

NHANES 1999-2000 Data Release (June 2002)
Ankle-Brachial Blood Pressure Index (ABPI) Section
Lower Extremity Disease Examination (LEX)
MEC Examination

Description

The Lower Extremity Disease examination data will be used to determine the prevalence of lower extremity disease in the U.S. population (diagnosed and undiagnosed), including those at high risk for the late complications of the disease (i.e., ulceration and amputation). The major manifestations of lower extremity disease are peripheral vascular disease and peripheral neuropathy. The Ankle Brachial Blood Pressure Index (ABPI) section of the Lower Extremity Disease component collects data on peripheral vascular disease and the Peripheral Neuropathy (LEXPN) section of the Lower Extremity Disease component collects data on peripheral neuropathy. The following documentation provides information on the ABPI section.

Eligible Sample

Participants 40 years of age and older are asked to participate in the ABPI Section of the Lower Extremity Disease examination.

Exclusion Criteria

Persons are excluded from the exam if they have bilateral amputations or weigh over 400 pounds (due to equipment limitations). The variables (SEQ040, SEQ050, WHQ020L) that record this information are found in the SEQ (Shared Exclusions) File. In addition to these exclusion criteria, some persons who were eligible for the exam (40 years of age and older) might not have received the exam due to the following multiple reasons: 1) casts, ulcers, dressings, or other conditions of the participant interfered with testing, 2) participant could not understand the test instructions, 3) participant became ill and the test could not be performed, 4) there was an equipment failure, 5) participant refused, 6) participant came late or left early from the MEC and the LED exam could not be performed, or 7) some other reason. As a result, these eligible persons will have missing data for the ABPI variables.

Examination Protocol

Participants lie supine on the exam table during the exam. Systolic pressure is measured on the right arm (brachial artery) and both ankles (posterior tibial arteries). If the participant has a rash or open wound on the right arm, dialysis shunt, right-sided radical mastectomy or any other condition that would interfere with accurate

measurement or would cause discomfort to the participant, the left arm is used for the brachial pressure measurement. Systolic blood pressure is measured twice at each site for participants aged 40-59 years and once at each site for participants aged 60 years and older. If a health technician is unable to obtain a reading at a site they may attempt another reading at the same site after a brief resting period.

Health technicians measured brachial and tibial systolic blood pressures using blood pressure cuffs with 10cm and 12cm bladder widths. However, during the 2-year data collection, a change was made to the protocol and brachial and tibial systolic blood pressure measurements were collected using blood pressure cuffs with 9cm, 12cm, 15cm, and 18cm bladder widths. The appropriate cuff to be used on a participant was determined by the circumference of the participant’s bare upper arm at the midpoint. While the participant was standing upright, the health technician would measure the participant’s arm circumference and then refer to the table below (adapted from Human Blood Pressure Determination by Sphygmomanometry by the American Heart Association) to determine the acceptable cuff size for a given arm circumference. The same size cuff was used on the arm and both ankles.

Table. Arm circumference and acceptable cuff size

Cuff Size	Bladder width (cm)	Bladder length (cm)	Arm circumference (cm)
Child/small adult	9	17	17-21.9
Adult	12	22	22-29.9
Large adults	15	32	30-37.9
Adult thigh	18	35	38-47.9

After the appropriate cuff size was selected, the cuffs were placed on the participant’s arm and each ankle. Before the blood pressure was measured at each site, the peripheral neuropathy testing of the LED exam was performed to provide a brief resting period for stabilization of the participant’s blood pressure prior to measurement. (Note: the peripheral neuropathy protocol is described in a separate section (LEXPN).

Refer to Lower Extremity Disease Procedures Manual for further details.

Staff

A trained health technician performed the examination.

Quality Control Procedures

Inspection, calibration, and maintenance of the equipment and supplies were performed on a regular basis. Health technicians were regularly monitored by MEC supervisory

staff and evaluated by outside staff two to four times per year. Data were also routinely examined by outside staff. For further details refer to the Quality Control Manual.

Analytic Notes

Please note data collection methods for ABPI section and differences in blood pressure cuffs sizes.

During the data editing process, extreme values were examined. When there was insufficient information to conclude that values were invalid, they were retained in the data set. Analysts should examine the data distribution and consider whether or not it is appropriate to include or exclude extreme values in a given analysis.

In addition to missing data for persons excluded from the exam there may be other missing data for some persons due to one of the many reasons described above under 'exclusion criteria' such as participant refusal, equipment failure, or technical error.

Persons aged 40-59 may have up to 2 recorded blood pressure readings at each site where as persons aged 60 and older may only have 1 recorded reading at each site. Therefore, analysts should note that for participants aged 60 and older ALL second measurements will be missing at each site. Other missing blood pressure values (either the first or second for those 40-59 or the first reading for those 60+) may have been due to one of many reasons described above under item #2 such as participant refusal, equipment failure, or technical error.

The ankle brachial blood pressure index (ABPI) was automatically calculated by the computer system. The right ABPI was obtained by dividing the mean systolic blood pressure in the right ankle by the mean blood pressure in the arm. The left ABPI was obtained by dividing the mean systolic blood pressure in the left ankle by the mean blood pressure in the arm. The mean blood pressure value for the arm and ankles are computed based on the first and second reading at each site. Since the second reading for all persons 60+ is missing the mean values are in fact the first recorded blood pressure reading at a site. This may also be true for 40-59 year old persons who have a missing value for the first or second blood pressure reading.

Special Notes on Using the Dataset

Each pressure was measured twice on participants aged 40-59, but only once for participants 60 and older. Therefore, participants aged 60 and older will have missing data for all second measurements. Any other missing blood pressure values may have been due to one of many reasons such as equipment failure, participant refusal, or technician error.