findings. Persons with quite high blood pressures (Exhibit 2-3) should have immediate medical attention. Persons with high blood pressure should see a physician within one week. Persons with above normal reading should see a physician for a recheck of blood pressure within three months.

Exhibit 2-3. Guidelines for Blood Pressure Reporting to Examinees

Systolic		Diastolic	MIL*	Statement
Under 150	and	Under 90		Normal
150 and over	and/or	90-95		Above normal - Recheck within 3 months (Level III Referral)
Any	and	96-114		High - Recheck within 1 week (Level II Referral)
		115 and over	or 260	Quite high - Immediate referral (Level I Referral)

These guidelines are approved by the National High Blood Pressure Coordinating Committee, in the 1980 Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure, p. 8.

*Maximum Inflation Level

2.11 Chest and CVA

2.11.1 Procedure

Continue with examinee seated.

- o Inspect anterior chest wall paying particular attention to the costochondral junctions, and sternum. Check for asymmetry of chest and observe A.P. diameter.

- o With your hands on examinee's lower ribs and your thumbs together on lower spine ask examinee to take a deep breath. Compare excursion of left and right chest walls.

- o Test for CVA tenderness on right and left using closed fist to elicit response.

- o Auscultate lungs as follows:

  - Listen to posterior chest by asking examinee to breathe in and out through mouth more deeply than usual.

  - Start at apex proceeding downward and from left to right to compare sounds in at least 6 areas (3 on each side).

  - Listen to at least one entire breathing cycle at each location.

  - Listen for timing, pitch, intensity, and quality of breath sounds. Note extra or adventitious sounds.

- o While the examinee is still in a seated position, auscultate the base and apex of the heart for evidence of murmurs using the diaphragm of the stethoscope.

2.11.2 Recording of Findings and Definitions

- o Check "Yes" box if abnormality is present or, as appropriate, indicate severity of condition. Check "No" box if particular condition is not noted. Indicate presence of other abnormalities such as asymmetrical motion of chest under "Other."

- o Beading of ribs - Definitely palpable and visible enlargement of the costochondral junctions.

- o Asymmetry - Check "Yes" if the chest is structurally asymmetrical.

- o Funnel breast - Sternal depression of chest wall resembling a funnel.

- o Pigeon breast - Deformity in which the sternum projects anteriorly.

- o Increased A.P. diameter - A.P. diameter increased to the point of appearing barrel-chested.

- o Auscultation: Circle the number(s) for the area(s) of the lung where abnormality is noted. Diagram of chest is from posterior view.

  - Diffuse wheezing - Harsh breathing with a prolonged wheezing expiration heard all over the chest.

  - Bronchial breath sounds - Harsh breathing with a prolonged high pitched expiration which has sometimes a tubular quality.

  - Rales - Abnormal, crackling respiratory sounds heard on either inspiration or expiration.

  - Ronchi - Dry, course rales in the bronchial tubes.

  - Wheeze - A whistling or sighing sound.

2.12 Breast Mass(es)

2.12.1 Procedure

- o For female examinees age 10 and over - With examinee seated, observe symmetry of size and shape of both breasts, areolae and nipples. With examinee first seated and then supine, palpate the right breast first and then the left breast using a semi-circular method. Begin at the outermost circle and palpate in smaller circles toward the areolae and including the nipple. Compress the nipple.

- o For male examinees age 10 and over - With examinee in supine position, inspect the areolae and nipples for swelling or ulcerations, and palpate for nodules or masses.

2.12.2 Recording of Findings and Definitions

- o Check "Yes" box if nodule or mass is found in "Right" and/or "Left" breast. Check "No" box if none is found.

- o Describe nodule, mass, or other abnormalities under "Other" breast finding, characterizing it with regard to location, size, consistency, tenderness and mobility.

2.13 Heart

2.13.1 Procedure

Continue with examinee in supine position.

- Assess carotid pulse. Assess the right pulse first and then the left pulse:
  - Compress the carotid artery by hooking index and middle fingers around medial edge of sternocleidomastoid muscle.
  - Palpate carotid artery in lower half of neck to avoid carotid sinus.
  - Note amplitude and compare right with left pulse.
  - Auscultate carotid artery for bruits.
- PMI (Point of Maximum Intensity): Inspect chest wall first, then palpate for apical beat. If PMI is felt, determine the closest interspace and its relation to the mid-clavicular line. Skip item 2a and 2b for examinees who are less than 18 years old.
- With the palm of the hand, palpate for thrills at the apex, and at the base.
- Auscultation for murmurs: Start with diaphragm and repeat with bell in following order:
  - Listen at the apex particularly for heart sounds S1 and S3, for systolic click and mitral murmurs.
  - Listen at second right interspace for S2 and aortic murmurs.
  - Listen at second left interspace for S2 and pulmonic murmurs.
  - Listen at third left interspace for S2 and aortic and pulmonic murmurs.
  - Listen just to the left of the ensiform cartilage for tricuspid murmurs.
- Refer to Exhibit 2-4 for location and nature of the lesion.

Exhibit 2-4. Cardiac Murmurs

TIME OF OCCURRENCE	SITE OF GREATEST INTENSITY	DIRECTION OF TRANSMISSION	SEAT OF LESION	NATURE OF LESION
Systolic.	At cardiac apex. Use bell of stethoscope.	Along left fifth and sixth ribs--in the left axilla--in back, at inferior angle of left scapula.	Mitral orifice.	Incompetency--Regurgitation.
Systolic.	At junction of right second costal cartilage with sternum.	To junction of right clavicle with sternum --in course of right carotid.	Aortic orifice.	Narrowing--Obstruction.
Systolic.	At ensiform cartilage.	Feebly transmitted.	Tricuspid oriface.	Incompetency--Regurgitation.
Systolic.	At left second intercostal space, close to sternum.	Feebly transmitted.	Pulmonary orifice.	Narrowing--Obstruction.
Diastolic.	At junction of right second costal cartilage with sternum. Use bell of stethoscope.	To midsternum--in course of sternum.	Aortic orifice.	Incompetency--Regurgitation.
Diastolic.	At left second intercostal space, close to sternum.	In course of sternum.	Pulmonary orifice.	Incompetency--Regurgitation.
(Diastolic) presystolic.	Over body of heart.	To apex of heart.	Mitral orifice.	Narrowing--Obstruction.
(Diastolic) presystolic.	At ensiform cartilage.	Feebly transmitted.	Tricuspid orifice.	Narrowing--Obstruction.

2.13.2 Recording of Findings and Definitions

- o Diminished carotid pulsations - If pulsations are unequal record the stronger one as normal, the weaker as diminished.

- o Carotid bruit - An adventitious sound of arterial origin heard on auscultation. Check "Yes" box if present, "No" box if not.

- o PMI (Point of Maximum Intensity) - The point on the chest where the impulse of the left ventricle is felt most strongly, normally in the fifth costal interspace at the mid-clavicular line. Record whether felt or not, and check in which interspace and whether at inside, or outside mid-clavicular line.

- o Thrill - A sensation of vibration felt by the examiner on palpation of the heart, for example, over an incompetent heart valve. Check box indicating if present or absent and check the box indicating location.

- o Heart sounds: Check the structured responses which best describe:

  - First (S1) - Best heard at apex as dull and prolonged and occurring with the beginning of ventricular systole and closure of mitral and tricuspid valves.

  - Second (S2) - Best heard in second and third left interspaces as short and sharp and occurring with the closure of the aortic and pulmonic valves. A split second sound is sometimes audible at the left sternal border and is due to a slight asynchrony of right and left ventricular contraction.

  - Third (S3) - Best heard at apex as weak, low-pitched and dull following S2. It occurs in most children and in many young adults. It is thought to be caused by vibrations of the ventricular walls when they are suddenly distended by the rush of blood from the atria.

  - Systolic Click - A high pitched brief sound occurring in midsystole and usually loudest at apex.

- o Murmurs: Describe all murmurs heard according to when they are heard (systole or diastole), in which area they are heard best, whether they are functional or organic and their intensity.

- o The loudness or intensity of a murmur is indicated by a rating system that grades murmurs from 1 to 6:

  - Grade 1 - The softest audible murmur, it is not evident upon initial listening but requires a period of acoustic adjustment or "tuning in."

- Grade 2 - Faint murmurs but audible without "tuning in."
- Grades 3 & 4 - Murmurs of intermediate intensity.
- Grade 5 - Murmurs are the loudest but cannot be heard through a stethoscope held off the chest wall.
- Grade 6 - Murmur is so loud as to be audible through a stethoscope held off the chest wall.

o If there are other significant cardiac findings, describe under "Other."

2.14 Abdomen

2.14.1 Procedure

With examinee in supine position:

o Inspect abdomen for swelling, masses, or scars.

o Auscultate abdomen in the aortic, iliac and renal artery areas for bruits.

o Palpate abdomen slowly in all quadrants and in suprapubic areas using a light, dipping motion.

- Note areas of increased resistance or tenderness.
- If there is history of pain or tenderness, palpate that area last.

o Palpate with firm pressure more deeply in all four quadrants to identify masses and tenderness.

o Support the lower rib cage from underneath with your left hand and check with your right hand for enlarged liver:

- Percuss for the lower edge of the liver.
- Place your right hand in right midclavicular line, below lower border of liver dullness.
- Press in and up gently as the examinee inhales deeply.
- Feel for liver edge as it descends and touches your fingertips.
- Reposition your hand if you are unsuccessful or exert more pressure inward as examinee inhales. Note any tenderness.

- o Palpate for an enlarged spleen:
  - Reach across examinee and support left lower rib cage from underneath the body.
  - Place your right hand below left costal margin.
  - Ask examinee to inhale deeply and press firmly inwards trying to feel spleen descending toward your fingers.
  - If splenic enlargement is suspected, have examinee roll onto right side and repeat procedure.
- o During the examination of the abdominal area for examinees who are age twenty and over and are having the gallbladder ultrasound (the fasting group), ask questions that will allow you to answer the following questions (to determine if the examinee has symptoms of gallstones or gallbladder problems):

  10a. During the past year has this examinee had any attacks of nausea and/or vomiting lasting more than 2 hours?

  10b. During the past five years has this examinee had pain in this area (GALLBLADDER AREA) which lasted a half hour or more?

  10c. If "Yes" ABOVE, ASK: Does this examinee usually feel sick to his/her stomach either before or after getting this pain?

  11. What is your opinion of the likelihood of this examinee having gallstones?

2.14.2 Recording of Findings and Definitions

- o Surgical scars - If scar(s) is/are present, check "Yes" box and circle the number(s) of the area(s) according to diagram.
- o Indicate by checking the "Yes" box, the presence of ascites or bruit. If not present, check "No" box.
- o Bruit - If bruit is present, check "Yes" box and circle the number(s) of the area(s) according to the diagram.
- o Hepatomegaly - If liver is palpated in right upper quadrant, 2 cms or more below right costal margin, indicate as enlarged by checking appropriate "Yes" box.
- o Splenomegaly - If spleen is felt in left upper quadrant, check "Yes" box; if not, "No" box.
- o Uterine enlargement - Record all enlarged uteri including those enlarged secondary to pregnancy by checking "Yes" box. If not

enlarged, check "No" box. Write "N.A." in the right column for males.

- o Tenderness, masses in abdomen - Indicate if tenderness and/or masses are found by checking "Yes" box and by circling the number(s) of the area(s) where found (refer to diagram). Circle the number that locates the center of the mass. Write in a description of the mass(es), identifying location, size, shape, whether loose or fixed, firmness, etc.(for example, (7) 3 cm diameter firm, fixed, non-tender).

- o Describe any other significant abdominal findings such as hernias under "Other."

2.15 Tanner Staging (Ages 10 through 17)

2.15.1 Procedure

- o Skip this section for examinees who are not between the ages of 10 and 17.

- o Male - With examinee in supine position inspect pubic hair and genitalia. Inspect and then palpate the testicles.

- o Female - With examinee in supine position inspect pubic hair and breasts.

2.15.2 Recordings of Findings and Definitions

- o Classify pubic hair (male and female) and check appropriate box according to the following:

  - Stage 1 - Preadolescent. The vellus over the pubis is no further developed than that over the abdominal wall, i.e., no pubic hair.

  - Stage 2 - Sparse growth of long, slightly pigmented downy hair, straight or only slightly curled, appearing chiefly at the base of the penis or along the labia.

  - Stage 3 - Considerably darker, coarser, and more curled. The hair spreads sparsely over the junction of the pubis.

  - Stage 4 - Hair now resembles adult in type, but the area covered by it is still considerably smaller than in the adult. No spread to the medial surface of the thighs.

  - Stage 5 - Adult in quantity and type with distribution in the classically "male" or "female" pattern.

Note: It is most important to grade genital maturation and pubic hair maturation separately.

- Classify male genitalia and check appropriate box according to the following:

  - Stage 1 - Preadolescent. Testes, scrotum, and penis are of about the same size and proportion as in early childhood.

  - Stage 2 - Enlargement of scrotum and of testes. The skin of the scrotum reddens and changes in texture. Little or no enlargement of penis at this stage.

  - Stage 3 - Enlargement of penis (occurs at first mainly in length). Further growth of testes and scrotum.

  - Stage 4 - Enlargement of penis, with growth in breadth and development of glans. Further enlargement of testes and scrotum; increased darkening of scrotal skin.

  - Stage 5 - Genitalia adult in size and shape. No further enlargement takes place after Stage 5 is reached; it seems, on the contrary, that the penis size decreases slightly from the immediate postadolescent peak.

- Classify female breasts and check appropriate box according to the following:

  - Stage 1 - Preadolescent. Elevation of papilla only.

  - Stage 2 - Breast bud stage. Elevation of breast and papilla as small mound. Enlargement of areolar diameter.

  - Stage 3 - Further enlargement and elevation of breast and areola with no separation of their contours.

  - Stage 4 - Projection of areola and papilla to form a secondary mound above the level of the breast.

  - Stage 5 - Mature stage. Projection of papilla only due to recession of the areola to the general contour of the breast.

- Describe other abnormalities under "Other findings." Record as an undescended testicle only if the testicle cannot be felt either in the inguinal canal or scrotum or if the scrotal development shows no evidence of the testicle ever having descended previously. Retracted testicles due to heightened cremasteric reflex are not to be classified as undescended.

- If breasts are not at the same stage, code the right breast in the boxes provided and code the left in "Other findings."

2.16 Extremities

2.16.1 Procedure

With examinee supine, examine legs and knees for signs of swelling or deformities by carrying out the following:

- o Only if examinee is under age 3 - carry out Ortolani's maneuver to check abduction of hips.

  Ortolani's maneuver: With the infant lying supine, the examiner adducts and abducts the legs. The examiner's thumb rests along the inside and the other fingers extend along the outside of the infant's thigh. The hips and thighs are flexed at 90 degrees and one leg is then abducted with the examiner's fingers gently pressing the trochanter of the femur upward and forward. The normal hip in a relaxed infant can be abducted to almost 90 degrees. If dislocation is present, resistance may be felt between 45 and 60 degrees and a click felt as the dislocated femoral head slips into the acetabulum.

- o Palpate femoral pulsations simultaneously, and auscultate femoral arteries for presence of bruits.

- o Palpate dorsalis pedis pulsations simultaneously.

- o Inspect lower extremities for presence of ulcerations.

- o Test for edema by pressing thumb behind medial malleolus, over dorsum of foot and over shin.

- o Only if examinee is eighteen years or older, do straight leg raising test as follows:

  - Raise right leg to a 45 degree angle with knee extended and with foot in normal position,

  - If pain is not elicited, dorsiflex the foot,

  - Repeat with left leg.

  Note: if pain is elicited at any stage in this test, do not continue on that side.

2.16.2 Recording of Findings and Definitions

- o Femoral pulsation - If pulsations are unequal, consider greater one to be normal. Record character of pulsation by checking appropriate box. Check "Yes" box if bruit is present, "No" box if not.

- Dorsalis pedis pulsations - If pulsations are unequal, consider greater one to be normal. Record character of pulsations by checking appropriate box.

- Leg ulceration - An open sore with loss of substance, sometimes accompanied by formation of pus. Check "Right" and/or "Left" box if present, "No" box, if not.

- Edema - Record only if there is indentation of skin or soft tissue (pitting edema) by checking appropriate box:

  - Mild -- Pitting edema over medial malleolus and dorsum only.

  - Moderate -- Pitting edema up to mid-tibial line.

  - Severe -- Pitting edema above mid-tibial line.

  - None -- If there is swelling but no pitting, record as none.

- Straight leg raising - Record as "Abnormal" if either straight leg raising test of right or left leg produces pain. Leave appropriate ankle dorsiflexion blank if straight leg raising test of right or left leg produces pain. Check "Yes" box if pain occurs on dorsiflexion of foot. Record as "Normal" and check "No" box if test produces no pain.

- Describe other abnormalities under "Other."

2.17 Joints

2.17.1 Procedure

If examinee is less than 10 years old skip to Section N.

With examinee in supine position test range of motion of lower extremity in a single movement.

- Ask examinee to bend right knee to chest, placing right foot on left patella. Rotate hip externally and then internally by pulling knee laterally and then medially.

- Repeat with left leg.

With examinee seated, test range of motion of upper extremity in a single movement.

- Ask examinee with arms straight to raise both hands over head, then place both hands behind neck with elbows out, and finally place hands behind small of back.

If examinee is under 18 years of age, inspect wrists for signs of deformity due to epiphysial enlargement.

2.17.2 Recording of Findings and Definitions

- o In carrying out range of motion tests observe examinee for evidence of any problems of tenderness, swelling, deformity of the joints, limitation of motion, paralysis or muscle weakness. Check all the boxes appropriate to findings indicating whether condition found is on right, left or both extremities.

- o Epiphysial enlargement of wrists - This can be more easily felt than seen and should be recorded by checking the "yes" box, particularly if present at the ulnar epiphysis.

- o If pain is elicited on any of the range of motion tests, stop immediately and record findings as much as possible. Under "Other" explain why you stopped range of motion test.

- o Specify under "Other" any congenital anomaly, joint injury, prosthesis, amputation, or other joint manifestation.

2.18 Neurological Evaluation

2.18.1 Procedure

With examinee seated, test the following:

- o Coordination

  - Hand-wrist pronation, supination. Ask examinee to hold hands out in front of him and turn them over and back rapidly several times.

- o Sensory

  - Assess vibratory sensation using a tuning fork, asking examinee to tell what is felt and when sensation stops. Test on bony prominence of wrist and ankle on each side.

- o If no weakness is noted while examining the joints or doing the straight-leg raising, assess whether there is generalized muscle weakness or paralysis of arms and legs.

- o Speech evaluation

  - Throughout entire exam, note examinee's oral responses for evidence of stuttering, stammering, or other defects.

- o Tendon reflexes

  - Locate patellar tendon and tap it briskly just below patella to elicit knee jerk. Test both knees.

  - If reflexes are underactive, reinforce by having examinee lock hands and pull.

2.18.2 Recording of Findings and Definitions

- o Coordination - Indicate any uncoordinated movements, or other abnormalities, e.g., tics, tremors, etc., by checking "Abnormal." If no abnormalities noted, check, "Normal."

- o Sensory - Indicate if vibrations are not felt by checking right and/or left boxes as appropriate. If response is elicited and equal check "Normal." If responses are correct check "Normal."

- o Muscles - Check appropriate box if weakness is noted. Identify paralysis and indicate which extremity in space provided.

- o Speech evaluation - Check "Yes" box if speech is abnormal. Use "Stuttering" box if this is noted; all other speech impediments such as slurred speech, lisp, aphasia should be described.

- o Tendon reflexes - "Yes" box is used only if knee reflexes are absent on both sides. If one or both are present check "no" box. If hyperactive or other abnormality noted, describe under "Other."

2.19 Skin Evaluation

2.19.1 Procedure

While conducting the examination, the skin on the arms, legs, and hands and face will have been inspected. If there is need for rechecking any particular area, do it now to complete the evaluation of the examinee's skin.

2.19.2 Recording of findings and Definitions

- o Indicate presence of any of the specific skin abnormalities by checking "Yes" box. If not found check "No."

- o Follicular hyperkeratosis, of arms and of upper back: This lesion has been likened to "gooseflesh" which is seen on chilling, but is not generalized and does not disappear with brisk rubbing of the skin. Readily felt, it presents a "nutmeg grater" feel. Follicular hyperkeratosis is more easily detected by the sense of touch than by the eye. The skin is rough, with papillae formed by keratotic plugs which project from the hair follicles. The surrounding skin is dry

and lacks the usual amount of moisture or oiliness. Differentiation from adolescent folliculosis can usually be made by recognition of the normal skin between the follicles in the adolescent disorder. Follicular hyperkeratosis is distinguished from perifolliculosis by the ring of capillary congestion which occurs about each follicle in scorbutic perifolliculosis.

- Hyperpigmentation, hands and face: Asymptomatic with no inflammatory component. The skin shows increased coloration due to deposition of pigments, seen most frequently on the dorsum of the hands and lower forearms, particularly when skin hygiene is poor. There is not the sharp line of demarcation at the border of the lesion such as one sees in pellagra. Also, not to be confused with sun tan. Any other abnormality of pigmentation should be noted and described under "Other."

- Dry or scaling skin (xerosis): Xerosis is a clinical term used to describe a dry and crinkled skin which is made more obvious by pushing the skin parallel to the surface. In more pronounced cases it is often mottled and pigmented and may appear as scaly or alligator-like pseudoplaques, usually not greater than 5 mm. in diameter. The nutritional significance of it is not established. Differential diagnosis must be made between this condition and changes due to dirt, exposure, and ichthyosis.

- Perifolliculosis: Congestion around the follicles which does not blanch upon pressure. (See discussion of follicular hyperkeratosis above.) There is an early ring of capillary engorgement around some hair follicles which does not disappear on pressure. It is more frequently encountered on the dependent parts such as the legs. Swelling and hypertrophy of the follicles may occur, at which time the skin becomes rough. Follicular hyperkeratosis may coexist. (This is indicated as perifolliculitis on the exam form.)

- Petechiae: Minute hemorrhages under the skin which do not blanch with pressure. Record petechiae which you as a physician judge to be due to abnormalities of the examinee. Do not record normal responses to minor trauma as positives. Qualify by describing distribution and severity.

- Mosaic skin: This is usually found on the lower legs and constitutes a dry, atrophic alteration of the skin with a mosaic-like pattern and a certain luster of the surface. It is associated with conditions where the superficial layers of the skin are subject to stretching (increased tension) due to underlying edema, e.g., in protein deficiency.

- Pellagrous dermatitis: Areas of dry dermatitis-like lesions on the dorsal surface of hands, cheeks, forehead, and if exposed, on the neck (Casals necklace).

- Ecchymoses: Small hemorrhage spots, larger than petechiae, in the skin or mucous membrane forming a nonelevated rounded or irregular, blue or purplish patch. Report ecchymoses which you as a physician judge to be due to abnormalities of the examinee. Do not report normal responses to known minor trauma.

- Spider Angioma: A tumor whose cells tend to form blood vessels looking like a spider which blanch with pressure.

- Eczema: A superficial inflammatory process involving primarily the epidermis, characterized early by redness, itching, minute papules and vessels, weeping, oozing and crusting, and later by scaling.

- Inflammation: A localized response elicited by injury or destruction of tissues characterized by pain, heat, redness, swelling and loss of function.

- Impetigo: A streptococcal infection of the skin characterized by fragile, grouped, pinhead-sized vesicles or pustules that become confluent and rupture early, forming rapidly enlarging and spreading erosions with bright yellow crusts that are attached in the center and have elevated margins.

- Scars: Report only scars that are the result of trauma, infection or other similar abnormality. Do not include surgical scars of the face and scalp, extremities, chest, abdomen, etc. These should have been reported in the appropriate section of the examination.

- Urticaria: A vascular reaction (hives) of the skin marked by the transient appearance of smooth, slightly elevated patches or wheals which are redder or paler than the surrounding skin and often attended by severe itching.

- Infestation: Parasitic attack of the skin by insects or parasitic invasion of the tissues, for example, by helminths.

- Describe other abnormalities of skin under "Other." Also describe listed conditions found in greater detail by extent, size, severity, location, etc.

2.20 Pulse and Blood Pressure Measurement

Repeat the pulse and blood pressure measurements using the procedures in Section 2.10. Measure and record only the pulse for examinees less than six years old.

2.21 Back

2.21.1 Procedure

With examinee standing:

- o Inspect spinal profile, observing normal concave cervical, convex thoracic, and concave lumbar curves.
- o Inspect spine for lateral curvature.
- o Palpate spinous processes, sciatic notch and sacroiliac area for tenderness and spasm.
- o Test range of motion of lower spine by:
  - Asking examinee to bend knees slightly and touch toes. Note symmetry and ease of movement.
  - While stabilizing the examinee's pelvis with your hands have the examinee bend sideways and backwards and twist trunk.
  - Have examinee flex chin to chest, and then to extend head backward. Note: Do last part of this test cautiously if examinee is over 55 years old.

2.21.2 Recording of Findings and Definitions

- o Scoliosis - Lateral curvature of the spine. Usually consists of two curves, the original one and a compensatory curve in the opposite direction.
- o Kyphosis - Exaggeration or angulation of normal posterior curve of spine or excessive curvature of the spine with convexity backward.
- o Lordosis - Abnormal anterior convexity of the spine.
- o Record abnormal findings by checking "Yes" boxes as appropriate. Check "No" box if no abnormality is found.

2.22 Gait

2.22.1 Procedure

- o Assess examinee's gait as he/she enters the room and during the entire examination. Gait should be relaxed with easy alternate arm swing. Face and head should lead rest of body on turns.
- o Examine lower extremities for evidence of bowed legs, knocked knees, and varicose veins.

2.22.2 Recording of Findings and Definitions

- o If examinee shows abnormality of gait such as staggering, limping, dragging one foot, shuffling, etc., check "Not normal" box.
- o Bowed legs (genu varum) - Bilateral concave deformities of the thighs and tibiae should be recorded, even if mild.
- o Knock knees (genu valgum) - Bilateral convex deformities of the knees and tibiae should be noted only if marked.
- o Varicose veins - Enlarged twisted veins of the lower legs. If present, record severity by checking the appropriate box for the affected leg(s):
  - Severe -- Varicosities with ulcerations, discolorations, swelling and edema.
  - Moderate -- Varicosities with discoloration and possibly swelling but no ulcerations.
  - Mild -- Simple varicosities with no other complication.
  - None -- No varicosities.
- o If no problems are evidenced, check "Normal" box.

2.23 Health Status

2.23.1 Procedure

This is the examining physician's subjective impression of the health status of the examinee.

2.23.2 Recording of Findings and Results

On the basis of your examination and observation indicate your subjective opinion of the examinee's health status. Is it "excellent," "very good," "good," "fair," or "poor?" Check the box corresponding to your opinion.

2.24 Nutritional Status

2.24.1 Procedure

This is the examining physician's subjective impression of the nutritional status of the examinee.

2.24.2 Recording of Findings and Results

Indicate your subjective opinion regarding your judgment of the examinee's nutritional status. Is it "Normal nutrition," or "Abnormal nutrition?" Check the box that indicates your judgment.

2.25 Weight Status

2.25.1 Procedure

This is the examining physician's subjective impression of the weight status of the examinee.

2.25.2 Recording of Findings and Results

Indicate your subjective opinion regarding your judgment of the examinee's weight status. Is it "Obesity," "Normal weight," or "Underweight?" Check the box that indicates your judgment.

2.26 Diagnostic Impressions and Health Care Needs

2.26.1 Procedure

The purpose of this page of the exam form is to identify the health status of the examinee. Current disorders, whether now receiving care or not, which require continuing physician care are to be noted and characterized. Based on the limited information that is available to the physician from the review of the Sample Person Questionnaire and the physical exam, give your impression of health care needs for conditions that appear to have any of the following characteristics:

- Potentially or presently life threatening, or
- Causing loss of functioning; or limitation of activity for the previous three months or longer, or
- On a potentially downward course.

As stated in Section 2.3 of this chapter, the second objective of the physician's examination is to list the conditions found on examination. The conditions to be coded include only those the physician finds from the history or examination. Do not code or list any condition that you learn about from other MEC staff members. The conditions that you code are to be characterized according to the type of condition, the basis for the judgment of the condition, the confidence in this determination, the severity of the condition, and whether or not a physician has been consulted about this condition. Central to this characterization is the assigning of ICD codes to the identified condition.

ICD coding is important because it provides numerical abbreviations for the major conditions observed. These codes facilitate computer analysis of the conditions which will then be compiled and be compared to previous NHANES data. You will be looking up a condition you discover in the exam, finding the correct ICD code and entering it in the space provided.

Only conditions which are either life threatening, or disabling, or are on a downward course should be listed and coded. Therefore, conditions such as transient upper respiratory infections, allergic rhinitis, and other minor or corrected conditions are not to be coded or listed, since they do not fit the criteria described above.

The International Classification of Diseases (ICD) 1975 revision is in two volumes. These manuals contain listings of conditions along with the four digit ICD code. They are described below.

Volume I: Tabular List

Volume I, the Tabular List, should be regarded as the primary coding tool. It is arranged in 17 main sections which deal first with diseases caused by well-defined infective agents; these are followed by category sections for neoplasms, and endocrine, metabolic, and nutritional diseases. Most of the remaining diseases are arranged according to their principal anatomical site, with special sections for mental diseases, complications of pregnancy and childbirth, certain diseases originating in the perinatal period, and ill-defined conditions including symptoms and a chapter of injuries or trauma. The 17 chapters are further divided into sections, categories and subcategories.

The titles of these chapters are as follows:

I. Infectious and Parasitic Diseases
II. Neoplasms
III. Endocrine, Nutritional and Metabolic Diseases, and Immunity Disorders
IV. Diseases of the Blood and Blood-forming Organs
V. Mental Disorders
VI. Diseases of the Nervous System and Sense Organs
VII. Diseases of the Circulatory System
VIII. Diseases of the Respiratory System
IX. Diseases of the Digestive System
X. Diseases of the Genitourinary System
XI. Complications of Pregnancy, Childbirth, and the Puerperium
XII. Diseases of the Skin and Subcutaneous Tissue
XIII. Diseases of the Musculoskeletal System and Connective Tissue
XIV. Congenital Anomalies
XV. Certain Conditions originating in the Perinatal Period
XVI. Symptoms, Signs and Ill-defined Conditions
XVII. Injury and Poisoning

The Tabular List also contains the Supplementary Classification of External Causes of Injury and Poisoning (E Code) which is used in preference to a code from Chapter XVII in classifying the underlying cause of death.

The ICD-9 Tabular List (Volume I) for the Disease and Nature of Injury Classification makes use of certain abbreviations, punctuation, symbols, and other conventions which need to be clearly understood.

Abbreviations

NOS — Not otherwise specified. This abbreviation is the equivalent of "unspecified."

Punctuation

[] — Brackets are used to enclose synonyms, alternative wordings, or explanatory phrases.

() — Parentheses are used to enclose supplementary words which may be present or absent in the statement of a disease without affecting the code number to which it is assigned. They are also used to enclose numeric codes in the inclusion and exclusion notes and at the end of certain terms.

: — Colons are used in the Tabular List after an incomplete term which needs one or more of the modifiers which follow in order to make it assignable to a given category.

{} — Braces are used to enclose a series of terms, each of which is modified by the statement appearing at the right of the brace.

Symbols

† — Daggers are used to indicate categories or subcategories for underlying cause of death use when the categories are subject to dual classification.

* — Asterisks are used to indicate categories and subcategories for morbidity or hospital use when the categories are subject to dual classification.

Notations

Includes: — This note is used to further define or give examples of the content of material. This note sometimes appears under the chapter title, but most frequently appears under the section title or the category title.

Excludes: — This note is used to indicate terms which are classified elsewhere. It appears under chapter titles, section titles,

category titles, and also under subcategories within the classification.

Volume II: Alphabetic Index

This volume is the Alphabetic Index to Volume I, Diseases: Tabular List, of the International Classification of Diseases, 9th Revision.

The Alphabetic Index is an important supplement to the Tabular List since it contains many diagnostic terms which do not appear in Volume I. Terms listed in the categories of the Tabular List are not meant to be exhaustive; they serve as examples of the content of the category. The Index, however, includes most diagnostic terms currently in use.

Arrangement

The Alphabetic Index is divided into three sections:

o Section I, Index to Diseases and Injuries:

This section contains terms referring to diseases (categories 001-799), and injuries (categories 800-999, except for poisonings by drugs and chemicals), see pages 3-532.

o Section II, Alphabetic Index to External Causes of Injury (E Code):

This section is not used for HHANES. It contains external causes responsible for death. These terms are not medical terms, but usually terms which describe the circumstances under which an accident or an act of violence occurred. External causes include accidents, homicide, suicide, therapeutic misadventures as well as deaths due to operations of war.

o Section III, Table of Drugs and Chemicals:

This table gives the code numbers for drugs, medications, and other chemical substances as the cause of poisoning. This section is not used for HHANES.

Conventions

Many of the conventions used in the Tabular List (Volume I) are also used in the Index (Volume 2).

NEC Not elsewhere classifiable. The category number for the term including NEC is to be used only when the coder lacks the information necessary to code the term to a more specific category.

() Parentheses are used to enclose supplementary words which may be present or absent in the statement of a disease without affecting the code number to which it is assigned. They are also used to enclose numeric codes in the inclusion and exclusion notes and at the end of certain terms.

†/* Daggers and asterisks are used to indicate categories or subcategories subject to dual classification. The dagger (†) indicates etiology and the asterisk (*) indicates manifestation.

#/◊ These symbols direct the coder to special notes and instructions for coding neoplasms.

As stated above, Volume I, the Tabular List, should be regarded as the primary coding tool. Volume II, the Alphabetical Index, is used simply as a means to direct the user to the appropriate category in Volume I. Reference should always be made back to Volume I to ensure that the code given by the Index fits the circumstances of a particular case.

The Index is organized in the form of lead terms, which start at the extreme left column, and show various levels of indentation, progressing further and further to the right. A complete index term, therefore, may be comprised of several lines, sometimes quite widely separated.

The lead term is usually the name of a disease or pathological condition. The terms indented underneath are either varieties of the condition, or anatomical sites affected.

EXAMPLES: Congenital myocardial insufficiency is indexed:

```
Insufficiency
   myocardial
    congenital   746.8
```

Senile brain disease is indexed:

```
Disease
   brain
     senile     331.2
```

Acute appendicitis is indexed:

```
Appendicitis
  acute   540.9
```

The index includes many cross-references. Cross-referencing by synonyms, closely related terms and code categories begin with "see" and "see also." "See" is an explicit direction to look elsewhere for the code assignment. "See also" directs the coder elsewhere if all the information is not listed under the main entry. Reference may be to another entry in the Index or to a category in Volume I.

EXAMPLES: Paralysis, paralytic
- cerebral
-- spastic infantile - see Palsy, cerebral

It is necessary to refer to Cerebral palsy for the code. Other modifiers may be found indented under "Cerebral palsy."

Addiction
- drug - (see also Dependence) 304.9

The Index indicates that if the only condition on the report is "drug addiction," the code is 304.9, but if any other information is present, such as a specified drug, the term "Dependence" should be looked up.

Enlargement, enlarged - see also Hypertrophy
- adenoids (and tonsils) 474.1
- alveolar ridge 525.8 etc.

If the coder does not find the site of the enlargement among the indents beneath "Enlargement," he should look among the indents beneath "Hypertrophy" where a more complete list of sites is given.

Anatomical sites and very general adjectival modifiers are not normally used as lead terms in the Index. Anatomical sites and some modifiers are listed with the note "see condition." This instructs the coder to look for the condition or disease (lead term) in the Index.

The Introduction of the Index contains more detailed explanations about the use of the Index, its general arrangements and conventions used.

Steps for ICD Coding

The following steps should be followed for ICD coding:

1. While the examinee is present write a complete description of the condition under item a. Complete the information requested for items b-e as explained.

2. After the examinee has left the room, locate the main term for the listed condition in the Alphabetic Index (Volume II).

3. Refer to any notes under the main term.

4. Refer to any modifiers of the main term.

5. Refer to any subterms indented under the main term.

6. Follow any cross-reference instructions.

7. Verify the code number in the Tabular List (Volume I).

8. Read and obtain guidance from any instructional terms in the Tabular List.

9. Assign the code thus obtained.

10. Write in the code using three digits or four digits as listed, with a decimal point after the third digit, if appropriate. Check to make sure these entries are legible.

For quality control purposes, a percentage of the codes will be checked by NCHS and by Westat. You will receive feedback on your coding based on the quality control checks.

What Conditions to Code

Code all conditions that fall into any one of the following categories:

- Potentially or presently life threatening, or
- Causing loss of functioning or limitation of activity for the previous three months or longer, or
- On a potential downward course.

Conditions included in these criteria are controlled and uncontrolled hypertension, controlled and uncontrolled diabetes, cancer that has been treated within the past five years, crippling arthritis, severe asthma, and similar other conditions.

Conditions which are excluded are successful heart valve implant, corrected cleft palate, minor deformities such as flat feet, fallen arches, minor arthritis, colds, hay fever and other similar trivial conditions.

2.26.2 Recording of Findings and Results

- Conditions: Write the name of the suspected condition which requires health care. Diagnostic impressions may be on the basis of the physical exam and/or the history (S.P.Q.). Not all findings should be listed, only those deemed significant in relation to the criteria detailed in Section 2.25.1
- If no conditions are presented that are included in the criteria, check the box next to "None" and go to the next page of the examination form.
- Basis for Judgment: Mark the appropriate box according to whether the condition is determined from the Adult or Child Sample Person Questionnaire, physician's exam or both.

- Confidence in Assessment: Indicate the certainty of each condition as to whether it is certain, likely, or uncertain.

- Severity of Condition: For each listing, indicate the seeming severity of each, checking whether it appears to be mild, moderate, or severe. This will be strictly subjective and based on your own appraisal. Should there arise some difficulty in deciding between two of the possible classifications, the lesser should be selected.

All conditions listed are not to be considered severe despite the criteria listed earlier (the criteria do not include severity). For example, an examinee with a blood pressure of 132/92 should be listed as having hypertension with the severity coded as "Mild." If an examinee with the same reading as above has a history of hypertension, is taking medication, and has seen a physician recently, the severity code would depend on the types and dose(s) of medication(s). A third example of a hypertensive examinee is one whose blood pressure is 148/96. For this examinee the condition should be coded as "Severe."

For a diabetic examinee who does not take any insulin but who controls the condition with diet, the condition would be coded as "Mild." For a diabetic who is insulin dependent and who has physiological changes due to the diabetes, the code would be "Severe."

- Has A Physician Been Consulted Regarding This Condition Within the Last Year?

  -- If it is known from the medical history that the examinee has seen a physician about a particular condition do not ask this question but check "Yes."

  -- If it is not clear from the medical history that a physician has been seen for the particular condition. It is important that any existing physician/patient rapport not be disrupted. Also, this information may be sensitive in cases where a condition exists and the physician and/or the family have decided not to reveal the diagnosis to the examinee. In these cases we have established a procedure that will, we hope, screen the intent of the question from the examinee. To the examinee say, "I'm interested in getting some information about several health conditions. Please tell me if a doctor has ever said you have: (1) cataracts?, (2) diabetes?, (3) arthritis?, (4) (insert the particular condition in question)?". If the examinee has one or more of these mock conditions substitute other mock conditions. Be sure to add some mock conditions in addition to asking about the true conditions.

- ICD code for condition:

  Each condition should be coded according to the Ninth Revision of the International Classification of Diseases, (ICD). These numeric codes

will be used to facilitate computer analysis of the conditions. Use the two ICD unabbreviated volumes to locate the condition. Enter the code on the form.

- o Make sure that the conditions listed are legible and do not use medical shorthand.

- o This section of the Physician's Exam Form contains space for five conditions to be identified. Additional copies of this page will be available for use when an examinee has more than five conditions.

- o The physician also must ICD code any dental conditions which meet any of the three criteria (life threatening, or limitation of activity for three months or longer, or on a potentially downward course). Ask the dentist at the end of each exam session if any examinees had any such conditions.

2.27 Substantiating Comments on Diagnostic Impressions and Health Care Needs

2.27.1 Procedure

In this section the physician should write in the Level of Referral for this examinee along with any additional comments about conditions s/he found or changes in medical care s/he would recommend if the examinee were her/his patient. This would include all the abnormalities found or additional diagnoses and treatment. The condition outlined need not be one in which a diagnosis is already available, but may be a collection of symptoms, signs, etc.

The levels of referral are:

Level I - emergency;
Level II - needs medical care within one month;
Level III - no major medical findings.

See Sections 1.13 (general information), 3.1 (Level III), 3.5 (Level II), and 3.6 (Level I) for more information on each level.

Also on this page the dentist will record oral soft tissue pathology if it is found during the dental exam and Level II vision referrals. The dentist will record after all the exams for the session are completed.

2.27.2 Recording of Findings and Definitions

There are three types of information the physician records on this page. They are:

- o The Level of Referral (I, II, or III) for this examinee, check the appropriate box,

- Any substantiating comments which relate to the conditions found during the examination,

- Any important additional questions that were asked of the examinee, the answers to which were used to determine the diagnosis of the condition.

Chapter 3

ADDITIONAL PHYSICIAN PROCEDURES

This chapter presents additional procedures which are the responsibility of the physician. These procedures include completing additional forms, steps required for making medical contacts when examinees need medical care, handling medical emergencies, care of equipment in the physician's room, and quality control procedures. The accurate and timely completion of these procedures is crucial to the success of the physician's part in Hispanic HANES.

3.1 Reports of Physical Findings

NCHS has developed several letters for reporting test results to examinees' physicians. This section of Chapter 3 explains three of these reports. These are:

- Report of Findings I,
- Report of Findings II, and
- Special Letter for Positive Ultrasound Results.

The first report of findings is routinely used to communicate clinical findings, including those test results available soon after the exam, to the sample person's specified source of medical care. The accompanying letter also discusses the limitations of the exam in context with the survey's objectives.

3.1.1 Report of Physical Findings I

The Report of Physical Findings I is completed by the physician and several other members of the MEC team. The Report of Physical Findings I is included in all examinee charts. For Level III examinees who have no major significant medical findings, this is the only letter you will send to their health care provider.

The first page is the form letter to the designated physician/clinic. The second page of the form provides space for the name and address of the examinee, test results and notes on tests and procedures. Two sections of page 2 are to be completed by the physician during the physical examination. For blood pressure, record the systolic and diastolic for both readings taken in the spaces provided or check the box indicating that the examinee's blood pressure was not taken. For "Other Clinical Findings" report the same medical findings that were summarized in the Diagnostic Impressions and Health Care Needs section of the Physician's Examination Form. If there are no significant findings write "None."

3.1.2 Report of Physical Findings II

For the second report of physical findings the examining physician will not record any information. This report will contain those results which cannot be furnished at the end of an examination session, such as the results of laboratory analyses performed at the Centers for Disease Control and other laboratories.

These two reports will be transmitted to NCHS and mailed to the designated health care provider from NCHS headquarters. As relevant, the report for each examinee will include a copy of the check X-ray, the ECG tracing and results of laboratory work. At the time this report is mailed, a card will also be sent to the examinee indicating that the findings have been sent and reminding the examinee of the name and address of the doctor/clinic or referral medical facility that the examinee has designated.

3.1.3 Special Letter for Positive Gallbladder Ultrasound Results

This letter will be used by the physician to notify an examinee's source of medical care that positive gallbladder ultrasound results were obtained during the course of the examination. It also will remind the recipient physician that "...many people with gallstones suffer no symptoms from them and therefore may be unlikely to benefit from surgical removal of the gallbladder...".

This letter will be sent if the health technician determines that the gallbladder ultrasound exam is positive. After the physician has examined the person the health technician will notify the physician of the positive ultrasound. This notification must occur after the physician has completed the examination so that no bias is introduced through knowing about the positive ultrasound.

Next the physician will explain the results and their implications to the examinee and, if the examinee consents, a letter will be sent to the designated health care provider. The physician will complete the letter by filling in the physician's name and address, the examinee's name, and the date of the exam. If there are other findings requiring medical attention within the next month both the Special Letter for Positive Ultrasound Results and the Advance Letter of Findings (see Section 3.5.2) may be sent together. If the gallbladder findings are the only results requiring further medical care then this special letter will be the only one that is necessary.

For Hispanic HANES there are several additional letters. Since most of these letters will be sent from NCHS headquarters, the physician is not required to sign or complete them. The remaining letters and forms which will be completed by the physician are discussed in the following sections.

3.2 The Physician's Log

The purpose of the Physician's Log is to document what has been done by the physician as well as to note out-of-ordinary circumstances and events. This log is completed by the physician.

For each examination session, the physician should begin a new page by entering the date at the top. The rest of the page should be used to record the information requested about each examinee. That information includes the following entries:

- Examinee identification number;
- Time in hours and minutes when the physician began and ended the examination. As for the Control Record, time in = time physician starts to review the examinee's medical history; time out = time physician finished recording and editing available information in the Report of Physical findings which may not include review and possible reporting of X-ray(s) and/or ECG(s);
- A check mark to indicate the completed reading of acceptable quality X-ray and ECG's.
- A check mark to indicate the completion and edit review of the Physician's Examination Form.
- A check mark to indicate the completion and edit review of the blood pressure and medical findings sections of the Report of Physical Findings I. No check mark should be made until the physician has reviewed acceptable X-rays and/or ECG's and has noted information in the medical findings section if any are suspect;
- As in the Control Record, an explanation of why all or part of the physician's examination was not performed. Complete only if some portion or all of the physical examination was done; otherwise enter "NA."
- A description of an unusual occurrence such as "the examinee fainted during the physician's examination." Complete only when necessary; otherwise enter "NA."
- A check mark to indicate that a medical contact has been made or will be made for this examinee. When this column is checked an entry must be made in the Medical Contact Log. Do not write medical findings on this Log.

It should be stressed that the Physician's Log is meant to provide a record of the work that has been completed. It is important that completed work be signed off in case any questions arise at a later date.

The Daily Appointment Schedule will provide information for several uses. A copy of the schedule will be given to each staff person in the MEC for the next day. The form will provide a typed copy with the name, age and sample number for each examinee for the day. This list can be used to verify the Physician's Log and other forms. It also lists the number of examinees that are expected for the session. In most cases the number of examinees per session will be ten.

The physician should keep each Daily Appointment Schedule with each day's Physician's Log. Both forms should be sent, along with the Medical Contact Log and copies of advance letters of findings to physicians, to Westat at the end of the stand.

3.3 Reading X-rays and ECG's

The physician is responsible for reading the chest X-rays and ECG's completed on examinees who are 20-74 years of age and for entering the status information required on the Physician's Log. The physician should read these for pathology and refer examinees with serious problems to their designated providers of medical care. All chest X-rays and ECG's will be sent to an NCHS contractor for reading at a later date. You will be reading these for major pathological conditions so that a referral can be made.

Before reading a chest X-ray or ECG, the physician should check for the examinee identification. The identification marker, which must show on the X-ray file, should agree with the sample number on the film jacket. The number at the top of the ECG tracing should agree with the sample number stickers on the tracing.

For each chest X-ray and ECG the physician must determine the quality status of each. A chest X-ray is acceptable only if it meets all of the following minimum standards:

- Both apices must appear fully on the film; they must not be cut off.
- Both costophrenic angles must appear fully on film.
- The examinee must have been in the correct position, not rotated to one side of the other meaning that the sternoclavicular articulations must be clearly visible and symmetrical and the vertebral spinous processes at the medial ends of the clavicles must be clearly visible.
- The exposure must be taken on full inspiration meaning that the average, normal examinee's diaphragm will be depressed, appearing to lie between the ninth and tenth ribs.
- The film must not be under-exposed meaning that the rib margins must be clearly defined and the vertebral bodies and pulmonary markings must be visible through the heart shadow.

- The film must not be over-exposed; the translucent disc spaces should not be clearly visible through the heart shadow and the fine lung markings should be visible.

- There must be no artifacts on the film such as roller processing marks, static marks or black crescent marks that would interfere with reading the film.

Inform the technician if there is an unacceptable X-ray and request a repeat.

An ECG tracing is acceptable only if it meets all of the following minimum standards:

- The ECG complex must be clearly defined with the P wave distinctly visible; no noise interference that would cause an obscured or obliterated P wave should be present.

- The P wave, and except in rare instances, the QRS complex on lead 1 both must have positive deflections indicating that the limb leads have been applied properly.

- The baseline must not "wander," that is, the vertical distance between adjacent complexes must not be greater than 5mm.

- Four standard complexes must be present on the tracing.

Request that the technician repeat the procedure if any of these requirements is not met. For reading the ECG's and X-rays refer to the following reference materials. Also, you will notice that the MEC ECG's have 15 leads. The first 12 are to be read by the physician. The last 3 will be computer interpreted at NCHS.

ECG Reference Material:

- Hurst, J. Willis, and Robert Myerburg, Information to Electrocardiography, McGraw Hill Book Company, 1973, available in paper.

- Goldberger, Ary L. and Emanual Goldberger, Clinical Electrocardiography, The C.V. Mosby Company, 1981, available in paper.

- Rubin, Ira L. and Julian Frieden, ECG Case Studies, Medical Examination Publishing Company, Inc., New York, 1981, available in paper.

- Constant, Jules, Learing Electrocardiography, Little, Brown, and Company, Boston, 1981, hard cover only.

X-Ray Reference Material:

- Felson, Benjamin, Chest Roentgenology, W. B. Saunders and Company, 1973.

Finally, remember to check off the appropriate line on the Physician's Log for completed ECG's and X-rays after they have been read.

3.4 The Control Record

The Control Record is a NCHS master form for summarizing information about all the procedures performed and questionnaires administered to an examinee. The coordinator uses this form to direct the examinee to various stations in the MEC. Furthermore, the coordinator uses this form to determine whether all procedures and questionnaires that should be administered have been administered so that examinees can leave the MEC.

Column (1) lists the 18 procedures that may be administered to an examinee. The physician is responsible for completing the information for Procedure 1, "Physician's Exam;" column (2) indicates the age group for which the procedure is relevant. In the case of the physician's exam, this includes all examinees. The physician should record the time in hours and minutes when s/he begins and ends the examination in columns (3) and (4) respectively. "Time in" means the time the physician starts to review examinee's medical history with the examinee present. "Time out" means the time that while the examinee is present, the physician finishes recording and editing available information in the Report of Physical Findings. This will not include the time for reading X-rays and ECG's. The physician should enter his/her three-digit examiner code in column (5) and enter the reason, if any, why the physician's examination or part of the examination was not performed in column (6). The physician should enter "NA" if column (6) is not appropriate for the examinee.

3.5 Examinees Who Need Early Medical Care

As stated in Section 1.9, based on the physician's examination and review of medical history given by the examinee, the physician should place the examinee in one of three categories: minor or no medical findings (Level III), major medical findings requiring early medical care (Level II), and major medical findings requiring immediate care (Level I). This section is concerned with the Level II category, that of major medical findings requiring care in the next month. This occurs when the findings are expected to cause rather serious adverse effects within this time period, effects which have been previously undiagnosed, unattended, nonmanifested or not communicated to the examinee by his/her personal health care provider. Early medical care means additional examination and/or tests by an examinee's designated physician/clinic or by staff at a referral medical facility within a month of the MEC examination date. Remember that NCHS will routinely send out reports of medical findings 6 to 8 weeks after the exam. In these cases the examinee

needs further care before the Report of Physical Findings would be received by the medical care provider from NCHS.

3.5.1 The Medical Contact Log

When an examinee is found to require early medical care, the physician should follow certain procedures and record the outcomes of these procedures in the Medical Contact Log. This Log is meant to provide a record of all contacts made and attempted with physicians, nurses or other staff at medical facilities with regard to examinees who are Level II referrals. This Log is not meant to be used for the Level I category of major medical findings which requires immediate care or for those examinees who suffer a medical problem in the MEC that requires immediate emergency procedures. Procedures for medical emergencies are discussed in Section 3.6.

Only the physician makes entries in the Medical Contact Log which requests up to ten pieces of information. Below, the procedures to follow in completing the Log are discussed.

At the top of each page of the Medical Contact Log, the physician should enter his/her three-digit examiner number. For a given examinee, the physician should enter the examinee's identification number in column 1 and the examinee's name in column 2. In column 3 write the date that the examination occurred.

The physician should explain to the examinee that s/he should make an appointment within the next month to go to his/her usual or referral health care provider to receive additional care. Then, the physician should ask the examinee for oral consent to contact that health care provider to alert him/her that the examinee should be contacting him/her within the next few weeks and to tell the health care provider of suspected findings. If oral consent is denied, enter "N" for no in column 4.

When the examinee refuses to give oral consent, the physician should ask an available MEC staff member who speaks the examinee's language to serve as a witness while the physician tries to convince the examinee of the seriousness of the situation. If the examinee still refuses, the physician should terminate the MEC examination and have the examinee leave the center expeditiously.

If "Y" is entered in column 4, complete column 5. The physician should check the written consent form in the examinee's folder to verify that it is signed. If it is, enter "Y" in column 5. If it is not, ask the examinee to sign it and if s/he does, then enter "Y" in column 5. If the examinee refuses to sign the consent form, enter "N" in column 5. Even though the examinee gave oral consent, the written consent form must also be signed or the physician cannot contact an outside health care provider. If "N" is entered in column 5, no other entries are required in this form for that examinee.

If "Y" is entered in column 5, decide whether to first contact the designated physician/clinic or referral medical facility by telephone or by

letter, depending on the urgency of the need in the physician's judgment. If the decision is to use the telephone, enter the telephone number, including the area code, in column 6. If the telephone is not used, but only a letter sent, enter "NA" for not applicable in column 6.

Record the name and/or medical facility contacted by telephone and/or letter in column 7. Be sure to record the name of any individual that you talk with on the telephone. Enter the position of the medical contact in column 8. Record the key reason for the medical contact in column 10.

A form letter must be sent to the health care provider even if contact was first made by telephone. Of course, in some cases, the form letter will represent the only method of contact. Enter the date that the letter was signed in column 9. How the physician completes the form letter is discussed on the following pages.

3.5.2 Physician's Advance Letter of Findings

To complete the form letter, fill in the following information:

- Current date,
- Name and address of designated physician/clinic or referral medical facility,
- Date examination occurred,
- Name and address of examinee and examinee identification number in space below the body of the letter,
- Description of the potential problem or problems in the blank space provided,
- Address and telephone number, including area code, of the MEC on the lines provided,
- Your signature and your name printed below after the closing, and
- Month, day and year of the last MEC operating day below MEC address.

The form letters are prepared on NCR three-part paper. After filling out the information in the form letter, the nurse will mail the signed original, the physician will need to keep one copy in the folder with the Medical Contact Log Sheets. At the end of the stand, send the Medical Contact Log Sheets and, one copy of each form letter to Westat. The third copy of the letter should be sent to NCHS.

There are two situations when the physician will make a Level II Referral based on information from other members of the MEC team. These are:

- o Abnormal Tympanic Impedance - the physician will make a Level II Referral when an abnormality in the tympanic impedance test is detected by the health technician. However, no referral is to be made for an abnormality in the pure tone audiometry test.

- o Failure of the Random Dot E Vision Test - the physician will make a Level II Referral if a sample person fails the test for binocular vision as detected by the dentist.

In both of these cases the physician will prepare and complete the Physician's Advance Letter of Findings and the Physician's Log.

3.6 Medical Emergencies

Before examinations begin at a stand, the Field Operations Manager will have obtained information about the types and availability of emergency medical services in the area where the MEC is located. Such services can include those available at nearby hospitals, hospital ambulance services and emergency medical services available from police and fire rescue squads as well as from other county or local rescue squads. This information will be summarized on a fact sheet posted in the MEC. The telephone numbers of the nearest police and fire stations will also be posted.

While the physician's examination includes no procedures likely to endanger an examinee's health, other portions of examinations may raise concerns on the part of examination staff. As the senior medical specialist, the physician may be called on to decide if some procedures should be administered to certain examinees to avoid potential medical problems. Although precautions should be taken to avoid medical problems, medical emergencies that require first aid can still occur.

3.6.1 Banyon Emergency Kit

The Model E-260 Banyan Emergency Kit will be located in the physician's room. An Emergency Reference Guide accompanies each kit. Emergency procedures of relevance to this study are described on pages 4 and 5 in the Guide. These procedures include external cardiac massage, artificial respiration, overcoming laryngeal obstruction, and insertion of endotracheal tube.

Only the physician should administer emergency procedures and use any contents of the emergency kit. The physician should only administer first aid type procedures until the examinee can be gotten to a hospital or other care arrives at the MEC.

Pages 2-3 of the Emergency Reference Guide list the contents of the E-260 kit. The major content categories are: drugs, needles and syringes, prefilled syringes, instruments, sutures, oxygen equipment and resuscitation equipment.

The Laerdal RFB II Resuscitator is described on pages 7-9 of the Guide. At the beginning of a stand, the physician should assemble the RFB II following the assembly notes listed on page 9. This same page also lists and pictures the eight parts comprising the RFB II system. Make sure no parts have been left out in assembly and reassembly and test the bag after each assembly. Procedures for cleaning and disinfecting the RFB II after each use are also included on page 9.

How the RFB II works and how to use the RFB II are described and illustrated on page 7. While using the system as noted on page 7, the physician should check for secretions and stomach contents by observing the examinee's lips and mouth through the clear plastic dome. If present, turn examinee on side and remove.

If a mouth or nose passageway cannot be cleared, and an endotracheal tube has been inserted as described in emergency procedures on page 5, how the RFB II can be attached to the tube is described on page 8.

To add supplemental oxygen, the RFB II can be connected to the emergency oxygen system as described on page 9. Information about oxygen administration and percent of oxygen delivered using different operation techniques and oxygen inflow volumes are presented on pages 9 and 10. How the oxygen system works with the RRB II is described in the last paragraph on page 8. Two safety features of the oxygen valve are also described on page 8.

Summary information about all of the drugs included in the kit is provided on pages 12-16. For each drug, information is given about indications, action of the drug, administration and dosage as well as a cross-reference to the contents of the kit on pages 2-3 indicating how the drug is supplied. Descriptions of drugs included in pages 12-16 but not included in the E-260 kit have been crossed out. Further, drugs listed on pages 12-16 that are contained in prefilled syringes have been so labeled immediately above the drug name. More detailed drug information is contained on the drug inserts included in the kit.

In addition to the summary information about drugs contained on pages 12-16, drugs are listed in three separate indices on page 17. The first index is by drug name, the second by drug classification, and the third by disorder.

It is important to note that some drugs are dated and should be replaced upon expiration. The expiration date is printed on each prefilled package and on each glass ampule. The physician will check the drug supply at the beginning and end of each stand in addition to each time the drugs are used to pull outdated drugs and replace them. If any drugs need to be replaced ask the FOM to order them for you.

The emergency oxygen system is described on pages 10 and 11 of the Guide. The components of the system are pictured and described on page 11. Page 10 describes how to use the system following four basic steps and notes when and how the cylinder can be refilled. In addition, four cautions are listed in

the bold print on page 10. The last caution concerns checking the oxygen supply to make certain the cylinder remains at least half full. For this study, check the oxygen by turning the handle at the end of the unit and reading the gauge to make sure it reads over 500 lbs. at the beginning of each stand and after each use of the oxygen system with an examinee.

If the ambulance personnel are adequately trained in emergency medical care, seriously ill examinees (Level I) who receive emergency medical care at the MEC need not be accompanied to the hospital by the physician. If it is necessary for the physician to accompany the examinee to the hospital, the MEC must be closed. The nurse will contact the examinee's designated physician/clinic as soon as possible to inform them of the incident and the medical facility to which the examinee was taken. For examinees the physician puts in the Level I category of having major medical findings that need immediate care after review of the Physician's Examination Form and the examinee's medical history, the physician should contact the examinee's designated physician clinic to identify the medical facility to which the examinee was taken and why. The physician should complete the Letter to the Examinee's Physician so that the examinee can give the original to the emergency care provider. A copy for Westat and a copy for NCHS should be retained.

3.6.2 Emergency Report Form

Any time emergency equipment and/or drugs are used with an examinee or the examinee needs immediate medical care (a Level I referral), the physician should complete an Emergency Report. To complete this form, the physician should fill in the following information:

- Month, day and year of the emergency or date of physician examination,
- Examinee identification number,
- Examinee age (enter number of months and years from the Control Record),
- Examinee sex (circle either Male or Female),
- Examinee symptoms (list symptoms separately like shortness of breath, dizziness),
- Emergency procedures (briefly describe what was done in the order in which it was done; if not applicable, enter "NA"),
- Emergency equipment (list all needles, syringes, instruments, sutures and equipment used being sure to note if the oxygen and resuscitation equipment were used in combination; if not applicable, enter "NA"),
- Emergency drugs (list names of all drugs used and dosage levels given; if not applicable, enter "NA"),

- Outcomes (briefly describe outcomes by relating them to individual emergency procedures performed; if not applicable, enter "NA"),
- Emergency services (list name, address and telephone number, including area code, if hospital ambulance service or police, fire, county or local rescue squad used; if not applicable, enter "NA"),
- Medical facility (list name, address and telephone number, including area code, where examinee was taken; if not applicable, enter "NA"),
- Month, day and year physician or nurse contacted the examinee's designated physician/clinic; circle whether physician or nurse made contact,
- Physician examiner number and nurse examiner number,
- Identify whether physician accompanied examinee to medical facility by checking the space for "did" or "did not"; if not applicable, check the space for "NA",
- Physician should sign form and have nurse sign form, and
- Month, day and year form signed.

The physician should give the original to the coordinator who will send it to NCHS headquarters as soon as the form is complete and file and make a copy to the Emergency Report folder. At the end of a stand, the physician should send the copies to Westat.

3.7 Set-Up Procedures for the Physician's Room

Thw Mobile Exam Center (MEC) is specially equipped with easily transported instruments. Some changes in equipment are necessary for this different kind of exam center. The following five sections of this chapter explain the care of the equipment and the physician's responsibilities for maintaining the physician's room. Before setting up, the physician should determine what equipment and supplies have been carried over from a previous stand as well as new supplies sent from NCHS headquarters at the beginning of a stand. Use the Physician Inventory Form to facilitate this determination.

The Physician's Inventory Form is partially filled in at NCHS headquarters when supplies are sent to the stand. Information on the form completed by NCHS staff include:

- Stand number,
- Location of stand,
- Estimated number of sample persons, and

- Amount of all supplies sent.

At the beginning of a stand, the physician should enter the following information on the Physician Inventory Form:

- Physician examiner number at the beginning of the stand,
- Number of each type of equipment available for the physician's exam,
- Amount of each type of new supply received, and
- Total amount of each type of supply counting new supplies and supplies carried over from the previous stand.

The completed inventory sheet should be turned in to the nurse. The physician should store supplies where there is sufficient space in the cabinets in the physician's room and/or under the trailer in the designated bin.

Before setting up equipment and organizing supplies for the physician's examination, the physician should use alcohol to clean the counter, examination table and other work areas. To set up equipment, the physician should:

- Clean the ear prongs and diaphragm of the stethoscope with alcohol and place the stethoscope on the counter,
- Assemble the blood pressure cuffs and attach the blood pressure unit to the wall;
- Put batteries in the otoscope and ophthalmoscope handles, put light bulbs in the otoscope and ophthalmoscope heads, check that the lights are working, then plug the handles in to recharge;
- Put new batteries in the nonrechargeable otoscope;
- Clean the otoscope and ophthalmoscope heads with alcohol before use;
- Sterilize ear and nose specula (sterilization procedures are described in Section 3.8);
- Place percussion hammer and tuning fork on counter;
- Put new batteries in the penlight, check the light and place on the counter.

To set up supplies, the physician should:

- Put paper on the examination table;

- o Put pillow on the examination table;
- o Put the following items on the counter:
  - Tongue blades in holder,
  - Magnifying glass,
  - Glass slides,
  - Safety pins,
  - Tape measure,
  - Clock,
  - Soap at the sink,
  - Tissues; and
  - Sharpened pencils and writing pens.

In addition, the physician should check the emergency kit to make sure the equipment is working and to verify that the supply is current. The emergency kit and procedures are described in Section 3.6.

3.8 Sterilization of Equipment

An important aspect of medical examination conducted with many individuals is the maintenance of basic cleanliness practices. For equipment that is used across examinees, the following sterilization procedures should be used:

- o Clean ear prongs and diaphragm of the stethoscope with alcohol daily;
- o Clean otoscope head with alcohol after each examinee;
- o Clean ophthalmoscope with alcohol daily;
- o Sterilize ear and nose specula with Sporicidin or Cidex after each examinee.

Separate sterilization procedures for using Sporicidin and Cidex are presented below. The physician should be sure to follow the procedures for the type of disinfectant s/he is using:

<u>To Sterilize with Sporicidin</u>:

Step 1: Pour the entire 2.56 oz. bottle of Sporicidin "Activate Solution"

into the one quart bottle of Sporicidin "Buffer Solution" and shake.

Step 2: On a piece of masking tape, write the date that the Sporicidin was activated and the date of expiration. Place this masking tape across the front of the quart bottle of activated Sporicidin. The shelf life of activated Sporicidin is 30 days. Any activated Sporicidin which is left over on the expiration date must be discarded. Pour this down the drain and be sure to rinse out all empty Sporicidin bottles before discarding.

Step 3: Pour the activated Sporicidin full strength into the container for sterilizing. When using Sporicidin to sterilize, do not dilute Sporicidin with water. Be careful not to splash the solution on your skin or other objects.

Step 4: Rinse used ear and nose specula with tap water to cleanse off any debris.

Step 5: Put ear and nose specula into the container filled with activated Sporicidin and close the container. Specula must be immersed completely for a minimum of seven hours to destroy vegetative pathogens.

Step 6: On a piece of masking tape write the date and time that the specula were immersed in the activated Sporicidin. Stick this tape on the top of the container.

Step 7: After a minimum of seven hours, remove the specula using plastic gloves. RINSE twice with warm water and a third time with steaming hot or boiling water.

Step 8: Set specula upright to drain on paper towels, then place in available container.

<u>To Sterilize with Cidex:</u>

Step 1: Add contents of Cidex 7 Activator Vial to the one quart bottle of Cidex. The activated solution will turn green.

Step 2: On a piece of masking tape, write the date that the Cidex was activated and the date of expiration. Place this masking tape across the front of the quart bottle of activated Cidex. The shelf life of activated Cidex is 14 days. Any activated Cidex which is left over on the expiration date must be discarded. Pour this down the drain and be sure to rinse out all empty Cidex bottles before discharding.

Step 3: Pour activated Cidex into the container. Be careful not to splash the solution on your skin or other objects.

Step 4: Rinse used ear and nose specula with tap water to cleanse off any debris.

Step 5: Put ear and nose specula into the container filled with activated Cidex and close the container. Specula must be immersed completely for a minimum of ten hours to destroy vegetative pathogens.

Step 6: One a piece of masking tape, write the date and time the specula were immersed in the activated Cidex. Stick this tape on the top of the container.

Step 7: After a minimum of 10 hours, remove the specula using plastic gloves. RINSE twice with warm water and a third time with steaming hot or boiling water.

Step 8: Set specula upright to drain on paper towels, then place in available container.

3.9 Description of Equipment and Supplies

Equipment used in the physician's examination includes a stethoscope; a wall model sphygmomanometer; infant, child, adult, large arm, and thigh blood pressure cuffs; an otoscope, an ophthalomoscope, a tuning fork, and a percussion hammer. Key pieces of the physician's equipment are described below.

Blood pressure unit

The blood pressure unit consists of a mercury-gravity manometer from which the pressure is read and an inflation system which includes an unyielding compression cuff containing an inflatable rubber bladder, a pressure bulb and a pressure control valve to control the rate of deflation.

The mercury-gravity manometer consists of a calibrated glass tube connected to a reservoir containing mercury. The mercury reservoir is connected to the compression cuff by a rubber tube. When air pressure is exerted on the mercury in the reservoir by pumping the pressure bulb, the mercury in the glass tube rises. Be sure that the center of the column is at your eye level.

The inflation system consists of the compression cuff, inflatable rubber bladder, pressure bulb, pressure control valve (thumb valve) and rubber tubing. The compression cuff is made of an unyielding material to exert an even pressure on the inflatable rubber bladder inside the cuff. Velcro fasteners keep the cuff in position when placed on the arm. As described in Chapter 2, five different sized cuffs, each with a complete inflation system, will be available for blood pressure measurement. Depending on the size of an examinee's arm, the physician will select either the infant, the child cuff, the adult cuff, the large arm, or the thigh cuff.

The pressure bulb is used to create pressure in the system by inflating the bladder. The pressure bulb should be held in the right hand with the pressure control valve on the outside.

The pressure control valve controls the rate at which the system is deflated. To close the valve, or inflate the cuff, the valve should be turned with the thumb clockwise (away from you). To open the valve, or deflate the cuff, the valve should be turned with the thumb counter clockwise (toward you).

2.5V Instruments

The otoscope and ophthalmoscope heads are available in 2.5V instruments that fit into the same rechargeable battery handle. The rechargeable handle eliminates frequent battery changes, eliminates overcharging and corrosion and provides uniform light intensity almost to the end of the charge. The otoscope has an open head with a 5/16 inch diameter magnifying lens and a rotatable speculum holder. The ophthalmoscope has large spot, pinhold, slit, fixation and red-filter apertures. One-hand selection of viewing lenses from -25 to +25 diopters is possible. The mirror optical system allows closer coincidence of light and viewing axis providing an illuminated view of the fundus which is helpful with small or undilated pupils.

Battery Otoscopes

In addition to rechargeable otoscope handles, the MECs are stocked with battery operated otoscopes. The batteries in these otoscopes should be changed at the beginning of each new stand.

Additional Supplies

Supplies in the physician's room include small and large ear and nose specula, disposable tongue blades, ammonia inhalants, paper for the examination table, rechargeable batteries for the otoscope and ophthalmoscope, light bulbs for the otoscope and ophthalmoscope, batteries for the penlight, a magnifying glass to check skin conditions, glass slides to check petechiae, safety pins to prick the skin, a tape measure, Sporicidin and/or Cidex disinfectants, alcohol, plastic gloves, tissues, paper towels, soap, masking tape, containers for sterilizing, pens and writing paper. The physician's room also contains a pillow for the examination table, a stool for the physician, a step stool for the examinee, a chair, a clock and a sink.

3.10 Maintaining Equipment

It is important that equipment is functioning properly so that accurate measurements are possible. Maintenance procedures for key pieces of the physician's examination are described below.

Stethoscope

Each day before use, check the tubing for tears and air leaks and check the diaphragm for cracks.

Blood Pressure Unit

The mercury manometer is calibrated when it is manufactured and once calibrated, recalibration is unnecessary. However, regular inspection is necessary to eliminate conditions that could cause the blood pressure measurement to be read as erroneously high or low.

Blood Pressure Equipment Care Checklist

Daily:

1. Check to see that the level of mercury in glass tube is at zero.
2. Check the shape of the meniscus -- it should be a smooth, well-defined curve, and that the mercury looks clean and silver in color.
3. Visually check for mercury droplets outside glass tube.
4. Check that the mercury rises easily in the tubing and that the mercury column does not bounce noticeably when the valve is closed.
5. Check for cracks in the glass tube.
6. Check for spilled mercury in the manometer unit. (See below.)
7. Check inflation system tubing for cracks and/or leaks.

Note: Never attempt to repair the equipment yourself.

Weekly:

1. Do the daily checks.
2. Use the coffee can procedure to check for air and mercury leaks:
   - o Connect the inflation system and wrap it around a 1-pound coffee can. Check all of the cuffs to be sure none have a leak. For infant and child cuffs use a soft drink can.

- o Inflate to 260 mm Hg and check that the mercury rises easily, and does not bounce. Look for mercury droplets at the top or bottom of the glass tube, indicating a mercury leak.

- o Open valve and deflate to 200 mm Hg and close valve. If mercury column continues to fall, there is an air leak in the system. If a leak is discovered, contact the Field Operations Manager immediately.

Mercury Leaks or Spills

It is important that you check for leaks and spills often as mercury is a metallic substance which gives off a toxic vapor when exposed to the atmosphere. Mercury vapors will penetrate the skin and are poisonous when inhaled.

1. Spillage within the manometer unit:

   - o Do not touch mercury with bare hands.

   - o Put manometer unit in a plastic trash bag and close securely with a twist tie.

   - o Contact the Field Operations Manager (FOM) for instructions as soon as possible and request replacement equipment.

2. Spillage outside the manometer unit:

   - o Do not touch mercury with bare hands.

   - o Do not do any exams until the mercury is cleaned up.

   - o Never attempt to sweep or vacuum up the mercury.

   - o Collect the mercury using the mercury collector by:

     - Removing the collector lid with the foam pad,

     - Pressing the pad firmly against the surface where the mercury was spilled,

     - Letting the mercury enter the pad cells which will close once the pressure is released,

     - Screwing the lid onto the collector base with the strainer touching the pad,

   - o Advise the FOM immediately and request replacement equipment.

If an air leak is located, the cuff is torn, or the valve or connections do not operate properly, call the Field Operations Manager immediately. Do not measure additional blood pressures with this equipment. Request that NCHS order new equipment and use the replacement equipment in the MEC.

If for any reason the blood pressure equipment cannot be adjusted to operate properly, conduct the physical examination without taking blood pressure readings. When returning the examinee and his/her files to the coordinator, mention that such readings were not taken so that if the examinee must be rescheduled for other reasons, blood pressure readings could be taken at that time. If there are no other reasons for the examinee to return, the examinee will not be rescheduled only to take blood pressure readings.

The 2.5V Instruments

The battery handles for the 2.5V otoscope and ophthalmoscope should be plugged into ordinary outlets overnight and over the weekend to recharge the batteries. While the batteries are guaranteed for two years from date of manufacture, a battery in a particular handle may fail. To replace the battery, unscrew the bottom cap, shake out the exhausted battery and drop in the new battery.

3.11 Pack-Up Procedures for the Physician's Room

After the last examination has been given at a stand, the physician uses the Physician's Inventory Form to inventory the equipment and supplies remaining and enter this information on the form. Specifically, the physician should enter:

- Examiner number at end of stand (EOS),
- Number of each type of equipment, and
- Amount of each type of supply remaining.

The physician should give the completed inventory form to the nurse.

The physician should combine all completed Physician Log pages, Medical Contact Log pages, all daily exam schedules, all copies of letters to health care providers about examinees needing early medical care and all completed Emergency Reports into a single package and send it to Westat.

In addition, the physician should secure the physician's room. This means:

- Store the emergency kit in its assigned space,
- Remove batteries from otoscope and ophthalmoscope handles and wrap,

- o Store these as well as all other items on tables and counters in drawers,
- o Stuff roll sheeting around instruments and delicate supplies and stuff shelves with paper,
- o Lock all drawers and cupboards,
- o Lay stool, chair and step stool on sides,
- o Secure emergency kit, and
- o Secure exam table and use glass tape to secure such things as table extension.

3.12 Dry Runs

At the beginning of each stand one session will be devoted to practice sessions on the operation of assigned duties by all MEC team members with adult and child examinees from the same population as to be included in the main study. The purpose of each dry run is to provide team members with the experience of performing their assigned duties with relevant examinees as well as to check the procedures and equipment and the appropriate and accurate completion of assigned forms.

Problems identified during the dry run will be discussed with the MEC staff and potential solutions or at least ways of alleviating the extent of problems will be discussed. In the case of the physician, major areas for review in the dry run evaluations include set-up of supplies and equipment, including the emergency kit; administration of the physician's examination; review of X-rays and ECG's for clarity; completion of required forms and interaction with other MEC staff members, particularly the nurse and the coordinator. Based on the results of the dry run, operations may need to be modified or additional quality control procedures established to overcome or minimize identified problems.

3.13 Quality Control Procedures

To ensure complete and accurate data collection and to document the data collection process, a variety of quality control procedures have been developed for this survey. This section describes procedures to be followed by you and by the senior medical advisor.

3.13.1 Editing the Physician's Examination Form

After filling in information on the Physician's Examination Form while proceeding through the various components of the examination process for a particular examinee, the physician should review the form for completeness,

accuracy and legibility before beginning the Report of Physical Findings and before the examinee leaves the station so that data can be retrieved if necessary. The physician should make the following checks of the Physician's Examination Form:

On all pages, see that:

- o A response has been marked for all appropriate items keeping the age of the examinee in mind,
- o No conflicting responses have been marked for the same item (e.g., "Right Otitis externa" and "No Otitis externa" should not both be marked),
- o Appropriate skip patterns have been followed, and that
- o All coding is complete with leading zeros where needed.

On the last two pages, see that:

- o ICD conditions are printed with appropriate codes filled in,
- o Support of diagnostic impressions and health care needs is recorded,
- o All coding is complete with leading zeros where needed, and that
- o All entries are legible.

3.13.2 Verifying Daily Examinee Schedule

The physician should check off each examinee on the schedule provided by the coordinator as s/he is about to begin the physician examination. At the end of each day's session, the physician should review the schedule and check it against the Physician's Log to make sure that all examinees who were scheduled were seen by the physician. If any examinees were missed, the physician should notify the coordinator immediately.

3.13.3 Quarterly Observations and Replications

Four times a year, the senior medical advisor from the Technical Standards Team will be responsible for observing a sample of about 20 physical examinations given by the MEC physician. Using an observation checklist, the senior medical advisor will observe whether all appropriate body sites were examined and whether procedures for the examination of each body site were strictly followed, including the position of the examinee for each part of the examination. Any deviation from atandard procedures will be noted by the observer as well as any problems that arise.

Variations in procedures and problems will be reviewed with the MEC physician at the end of the day. If problems or other issues are considered

to be serious by NCHS or the senior medical advisor, retraining will be scheduled.

The senior medical advisor will replicate blood pressure measurements on a sample of 15-20 examinees. Discrepancies will be discussed with the physician as well as the probable cause(s) of such discrepancies and ways of eliminating those causes.

In addition to the examination components, the senior medical advisor will review a sample of Physician's Examination Forms and Reports of Physical Findings for completeness and accuracy. Physician's Examination Forms and the ICD codes will be reviewed promptly so that any inaccuracies of missing data can be acquired through partial re-examination of the examinee before s/he leaves the MEC. Reports of Physical Findings checked as complete on the Physician's Log by the MEC physician will be reviewed less urgently, when time permits.

One other measure of quality control may be instituted -- that is, replication of some physical examinations by the senior medical advisor. Since it is impractical to ask an examinee to submit to two complete examinations by two examiners, replicate examinations, if feasible at all, may be conducted on the dry run day at the beginning of a stand or the day before.

3.14 Problem Situations

Problems may arise with some examinees as they proceed through the various stations in the MEC. Some of these problems may surface during the physical examination while others may occur at a later time. Three categories of potential problem situations are described below; these include examinees with complaints, upset examinees and ill examinees.

3.14.1 Examinees with Complaints

While an examinee is with the physician, the examinee may complain about some part of the physical examination or about other MEC procedures. The physician should try to smooth over the examinee's concerns. In the case of complaints about procedures followed in the physical examination or elsewhere in the MEC process, the physician should explain that standarized ways of doing things must be used so that results can be combined across survey participants and that sometimes these procedures may not seem the best to an individual participant. In the case of complaints about what is done, or what is not done, the physician should explain that the contents of the examination were very carefully determined and that what is being measured is considered very important and even if relevant, resources did not permit measurement of other things. In the case of complaints about the behavior of MEC staff members, the physician should explain that s/he or the other staff members didn't mean to behave in a way that the examinee thought was inappropriate but they were following standardized procedures.

Enter the substance of any complaints given by an examinee in the Unusual Occurrence part of the Physician's Log, including the name of the staff member being complained about when appropriate. This will provide a record of the complaint in case the examinee takes some other action. Such complaints would be expected to be rare and taking follow-up steps would be expected to be even more unusual.

3.14.2 Upset Examinees

Although an examinee of any age may get upset while proceeding through the examination process, young or elderly examinees are more likely to become upset. One common reason why someone may become upset is unfamiliarity and/or fear about what exactly is going to be done in the physical examination and why. Such fears and apprehensions can be alleviated if the physician can explain in general terms what s/he is doing and why. Even advance information about how long the physical examination is likely to take and generally what it will include can be comforting.

If an examinee gets upset during the physical examination, the physician should attempt to identify the cause(s) of the problem, then alleviate or eliminate that problem to the extent possible. If the examinee cannot clearly identify the cause(s) of the problem, the physician should first try to determine if it is examination or non-examination based. If it appears to be related to the examination, the physician may have some clues based on where in the examination process the examinee demonstrated agitation. The physician may be able to direct the examinee to the cause by noting the immediately preceding sections of the examination and asking whether something about them caused the problem. Similarly, if non-examination based, the physician can try to identify broad categories such as the physician, himself or herself, the physician's room, a personal problem, a problem with another family member or something else. If the physician gets a "yes" response to any such categories, the physician can try to hone in on a more detailed specification of the problem under the premise that what to do or say to offset the problem can be better determined.

One other technique may serve to calm the examinee, especially in the case of a young child or elderly examinee: that is, to invite a relative or friend who may have accompanied the examinee to the MEC into the physician's room for the remainder of the examination if the examinee indicates s/he would prefer it. Adding a familiar element to an unfamiliar setting can have a moderating and calming influence.

It is possible that the physician may be unable to placate the examinee despite the efforts outlined above. In this case, the physician may have to prematurely terminate the examination, duly noting that outcome and associated reasons why on the Control Record and Physician's Log. Nonetheless, the physician should try to identify the problem cause(s), reduce or eliminate it (them), then proceed with the examination. In many cases, it is expected that the physician will be successful and will therefore be able to collect complete data on the examinee rather than stopping with only partial data.

3.14.3 Ill Examinees

If the examinee comes to the MEC feeling ill, the physician and other staff members should follow their usual operating procedures on the assumption that the examinee is only mildly ill and can effectively participate in the MEC process. If such an examinee becomes more ill during the process or an examinee suddenly becomes ill and complains about it, the physician and other staff members should try to determine if the examinee is too ill to continue. Perhaps a short rest will make the examinee feel well enough to continue. If not, the examinee should be rescheduled by the coordinator to complete the remaining MEC procedures.

It is impossible to completely specify all problems that might develop while the MEC is operating in a particular stand. Rather then list sets of procedures for possible rare events with the understanding that even so, something else may happen, this section outlines some general procedures that may be applied to a range of possible occurrences.

One basic guideline is to use common sense if something happens that requires an immediate response. A second basic guideline if less than an immediate response is needed is to contact the Westat home office promptly to explain the situation. The home office will be advised on a course of action. It is preferable to contact the home office first.

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