WAVE 5: PHYSICAL MEASURES PROTOCOL, VERSION 2

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THE GENERAL HEALTH QUESTIONNAIRE

At this point in the interview you should ask the respondent if they have a table you could move to. You need a table in order to take their blood pressure. So, if you are not already sitting at one, MOVE TO A TABLE.

Ask the respondent to take off any thick outer layer of clothing, ready to measure their blood pressure, and ask them to sit with their feet uncrossed. The respondent needs to sit quietly for 5 minutes before having their blood pressure taken.

While they are doing this ask the respondent to fill out the **GENERAL HEALTH QUESTIONNAIRE.** It is the last section of the **feelings and opinions** self-completion schedule which you sent to the respondent before the interview. If you have not already done so you should retrieve these from the respondent. You should fill in the respondent's ID number, your ID number and date of interview on the inside cover. Quickly check through to see that all pages are filled in, if pages or sections have been missed ask the respondent to finish them. The self-completion schedule has instructions to the respondent to ask you about anything they don't understand. Be aware that you might have to be especially diplomatic with respondents who have difficulty with reading or comprehension.

While the respondent is filling in the questionnaire, you can set up your instruments. Put the scales on a hard floor to 'settle'; take out the thermometer since it takes some time to reach the temperature of the room and set up the OMRON automatic OMRON HEM-705CP on the table ready to take blood pressure.

If the respondent has taken any medication today for respiratory or heart conditions, write down what it is, even if they have already told you they take it earlier in the schedule. Similarly record any active medical conditions such as colds. CAPI will then instruct you to ask the respondent a series of detailed questions about things they have done in the last 24 hours.

Record the temperature of the room where you take the respondent's blood pressure in CAPI. Blood pressure varies with temperature, so unless it is completely unavoidable the temperature in the room should be 18-24^{O}C.

To some participants the detailed verbal instructions may seem unnecessary. It may help to say that you are going to explain each test to the participant in detail since this is the best way to make sure that everyone does the test in a similar manner.

IT IS MOST IMPORTANT NOT TO DEVIATE FROM THESE INSTRUCTIONS.

ALWAYS do the physical measures in the order in which they appear on the schedule. Do not vary the order.

BLOOD PRESSURE MEASUREMENT

Reason

Elevated blood pressure or hypertension is well established as significantly increasing the risk of many diseases. We measure it in order to investigate its frequency in the study population and the effectiveness of its treatment.

Equipment and Overview

The OMRON HEM-705CP automated sphygmomanometer will produce a reading for systolic, diastolic blood pressure and pulse. Explain to the respondent in general terms what the process involves. Because it is a very important source of health data for us, you are asked to take three measurements, using the OMRON HEM-705CP.

Exclusion Criteria

None

Procedure

Measure BP on each arm – right 1st, left 2nd, then take 3rd measure on which ever arm has highest reading. If this is ambiguous (i.e. different readings are higher for systolic and diastolic) then choose the highest diastolic. If readings are the same, choose the right arm.

1) Be sure the respondent has removed outer garments, such as jackets. Ask them to roll up the sleeve of shirts, blouses etc. so that the upper arm is bare for the blood pressure cuff. If the sleeve is too tight to roll up, the cuff may be placed over one layer of light clothing.

2) Seat the respondent with his/her arm on the table, the palm facing upwards.

3) The respondent's legs must be uncrossed and feet placed flat on the floor throughout the procedure. Their antecubital fossa (elbow) should be adjusted to heart level by changing the position of the body in the chair. The OMRON HEM-705CP should be kept at heart level.

4) Palpate the brachial artery, and place the cuff around the upper arm at approximately heart level. There are two sizes of cuff, only use the largest cuff in the event the other cuff does not fit.

5) The lower edge of the cuff with its tubing connection should be placed about one inch above the natural crease across the inner aspect of the elbow. The cuff is wrapped snugly about the arm with the inflatable inner bladder centred over the area of the brachial artery, with the tubes leading down the arm.

6) The connecting tube to the OMRON HEM-705CP should be away from the body. The wrapped cuff should be secured firmly by pressure on the locking fabric over the area where it is applied to the cuff.

7) Be sure the respondent is sitting with his/her feet uncrossed and the elbow and forearm resting comfortably on the table with the palm turned upwards. The elbow should be at heart level. Reassure the respondent if they are nervous, and try to maintain a calm atmosphere.

8) When first setting up, the display is likely to be showing the time. Press the orange OMRON HEM-705CP/clock button to prepare the machine to take a reading. The display will show a zero and a heart symbol. Normally the pressure valve preset should be set to auto.

9) Warn the respondent not to move his/her arm while the measurement is being taken. The instrument is sensitive to movement while deflating, and may fail to take a reading.

10) To take a reading, simply press the grey start button. The cuff will automatically inflate and slowly deflate. When the reading is complete the machine will alternate between showing systolic and diastolic BP and showing pulse.

11) Record the results in CAPI.

12) Repeat blood pressure measurement on the other arm, and take final blood pressure measurement on whichever arm had the highest value. (To take another reading press the orange button twice, wait until the display shows a zero and a heart symbol and than press the grey start button.)

Data to be recorded in CAPI

1) If BP is not measured, give reason.
2) Confirm that inventory number displayed by CAPI is the same as on the equipment. If not, input inventory number of your equipment.
3) Record measurements for each arm:
   - Systolic BP
   - Diastolic BP
   - Pulse
4) Record which arm the third measure is taken from.
5) Any problems in taking measure
6) Respondent advised and GP letter left if results are outwith the normal range.

Feedback and results to respondent

CAPI will instruct you as to what to say to the respondent about their BP. Follow the wording on CAPI exactly. If the lowest BP reading is greater than or equal to 150/90 you should advise respondent their measure is too high

and to seek medical advice as per CAPI. If the BP reading is greater than or equal to 160/95 you should strongly advise the respondent to seek medical advice as per CAPI. Leave appropriate letter for GP.

Record the values of lowest BP on measurement card and indicate if respondent has been advised to see their GP.

Please Note: To calculate the lowest BP reading, CAPI will use the following equation:

$$\text{MAP (mean arterial pressure)} = \text{diastolic} + \frac{\text{systolic} - \text{diastolic}}{3}$$

If both measures give the same value when calculated using the formula, measure the BP on the arm which had the lowest diastolic reading.

HAND GRIP STRENGTH MEASUREMENT

Reason

Hand grip strength affects every day function such as raising the body weight or holding heavy objects, and declines with age. It is an indicator of upper body strength and gives an objective measure of strength/frailty in older people. The measurement will be given to all participants. There is no lower or upper age limit, but there are certain exclusions on safety grounds.

Equipment and overview

Hand grip strength is measured with a Jamar 5030J1 Hand Dynamometer which consists of a gripping handle with a strain-gauge and an analogue reading scale. Explain to the respondent that this is a new procedure and basically outline what will happen. Explain that measurements will be taken 3 times on each hand to ensure the best reading can be recorded.

Exclusion criteria

Those with **swelling or inflammation**, **severe pain or recent injury, and those with surgery to the hand in the last 6 months SHOULD NOT** take the grip strength test. If there is a problem with one of the participant's hands, just take measurements on the other hand only.

Demonstration

Demonstrate the grip-strength test for the participant. It is very important that you demonstrate the measurement correctly. Experience has shown that participants follow more closely what the nurse does rather than what s/he says. If the participant indicates that they do not understand how to handle the Jamar 5030J1 Hand Dynamometer, demonstrate it again rather than relying on repeating verbal instructions.

Accuracy

The accuracy of the test depends on the effort exerted by the participant and the conscientiousness of the interviewer. Consequently, it is crucial that the examination protocol be observed painstakingly. Insufficient effort on the part of the participant will cause the test results to be inadequate for analysis.

Procedure

1) **Ensure before each use that the Jamar 5030J1 Hand Dynamometer red peak-hold needle is reset to zero**.

2) The participant should preferably stand up – but if not possible then sitting in an upright chair is fine.

3) Encourage the participant to remove jewellery (rings) from his or her fingers (do not enforce this, only suggest it). Explain this is because it may actually hurt the participant to squeeze if they wear a ring.

4) Make sure the participant keeps their upper arm tight against their trunk.

5) The forearm should be at a right angle to the upper arm. Place the Jamar 5030J1 Hand Dynamometer in the participant's right hand. If the person cannot hold the Jamar 5030J1 Hand Dynamometer at the 90 degree angle, due to lack of strength in the arm or hand, then the participant can rest their arm on a table or armrest of a chair. If the participant needs to do the measure in a seated position then they could use a table for support. However, try and make sure that their forearm is still at a right angle to their upper arm. The participant may also use their free hand to rest the Jamar 5030J1 Hand Dynamometer on and you could also provide this support if appropriate, but care should be taken not to restrict its movement. The interviewer should record in the CAPI if the participant needs support of hand and arm to do the test.

6) Position the hand so that the thumb is round one side of the handle and the four fingers are around the other side. The instrument should feel comfortable in the hand. Alter the position of the handle if necessary. The handle should fit snugly to the first proximal interphalangeal joint. If not adjust the handle backwards (for small hands) and forwards (for larger hands) until it fits effectively.

8) Encourage the participant to squeeze as long and as tightly as possible or until the needle stops rising. **You must watch the needle to check when it stops rising.** Once the needle stops rising, the participant can be instructed to stop squeezing.

9) Read the grip strength in kilograms from the outside dial and record the result to the nearest 1kg in CAPI. **Reset the Jamar 5030J1 Hand Dynamometer after each measurement (Rotate the red peak-hold needle counter clockwise to zero).**

10) Repeat measurement in the left hand.

11) Do **two further** measurements for each hand **alternating sides** to give three readings in total for each side.

Data to be recorded in CAPI

1) If measurement not taken, record reason.
2) Note if hand/arm is supported.
3) Confirm that inventory number displayed by CAPI is the same as on the equipment. If not, input inventory number of your equipment.
4) Input grip strength in kg three times per each hand.

5) Record any problems with respondent's hand when undertaking measurement.

Feedback to respondent

If respondent asks "how well they have done" tell them their best grip strength on each hand but do not compare their results to other respondents.

STANDING HEIGHT / SITTING HEIGHT MEASUREMENTS

Reason

Height sums up the cumulative effect of your health, nutrition and environment as a child. It is also an important way of standardising other health measures. For example, the ratio of weight relative to height (body mass index or BMI) is used to indicate whether someone is under/over weight and is a predictor of health risk.

Equipment and overview

Portable SECA LEICESTER Height Measure – a collapsible device with a sliding head plate, a base plate and a vertical rod marked with a measuring scale.

Assemble the instrument, the four sections of the measuring rod are marked with unique symbols at each end to show which section mates with which.

Slot the assembled rod into the base. Slide the first white 'spacing stabiliser' over the rod facing in the opposite direction from the base. Add the measuring arm pointing in the same direction as the base, and finally the second 'spacing stabiliser' pointing in the opposite direction from the base.

Place the entire apparatus close to a door or wall so that the two white 'spacing stabilisers' brace it in a rigid vertical position.

Exclusion Criteria

You should be able to measure the height of most respondents. In some cases, however, it may not be possible or appropriate to do so. For example, respondents who are chair-bound should not have their height taken.

Procedure

1) Ask respondent to remove their shoes so that you can obtain a measurement that is as accurate as possible.

2) Raise the head-plate to allow sufficient room for the respondent to stand underneath it.

3) The respondent should stand with their feet flat on the centre of the base plate, feet together, with weight evenly distributed on both feet. Their arms should hang freely by their sides and the head, back, buttocks and heels should be against the vertical rod but not leaning on it. They should be facing forwards. Make sure that the respondent does not lift their heels off of the base plate.

4) If the respondent cannot stand upright with their back against the SECA LEICESTER Height Measure and have their heels against the rod (e.g. those with protruding bottoms) then give priority to standing upright.

5) Move the respondent's head so that the Frankfort Plane is in a horizontal position (i.e. parallel to the floor) and the line of vision is therefore perpendicular to the body. The Frankfort Plane is an imaginary line passing through the external ear canal and across the top of the lower bone of the eye socket, immediately under the eye. This position is important if an accurate reading is to be obtained. An additional check is to ensure that the measuring arm rests on the crown of the head, i.e. the top back half.

6) If the respondent is tall, it can be difficult to line up the Frankfort Plane in the way described. When you think that the plane is horizontal, take one step back to check from a short distance that this is the case.

7) Instruct the respondent to keep their eyes focused on a point straight ahead and take the measurement.

8) If the respondent has a hairstyle that stands well above the top of their head or wears a turban, bring the head-plate down until it touches the hair/turban. With some hairstyles you can compress the hair to touch the head. If you cannot lower the head-plate to touch the head, and think that this will lead to an unreliable measure, record this in the comments section. If it is a hairstyle that can be altered, e.g. a bun, ask the respondent to change/undo it. If s/he cannot do so (as will be the case with turbans), use a tape measure to measure the height of the bun/turban.

Data to be recorded in CAPI

1) If height not measured, give reason**.**
2) Confirm that inventory number displayed by CAPI is the same as on the equipment. If not, input inventory number of your equipment.
3) Record height in cm and mm e.g. 176cms, 5mm. If a measurement falls between two millimetres, it should be recorded to the nearest even millimetre. For example, if a respondent's height is between 176.4 and 176.5 cm, you should round it down to 176.4. Likewise, if the respondent's height is between 176.5 and 176.6 cm, you should round it up to 176cm, 6 mm.
4) Record any problems with height measure, e.g. balance/standing problems, problems with posture, spinal curvature.
5) Record the height of any special headdresses or hairstyles and CAPI will subtract this value from the total height.

CAPI will check and will prompt you if the measures you have input are not within reasonable limits. Should this occur, check first that you have typed the data in correctly. If you have, check you have assembled the SECA LEICESTER Height Measure correctly and measure the respondent's height again. Record in CAPI if measurement is taken twice.

Feedback to respondents

Record height values on measurement card, CAPI will convert it to feet and inches for you.

SITTING HEIGHT

Reason

Sitting height is measured to get an idea of body proportions i.e. the length of the legs relative to the body trunk.

Equipment

Portable SECA LEICESTER Height Measure

Exclusion Criteria

Do not measure sitting height if the respondent is in a wheelchair.

Procedure

1) Remove the top 1 or 2 sections of the measuring rod.

2) Find a hard chair with as flat a seat as possible. Place the base of the SECA LEICESTER Height Measure on the chair with the measuring rod at the back.

3) Ask the respondent to sit on the base plate with his/her back to the rod. Ensure that the respondent is sitting as far back and as upright as possible. Try to ensure that the rod is as vertical as possible. Check that their back is as straight as possible.

4) Position the head in the "Frankfort Plane". Bring the head plate down until it gently rests on the highest part of the subject's head. Press down to flatten hair.

5) Take the height reading indicated by the arrowhead, to the nearest even millimetre.

Extra Considerations

On being instructed to sit back as far as possible, many people will lean against a measuring rod. Encourage them to sit upright so that the rod is vertical.

If there isn't a suitable chair, it might be possible to use stairs: in some houses there are a few steps and then a level section on which you can place the base plate (the measure can then be taken with the respondent's thighs supported). Take care that the respondent is sitting upright. Continue with the procedure as noted above.

Data to be recorded in CAPI

1) If height not measured, give reason
2) Record height in cm and mm e.g. 176.5 cms. If a measurement falls between two millimetres, it should be recorded to the nearest even millimetre. For example, if a respondent's height is between 176.4 and 176.5 cm, you should round it down to 176.4. Likewise, if the respondent's height is between 176.5 and 176.6 cm, you should round it up to 176.6 cm.
3) Record any problems with sitting height measure.

CAPI will check and will prompt you if the measures you have input are not within reasonable limits. Should this occur, check first that you have typed the data in correctly. If you have, check you have assembled the SECA LEICESTER Height Measure correctly and measure the respondent's height again. Record in CAPI if measurement taken twice.

Feedback to respondents

If respondent asks, tell them their sitting height. CAPI will convert it to feet and inches for you if this is easier for the respondent.

WEIGHT MEASUREMENT

Reason

Weight measurement is standardised by height to give BMI, the standard measure of obesity. Obesity is an important risk factor for a number of diseases.

Equipment and overview

The Tanita HD-352 scales are turned on by pressing the “ON” button on the back of the scales.

Exclusion Criteria

Respondents are ineligible for this measure if they are a) chair bound, b) pregnant. The maximum limit of the Tanita scales is 31st 6lb, if you think the respondent will be heavier than the maximum limit of the scales do not embarrass them by attempting to take the measure.

Protocol

1) Place the scales on a flat and hard surface. If you are measuring the respondent in a carpeted room attach the support feet by inserting them into the holes at the four corners on the bottom of the scales.

2) Ask the respondent to remove shoes, heavy outer garments such as jackets and cardigans, heavy jewellery, loose change and keys.

3) Turn “ON” on the back side of the scales. (NB. Turn “OFF” to save power during transit).

4) Gently tap the button at the bottom right of the scales, “88888” will appear on the display. When “0.0” appears ask the respondent to stand on the scales.

4) Ask the respondent to stand with their feet together in the centre and their heels against the back edge of the scales. Arms should be hanging loosely at their sides and head facing forward. Ensure that they keep looking ahead - it may be tempting for the respondent to look down at their weight reading. Ask them not to do this and assure them that you will tell them their weight afterwards if they want to know. The posture of the respondent is important. If they stand to one side, look down, or do not otherwise have their weight evenly spread, it can affect the reading.

5) The display will show the reading in kg on the upper row and st-lb on the lower row. Record the reading in kgs before the respondent steps off the scales.

6) When the respondent steps off the scales the display reading will return to “0.0” and the scale will turn off automatically.

7) Remember to turn the scales off after use.

Data to be recorded in CAPI

1) If weight not measured, give reason
2) Confirm that inventory number displayed by CAPI is the same as on the equipment. If not, input inventory number of your equipment.
3) Record weight in CAPI in kgs to one decimal place e.g. 74.3 kgs
4) Record any problems with weight measurement.

CAPI will check and will prompt you if the measures you have input are not within reasonable limits. Should this occur, check first that you have typed the data in correctly. If you have, measure the respondent’s weight again. Record in CAPI if measurement taken twice.

Feedback to respondents

Record the weight on measurement card, CAPI will convert it to stones and pounds for you.

WAIST AND HIP CIRCUMFERENCES

Reason

The waist circumference and waist-to-hip ratio are markers for the distribution of body fat. In particular, central obesity (i.e. a large waist) is thought to be a better measure of obesity and risk of diseases than weight based measures.

Equipment

The equipment consists of a tape measure with buckle, calibrated in mm.

Exclusion Criteria

Do not measure if the respondent is a) chairbound, b) pregnant, c) has a colostomy or ileostomy. Maximum tape measure limit is 200cms. If you do not think the tape will be large enough to measure the respondent do not embarrass them by attempting to do so. Record reason if the measurement was not taken.

Procedure for both measures

Ensure that all outer layers of clothing, such as jackets, heavy or baggy jumpers, cardigans and waistcoats are removed. If the respondent is wearing a belt, ask them if it would be possible to remove it or loosen it for the measurement. Pockets should be emptied. If the respondent is not willing to remove bulky outer garments or tight garments and you are of the opinion that this will significantly affect the measurement, record this in the comments section.

Ensure the respondent is standing erect in a relaxed manner and breathing normally. Weight should be evenly balanced on both feet and the feet should be about 25-30cm (1 foot) apart. The arms should be hanging loosely at their sides.

If the respondent is large, ask him/her to pass the tape around rather than having to 'hug' them. Remember to check that the tape is correctly placed and that the tape is horizontal all the way around.

For both circumference measures ensure the zero point of the tape is below the measurement value for ease of reading.

Procedure

Measuring waist circumference

1) The waist is defined as the point midway between the iliac crest and inferior margin (or lower edge) of the last rib. Ask permission to locate the last rib and slide your hands down to the midpoint. The respondent may prefer to do this him/herself. Male waists tend to be above the top of their trousers whereas female waists are often under the waistband of their trousers or skirts.

2) If the respondent has a waistband at the correct level of the waist (midway between the lower rib margin and the iliac crest) measure the waist circumference over the waistband. Do not try to avoid the effects of waistbands by measuring the circumference at a different position or by lifting or lowering clothing items.

3) Fit the tape snugly but not tightly enough to compress the underlying soft tissue. Ensure the tape is horizontal. Ask them to breathe in then breathe out gently and to look straight ahead (to prevent the respondent from contracting their muscles or holding their breath). Take the measurement at the end of a normal expiration.

4) Repeat the measurement.

5) A third measurement must be taken if the first two are ≥ 0.5cm different, CAPI will instruct you to do this.

Measuring hip circumference

1) The hip circumference is defined as being the widest circumference over the buttocks and below the iliac crest. To obtain an accurate measurement you should measure the circumference at several positions and record the widest circumference.

2) Measure the respondent around the maximum extension of the buttocks. Check the tape is horizontal and the respondent is not contracting the gluteal muscles. Pull the tape, allowing it to maintain its position but without compressing the soft tissues.

3) Repeat the measurement.

4) As with waist circumference, a third measurement must be taken if the first two are ≥ 0.5cm different, CAPI will instruct you to do this.

Data to record in CAPI for each measure

1) If measure is not undertaken, record reason

2) Record each measure in mm.

All measurements should be taken to the nearest millimetre. If the length lies half-way between two millimetres, then round to the nearest even millimetre. For example, if the measurement is halfway between 68.3 and 68.4, round up to 68.4. And if the measurement is halfway between 68.8 and 68.9, round down to 68.8.

3) If the difference between measures is $\geq$ 0.5cm, record third measure.
4) Record any problems in taking measure.

Feedback to respondent

Record values on measurement card, CAPI will convert to inches for you.

BODY COMPOSITION ANALYSIS

Reason

Body composition is the amount of lean tissue and fat that makes up total body weight. Body fat can be measured by bioimpedance, which gives a more accurate measurement than BMI. Bioimpedance is about the electrical properties of your body and is a measure of how well the body impedes electric current flow. High levels of body fat can result in health problems including high blood pressure and cholesterol levels, arteriosclerosis, coronary disease, respiratory problems and kidney disorders.

Equipment and overview

The Bodystat 1500MDD measures bioimpedance. Explain procedure in general terms; to measure bioimpedance, a small electric current is applied via 2 electrodes and the resulting small voltage is picked up with another pair of electrodes. This is entirely safe and will not hurt at all.

Exclusion Criteria

Women in the early stages of pregnancy, subjects with pace-makers or **any** implantable electronic device and individuals who are wheelchair bound should not take this measure.

Procedure

IMPORTANT POINTS BEFORE PROCEEDING WITH MEASUREMENT

a) Subjects should be measured on a non-conductive (not metal) surface.

b) Once the electrode sites have been selected it may be necessary to apply a solvent to remove excess skin oil. Poor contact will result in higher impedance values resulting in an over-determination of body fat levels.

c) The skin should be at normal body temperature and not be sweating.

d) Once in place, press down on the electrodes to ensure good contact.

e) The electrodes may be repositioned if necessary but should not be used on another subject since they may dry out thereby artificially increasing the Impedance values.

f) Keep unused electrodes in the sealed plastic bag to ensure freshness.

g) **Electrodes should only be used once**. This is to ensure accuracy of measurement and good reproducibility of tests.

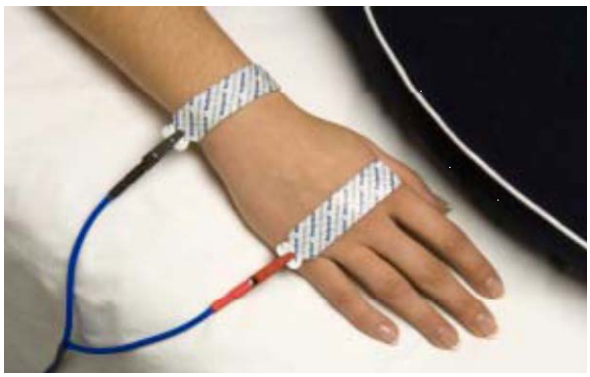
TAKING MEASUREMENT

1) Respondents must be standing for at least 1 minute before taking measure. This will not require any additional time if the physical measures have all been conducted according to the protocol so far.

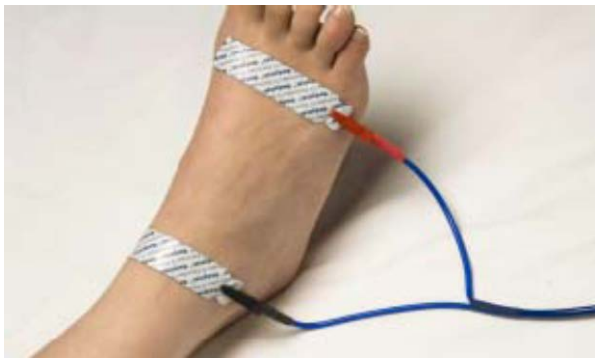
2) Ask respondent to remove their socks or tights and shoes.

3) Electrodes are attached to the right hand and right foot as shown below.

4) **RIGHT HAND**
RED LEAD: Behind the knuckle of the middle finger.
BLACK LEAD: On the wrist next to the ulna head.



5) **RIGHT FOOT**
RED LEAD: Behind the 2nd toe next to the big toe.
BLACK LEAD: On the ankle at the level of and between the medial and lateral malleoli (the large protruding bones on the sides of the ankle).



Another easy way to find the correct position of **the black inner electrodes** is to **draw an imaginary straight line** between the protruding bones on the wrist and ankle as described above and illustrated in the diagram. Then place each electrode in the centre of that line with the line also passing through the centre of the electrode tab.

Correct placement of the BLACK INNER electrode on the wrist and the ankle is critical. The electrode placement behind the fingers and toes is not as critical

6) The respondent should stand for one minute or, if supine, lie for 3 to 4 minutes before pressing the ENTER button on the equipment. This is to ensure that the fluid levels have stabilized in the body before a measurement is performed. The machine must be switched on for a minute before taking the measure.

Check the respondent to ensure that all the electrodes and leads are firmly connected

ENTERING RESPONDENT DATA (you will find all necessary information on the measurement card)

Once the unit has been successfully switched on, the following messages will be displayed on the two line LCD screen:

TEST NUMBER
= 001

The BODYSTAT 1500MDD unit automatically allocates the next available number. The test number is used to identify the respondent's data back at the SPHSU to calculate their body fat. It is, therefore, **essential** the test number is entered correctly into CAPI .

Press the **<⇦>** key. The screen then gender, followed by age, height, then weight (you will have recorded this on the measurement card):

GENDER
Female

Press either the **<⇧>** or **<⇩>** key to switch between Male and Female.
Press **<⇦>** to select the displayed gender.

AGE
30 Yrs

Press the **<⇧> to increase value**
Press **<⇩> to decrease value**

HEIGHT
165cm

Use the arrows to increase or decrease the value displayed to the correct height to the nearest cm. Press the **<⇦>** key to confirm height.

WEIGHT **65.5kg**

Use the arrows to increase or decrease the value displayed to the correct weight to the nearest kg. Press the **<⇦>** key to confirm weight.

Check the subject to ensure that all the electrodes and leads are firmly connected

Press the <⇦> key.

MEASURING ……

Wait a few seconds for the results to be displayed on the LCD screen. An audible signal will be heard indicating the completion of the electronic measurement. Ignore the "RESULTS NOT AVAILABLE" shown on the LCD screen and press enter to view the resistance values and phase angle value. The data has now automatically been saved and stored enabling both input and output subject data to be recalled at a later date.

The electrodes and leads may at this stage be removed.

Data to be recorded in CAPI

1) If measure not measured, give reason.
2) Confirm that inventory number displayed by CAPI is the same as on the equipment. If not, input inventory number of your equipment.
3) Record test number from BODYSTAT machine. **This is very important** so we can match up more detailed results for the respondent in the Unit.
4) Record resistance at 5kHz and 50kHz and phase angle results.
5) Record any problems taking the measure.

Feedback to respondents

Explain the need to use a special formula to calculate body fat. This will be done when data are returned to MRC and results will be sent to the respondent if they wish.

LUNG FUNCTION

Reason

Lung function tests, which measure the amount of air that can be blown out, assess respiratory impairment and disease as well as being an indicator of general health. Lung function is determined by growth in childhood, and environment and lifestyle during adult life (esp. smoking). Generally explain procedure.

Equipment and overview

The MICRO MEDICAL MICRO PLUS MS03 spirometer is a precision instrument designed to measure:-

Forced Expired Volume in 1 second	**FEV_1**
Forced Vital Capacity	**FVC**
Forced Expiratory Ratio	**FER**
Peak Expiratory Flow	**PEF**
Maximum Mid-Expiratory Flow,	**MMEF**

The results are displayed on a clearly legible custom liquid crystal display.

Exclusion Criteria

Respondents are ineligible if a) they have had abdominal or chest surgery in the last 3 weeks, b) have been admitted to hospital in the last 6 weeks with heart complaint, c) had eye surgery in last 4 weeks, d) are pregnant, e) have a tracheostomy.

Procedure

Demonstrate blow first yourself. Remember to use a new tube for the respondent.

Note: Give the respondent a practice go, then three recorded attempts. If the respondent is distressed or has breathing difficulties after any of the blows, and does not want to continue, DO NOT INSIST. Enter values for any attempts they did complete and write why you did not complete this measure on the schedule.

1) Ensure that the respondent is standing up, if the respondent is unable to stand they can remain seated for the measurement, however remember to record this in CAPI.

2) Switch the unit on by moving the switch to its first position, ‘BLOW’. The display will now indicate ‘BLOW’ and three zeros. Attach a

disposable mouthpiece and instruct the respondent to “breathe in until your lungs are completely full, now seal your lips around the mouthpiece and blow out as hard and as fast as possible until you cannot push any more air out.” Warn the respondent that they may feel slightly light-headed doing this. Try to encourage them to improve their performance at each go. The results are strongly affected by how hard and how long the respondent blows.

Reassure the respondent that a degree of 'wheeze' is normal if the test is done properly, with maximum effort.

3) When the respondent has completed this manoeuvre, the machine will initially show a value for FEV_1. Record this in the appropriate place on the CAPI schedule and then move the switch to the 'view' position. The machine will cycle through **five** measurements, **FEV_1**, **FVC**, **FER**, **PEF and MMEF** displaying each in turn. We want you to record all **five** measures.

   NB CAPI cannot work with decimal places, so record the digits as displayed in your spirometer ignoring the decimal point (e.g. 0.234 could be input as 0234 or 234). The decimal place will be inserted into the data when they are returned to the Unit.

   NB. you can 'freeze' one of the measures by moving the switch back to blow. When you return it to display it will carry on cycling through the measures. However, be careful, if you inadvertently move it to ‘off’ you will lose any remaining information.

4) Once the values have been noted the next test can be carried out by repeating the procedure after switching the unit off and then back on again. Give adequate time in between attempts for the respondent to get their breath back. Make sure to record three attempts.

5) For each blow tick 1 if you think they blew correctly and 2 if you think they did not.

Please Note - Technically unsatisfactory blows

A technically unsatisfactory blow is any of the following:

- An unsatisfactory start, e.g. excessive hesitating or a "false start". If you see * on either side of the *FEV_1* then this tells you that it is an excessively slow start.
- Laughing or coughing especially during the first second of the blow. Many people will cough a little towards the end of their effort but this is acceptable.
- Holding the breath in (i.e. a valsalva manoeuvre).
- A leak in the system or around the mouthpiece. This would include those where the mouthpiece is not firmly held by the lips.
- An obstructed mouthpiece e.g. tongue in front of the mouthpiece or false teeth obstructing the mouthpiece.

- Note that a result of 0.00 on an FEV_1 also means that the test has not been carried out properly.

6) Dispose of the mouthpiece - ask the respondent to throw it away for you. (The inside of the turbine casing may get clogged up after use with respondents who have chest trouble etc. If this happens, ask for a replacement).
7) If you are interviewing more than one person per day, ensure that you use a one-way valve on your second visit to prevent the spread of infections from your first to second respondent.

Data to be recorded in CAPI

1) If measure not measured, give reason.
2) Confirm that inventory number displayed by CAPI is the same as on the equipment. If not, input inventory number of your equipment.
3) Results for each 3 blows; FEV_1, FVC, FER, PER, MMEF and quality of blows. Remember to ignore the decimal point when entering the data.
4) Record any problems taking the measure.

Feedback to respondents

If asked, give respondent their FEV_1 measure but say the measurement varies considerably due to lots of factors. Do not compare their measure to other respondents.

REACTION TIMER

Reason

Reaction time is a measure of how quickly someone reacts mentally and physically and can be used as an indicator of cognition.

Equipment and overview

Explain general procedure to respondents. Two reaction tests are conducted :

a) Simple reaction times – respondent is asked to press a button as soon as they see a 0 appear,
b) Choice reaction time - numbers 1,2,3 and 4 appear on a screen and respondent has to press corresponding button.

Exclusion Criteria

People with physical handicaps, including problems like severe arthritis, may have difficulty doing the test and even if they can, it may not be a correct reflection of their mental reaction time. If such a person does not want to do the test, skip over it, but record why you have done so in CAPI. However, whenever it is possible we would like the reaction times test done. If you feel someone was slow because of a physical or even a mental handicap, record this in CAPI.

Procedure

Simple reaction times

1) Make sure the respondent is sitting comfortably with the reaction time equipment on a table in front of them.

2) Tell the respondent that you are going to measure how fast their reactions are.

3) Turn on the machine at the back, the first figure you see is 1.888, ignore this and press the button next to the display. The next number displayed is the test number and must be recorded in CAPI before entering the test results. The test number is used to identify the respondent's data back at SPHSU. It is, therefore, **essential the test number is entered correctly into CAPI .**Press the same button again and three dashes will appear across the screen. Tell the respondent that first of all they will have a practice session; a zero will appear 8 times and they should press the zero button as soon as it appears. It doesn't matter which hand or finger they use, so long as they feel comfortable.

4) Tell the respondent when you press the "start" for the practice. At the end of the 8 practices, the dashes will re-appear.

5) Give the respondent a few moments pause, and check that they understand what to do. Now tell them that a zero will appear another 20 times and they should press the button as for the practice.

6) Press the start button. At the end of the 20 trials, the dashes will re-appear.

To record the results

1) **Press button number 1.** This will show you the mean simple reaction time, which you should record in CAPI.

2) **Press button number 2.** This will show you the standard deviation for the simple reaction test which should also be recorded in CAPI.

NB CAPI cannot work with decimal places, so record the digits as displayed in your reaction timer ignoring the decimal point (e.g. 0.234 could be input as 0234 or 234). The decimal place will be inserted into the data when they are returned to the Unit.

Four Choice Reaction Times

1) Instead of zeros, a **1, 2, 3** or a **4** will appear on the screen. As soon as they see a number, the respondent should press the appropriate button. Explain this to them.

2) As with simple reaction time they have a practice of 8 numbers. Press the "start" button when the respondent is ready. When the practice is over, the dashes will re-appear.

3) The main test is 40 numbers. Press the start button when the respondent is ready. The dashes will re-appear when the trial is over.

To record the results

a. ***BUTTON 1*** *will give you the mean time of the correct responses*

b. ***BUTTON 2*** *will give you the standard deviation of the correct responses*

c. ***BUTTON 0*** *will give you the number of errors*

d. ***BUTTON 3*** *will give you the mean time for the errors*

e. ***BUTTON 4*** *will give you the standard deviation for the errors*

DON'T FORGET TO TURN OFF THE MACHINE AFTER USE

Data to be recorded in CAPI

1. If measure not taken, give reason.
2. Confirm that inventory number displayed by CAPI is the same as on the equipment. If not, input inventory number of your equipment.
3. Record test ID shown on the reaction timer. **This is very important** for us to be able to match up more detailed results for the respondent in the Unit.
4. Record the results, ignoring the decimal point.
5. Record any problems taking the measure.

Feedback to respondent

If asked, tell the respondent their results, but explain the measurement varies a lot due to different factors. Do not compare their results to other respondents.

The AH4

Reason

The AH4 is a test of reasoning. We are asking them to fill it in because it is thought that illness and ageing are related to performance in tests like these. In particular we are interested in the test as a predictor of dementia and confused states in old age.

Equipment and overview

AH4 test. Questions are in red booklet. The answer form is at the back of the self-complete booklet. Explain general procedure.

Procedure

Collect the self-completion questionnaire you sent to the respondent, if you have not already done so, check that you filled in the front page with the respondent's ID number, your ID number and date of interview, and that the respondent has filled in all the pages.

THEN ASK THEM TO DO THE AH4.

We are only using the first half of this measure, from page 1 to page 7 of the red 'question book'

Answers are to be recorded on the form printed on the BACK PAGE of the self-completion questionnaire. The respondents **must not write on the red question book.** If there has been some problem with the original self-complete (if it is lost for example) use a spare one and get them to fill in the self-completion questionnaire as well as the AH4.

1) Turn to page 1 of the red booklet and give it to the respondent.

2) Ask them to do the twelve questions on that page, recording the answers in the 1st column marked 'Examples: page 1' (some correct answers are written in so that they can see if they are doing it correctly). If they ask for help at this stage you are allowed to explain questions to them. They **must not turn over the page** until you tell them.

3) When they have finished the examples, read out the correct answers, which are:-

   Q2 - 5
   Q4 - 4
   Q6 - 64
   Q8 - 4
   Q10 - 25

Q12 - 5

If there are any problems you can discuss the questions and answers with them. Then explain that they have exactly 10 minutes to do as many as they can. They should try to do them all and only miss out questions if they get really stuck. If they do miss a question, tell them to X it out on the answer booklet so that the other answers match the questions. You are not allowed to help with these questions.

4) Tell them to turn over the page and begin. Time them for exactly ten minutes. Take the self-complete booklet from them.

Data to be recorded in CAPI

1) If AH4 not undertaken, give reason.

While they are completing the AH4 answer the interviewer questions in CAPI.

DO NOT GET YOUR EQUIPMENT FOR BLOOD SAMPLING OUT WHILE THE RESPONDENT IS COMPLETING THEIR AH4 AS THIS MAY DISTRACT THE RESPONDENT.

BLOOD SAMPLE

Reason

Biomarkers are naturally occurring substances in the blood that can signal disease when found at levels that are significantly different to levels found in healthy individuals. The blood samples will be tested for the following:

Leptin – A hormone produced by fat cells. Studies have shown a relationship between leptin levels and body fat. Obesity is an excess of body fat and a known risk factor for chronic diseases including heart disease, diabetes, high blood pressure, stroke and some forms of cancer.

Fibrinogen – A protein necessary for blood clotting. High levels are also associated with a higher risk of heart disease.

Total cholesterol – Cholesterol is a type of fat present in the blood, related to diet. Too much cholesterol in the blood increases the risk of heart disease.

HDL cholesterol – This is 'good' cholesterol which is protective for heart disease.

C-reactive protein – The level of this protein in the blood gives information on inflammatory activity in the body, and it is also associated with risk of heart disease.

Glycated haemoglobin (HbA1c) – Indicates the presence or risk of type 2 diabetes, which is associated with an increased risk of heart disease.

Asymmetric dimethylarginine (ADMA) – Plasma concentrations of ADMA provide a marker of risk for endothelial dysfunction and cardiovascular disease.

Telomeres – Are regions found at the end of chromosomes and are believed to have a function in the aging process. Many aging-related diseases are linked to shortened telomeres and as more cells die off organs begin to lose function.

DNA – Genetic factors are associated with some common diseases, such as diabetes and heart disease, and relate to general biological aspects of the ageing process.

In addition blood samples will be tested for:

1) Liver Function
2) Kidney Function
3) Full Blood Count (FBC)

The blood will NOT be tested for HIV (AIDS).

Consent

At this point ask for the respondent's consent to take blood for immediate analysis and to store samples for future research. Discuss each in turn with the respondent with the relevant consent forms and information sheets:

- **Information sheet 1** and **consent form 2** for taking blood for immediate analysis
- **Information sheet 2** and **consent form 3** for extraction of DNA and storage of blood and DNA in a tissue bank for future research.

In each case check that the respondent has read the information sheet; discuss any questions that s/he may have before providing the Consent Forms for the respondent to sign. As blood taking is an invasive procedure we need to obtain written consent as well as verbal consent to take it. This has to be obtained from the respondent **in all cases**.

If you cannot obtain written consent, the computer routes accordingly. **On no account** should you ever take blood before you have obtained written consent to do so from the respondent.

There are a number of different components to the blood consents. You should seek to obtain all these consents before you take any blood. However, **it is not a requirement that respondents consent to all parts**.

Ask the respondent if they would be willing to have a blood sample taken. Try to reassure respondents about the process, and be prepared to answer their concerns. You will need to explain to the respondent the need for written consent and how important it is.

Obtain written consents on **Consent Form 2 for immediate analysis.**

1) consent to give a blood sample to analyse for lipids(cholesterol), glycosylated haemoglobin, fibrinogen, leptin, C-reactive protein, telomere length, ADMA, liver and kidney function and full blood count.

2) consent to send laboratory results for cholesterol and HbA1c and selected physical measures, namely height, weight BMI and body fat to the respondent.

3) consent to send laboratory results for cholesterol and HbA1c and selected physical measures, namely height, weight BMI and body fat to their GP, ensuring that they understand the GP may use these in future reports on them.

Obtain written consents on **Consent Form 3 for storage in the tissue bank.**

4) Confirmation that they have read the information sheet 2 concerning blood storage and have had an opportunity to ask questions

5) consent to extract and store DNA for genetic analysis.

6) consent to store blood for future analysis.

7) Confirm that they understand they can withdraw their consent for the MRC to use their stored DNA and samples at any time.

Explain each of the consents to the respondent, using the information on the information sheet, and answer any questions they may have. When you are confident they understand ask them to initial the consent form for the parts of the blood sample they agree to, then you should both sign the form. Enter the consents they have agreed into CAPI so that it can guide you to take the appropriate samples.

If they consent to selected results being sent to their GP CAPI will ask you to obtain their GP's name and practice address. Sometimes, a respondent will not know the name of their GP or the exact address of the practice. Please try to obtain as much information as you can so that we can be confident we are sending the results to the correct GP.

If there is no consent given for specimen storage (do not take last yellow tube and the last purple tube – see list of coloured tubes below). Of course we would still like to collect blood for immediate analysis, provided the respondent consents to blood collection.

The consent form explicitly mentions that HIV tests **will not** be performed, so that the participants are not placing themselves at risk of financial disadvantage by taking part in the survey (some insurance companies may disqualify people, or demand higher premiums, if they have ever been **tested** for HIV, regardless of the result of the test).

You only need to get the respondent to sign a consent form if they have chosen to do one of the options on the form. If a respondent does not want to provide any blood you should not get them to sign consent form 3 or initial the first box of consent form 2. However, if the respondent wishes to receive their BMI and body composition results or to have them sent to their GP, please get them to initial the second and third boxes on consent form 2 (as appropriate) and cross out the bits relating to bloods and sign the form. If they do not want these results to be sent to themselves or their GP or to give blood, then they do not need to sign consent form 2 at all.

Exclusion Criteria

All respondents, with the following exceptions, are eligible to give blood.

a) **People with clotting or bleeding disorder** By clotting or bleeding disorders we mean conditions such as haemophilia and low platelets, i.e. thrombocytopenia. There are many different types of bleeding/clotting disorders but they are all quite rare. With these problems, do not attempt to take blood, even if the disorder is

controlled. (People who have a past history of thrombophlebitis, a deep venous thrombosis, a stroke caused by a clot, a myocardial infarction or an embolus are NOT considered to have clotting disorders and should not be excluded).

b) People who are not willing to give their consent in writing.

c) Pregnant women

d) Woman with recent mastectomy: you should not take blood from someone who has arm swelling post mastectomy but it is OK to take blood if there is no swelling.

e) Respondent on renal dialysis: blood should not be taken from an arm with a shunt in place for renal dialysis.

If you are uncertain whether a condition constitutes a contraindication to blood sampling, please contact a nurse supervisor who will advise you.

Equipment

Tourniquet
Alcohol swabs
Vinyl gloves
Adhesive dressing
Micropore tape
Set of labels for blood sample tubes
Royal mail 'safebox' X 2
"To" GRI labels
"From" MRC Labels
Vacutainer holder
Cotton gauze
Butterfly needles 23G
Needle disposal box
Vacutainer EDTA purple tubes
Vacutainer citrate blue tubes
Vacutainer plain yellow tubes

The blood tubes

Blood collection should be taken in the following order.

First 6mL Plain tube (yellow)	for Lipids, CRP, Liver & Kidney function
then 4mL EDTA tube (purple)	for HbA1c and ADMA
then 5mL Citrate tube (light blue)	for Fibrinogen
then 4mL EDTA tube (purple)	for DNA and Telomeres
then 6mL Plain tube (yellow)	for Leptin
then 4mL EDTA tube (purple)	for FBC
then 6mL Plain tube (yellow)	for Storage
finally 4mL EDTA tube (purple)	for Storage

Taking the sample

You will be taking a maximum of eight tubes. Everyone who is eligible and willing to have their blood taken should give at least six tubes of blood (two

yellow, one light blue and three purple tubes). If the respondent has given consent for storage you should also draw blood for the third yellow and fourth purple tubes. The CAPI programme will instruct you about which tubes you should draw blood for.

Procedure

1. Collect and prepare relevant equipment and specimen bottles.

2. Approach patient in a confident manner, explain procedure and obtain their consent.

3. The respondent should be seated comfortably in a chair, or if they wish, lying down on a bed or sofa.

4. Wash hands and put on gloves.

5. Ask the respondent to roll up their sleeve on their chosen limb and rest their arm on a suitable surface. Ask them to remove their jacket or any thick clothing, if it is difficult to roll up their sleeve.

6. The antecubital fossae (triangular area on the front side of the elbow joint of the arm) may then be inspected. It may be necessary to inspect both arms for a suitable choice to be made, and the respondent may have to be repositioned accordingly.

7. Do **not** ask the respondent to clench his/her fist.

8. Support chosen limb and apply the tourniquet around the respondent's arm, if necessary the vein may be tapped gently to aid filling. Please note, it is desirable to use the tourniquet applying minimal pressure and for the shortest duration of time. Do not leave the tourniquet in place for longer than 2 minutes.

9. Ask the respondent to keep his/her arm as still as possible during the procedure.

10. Clean patient's skin with appropriate preparation for 30 seconds and allow to dry. Do not touch the site after cleansing.

11. Grasp the respondent's arm firmly at the elbow to control the natural tendency for the respondent to pull the arm away when the skin is punctured. Place your thumb an inch or two below the vein and pull gently to make the skin a little taut. This will anchor the vein and make it more visible.

12. (a)Insert needle smoothly at approx a 30º angle
(b)When winged tipped devices used - obtain a flashback then insert needle approximately 1mm further.

13. Withdraw required specimens via Vacutainer System with the patient's arm in the downward position.

14. Release the tourniquet before withdrawing needle.

15. Ensure the wings of the butterfly are firmly held or secured against the skin. Using one hand, cover the puncture site and sliding shield with cotton wool, with the forefinger and thumb of the other hand press in both sides of the safety hub.

16. Slide the safety hub backwards.

17. An audible click confirms the shield is completely locked. The cannula should be fully enclosed in the protective shield.

18. Apply digital pressure over puncture site. Ask the respondent to hold the pad firmly for three minutes to prevent haematoma formation.

19. Following haemostasis apply adhesive dressing to puncture site. (Check patient is not allergic before applying! - If they are allergic, use cotton gauze secured with micropore)

20. Ensure patient is comfortable.

21. Label bottles with relevant details.

22. Discard all waste and sharps.

23. Discard gloves and wash hands

24. Follow procedures for completing forms and transferring specimens to labs.

25. **When venepuncture is unsuccessful after 2 attempts, no further attempts should be made.**
    Record the number of attempts in CAPI.
    Record which arm the sample was drawn from.

If there is a problem and the respondent decides they don't want all the tubes for collection filled, or the blood is not running freely stop collecting blood at the end of the tube you are taking.

IMPORTANT WARNING
Never re-sheath the needle after use.

Do not allow the disposal box to become overfull as this can present a potential hazard

Possible Problems Encountered

Please Note – If an adverse reaction occurs, please record in CAPI and complete an incident report form and ask the respondent to sign it.

PROBLEM	CAUSE	SUGGESTED ACTION
Fainting Respondent	1. Respondent looks or feels faint during the procedure	Discontinue procedure Ask respondent to lie down with their feet elevated. If they are happy to continue after a suitable length of time, the respondent should be supine, and the circumstances recorded.
Excessive pain	1. Anxiety, fear, low pain threshold 2. Frequently used veins 3. Nerve touched 4. Poor technique by operator	Confident unhurried approach. Avoid hesitancy. Consider using winged infusion device Avoid site Remove needle immediately and use different site.
Very anxious patient	1.Previous bad experience 2.Needle phobia	Confident unhurried approach. Make sure patient is in a comfortable position. Use all methods to dilate vein including applying local heat Consider using winged device
Limited access	1.Repeated use 2.Bruising due to fragility or medication 3.Peripheral shutdown	Confident approach. Only proceed if sure of successful first attempt, otherwise seek help. As above and ensure vein anchored. Ensure adequate pressure to puncture site Use all methods to try and dilate veins. Consider using

		BP cuff. Consider massaging above venepuncture site to assist venous filling/return
Infection	1.Poor aseptic technique	Practice good hand washing techniques as per Infection Control Manual.
Missed vein	1.Inadequate anchoring 2.Wrong positioning 3.Less than 100% concentration	Withdraw needle almost to bevel and manoeuvre to realign needle with vein. Remove and try again if too uncomfortable for patient
Blood flow stops	1.Over shooting vein or advancing needle while withdrawing blood. 2.Vein collapses due to contact between needle and valve or vein wall. 3. Poor blood flow	Gently ease needle back and continue Release and re-tighten tourniquet and continue. As before and gently massage above needle tip to pull blood into vein.
Haematoma	1.Perforation of posterior wall of vein. 2.Removing tourniquet before removing needle. 3. Inadequate pressure over puncture site	1.Insert needle at correct angle and stop when you have flashback. Do not advance needle during sampling Remember to release tourniquet. Apply pressure and dressing to area or supervise patient doing so.
Transmittable diseases	1.Viruses	All blood should be handled with care. Universal precautions apply Wear gloves for sampling
Needle inoculation	1.Lack of caution 2.Overfilling of sharps containers	Safe disposal of equipment Follow MRC policy for needle stick injuries

Blood Sample transfer to laboratory.

All blood samples will be sent to the Department of Clinical Biochemistry, Macewan Building, Glasgow Royal Infirmary, Glasgow, G4 OSF. Depending on the consent obtained from the respondent, the blood samples will be categorized into the profiles on page 38:

WARNING: Do not close Safe box lid until all the contents are inside the package.

Procedure

1) Label the tubes as you take the blood.
2) Use the set of ID number barcode labels to label the vacutainer tubes.
3) You have one sheet of labels per respondent - check the serial number, person number, full name and date of birth printed in the top left of each one.
4) Attach one serial number barcode label to every tube that you send to the lab.
5) Do **not** write any information (such as date of birth) on the labels.
6) All tubes from one person should be packed into two despatch container with a GRI Despatch Form on each.

   You will be given Royal Mail Safeboxes which contain:
   • An absorbent insert
   • A transparent bag

7) Remove absorbent material and plastic bag from Royal Mail Safe Box.
8) Place labelled tubes in fingers of absorbent material.

   (*1 tube per finger and a maximum of 4 tubes per safe box*.)

9) Place in plastic bag and seal.
10) Place bag and contents in clear plastic container within Safe Box.
11) Please ensure despatch document has been completed:

Completing Glasgow Royal Infirmary Blood Despatch Note

a) Affix the respondent's barcoded serial number label to each of the 3 copies of the despatch note. These must correspond to the barcoded labels you have stuck on the tubes.
b) Complete the despatch note, pressing firmly with your pen so that all copies are clear - remember to fill in the respondent ID, the time and date of blood collection and your nurse ID.
c) Next tick the correct profile depending on the consent given by the respondent. (see below, CAPI will tell you which this is).

If you have only achieved an incomplete blood sample (e.g. have only filled one tube), please state this clearly on the despatch note and give the reason.

10) Place a copy of the despatch document in compartment next to sample compartment in each Royal Mail Safebox.

    Please ensure all contents are inside at this point as once the package has been closed it cannot be opened without destroying it.

11) Remove the cardboard separator from the lid.
12) Place the lid over the bottom of the container and firmly press shut.
13) Peel the outer backing from the label and wrap around the Safe box.

14) Ensure the package is addressed correctly (prepared labels) and the return address has been completed (prepared labels).
15) Post as soon as possible (please keep at a ambient temperature in the meantime e.g. boot of your car).

Explanation of Profiles A-G

Profile A

Profile A includes analysis of **all blood analytes** (leptin, lipids, C-reactive protein, liver/kidney function test, fibrinogen, HbA1c, ADMA, telomeres and full blood count), **DNA** analysis and **Storage**. Profile A consists of **8 tubes** (3 yellow, 1 light blue, 4 purple):

First 6mL Plain tube (yellow)	for Lipids, CRP, Liver & Kidney function
then 4mL EDTA tube (purple)	for HbA1c and ADMA
then 5mL Citrate tube (light blue)	for Fibrinogen
then 4mL EDTA tube (purple)	for DNA and Telomeres
then 6mL Plain tube (yellow)	for Leptin
then 4mL EDTA tube (purple)	for FBC
then 6mL Plain tube (yellow)	for Storage
finally 4mL EDTA tube (purple)	for Storage

Profile B

Profile B includes analysis of **all blood analytes** (leptin, lipids, C-reactive protein, liver/kidney function test, fibrinogen, HbA1c, ADMA, telomeres and full blood count) and **Storage**. Please note that DNA analysis should not be performed. Profile B consists of **8 tubes** (3 yellow, 1 light blue, 4 purple):

First 6mL Plain tube (yellow)	for Lipids, CRP, Liver & Kidney function
then 4mL EDTA tube (purple)	for HbA1c and ADMA
then 5mL Citrate tube (light blue)	for Fibrinogen
then 4mL EDTA tube (purple)	for Telomeres
then 6mL Plain tube (yellow)	for Leptin
then 4mL EDTA tube (purple)	for FBC
then 6mL Plain tube (yellow)	for Storage
finally 4mL EDTA tube (purple)	for Storage

Profile C

Profile C includes analysis of **all blood analytes** (leptin, lipids, C-reactive protein, liver/kidney function test, fibrinogen, HbA1c, ADMA, telomeres and full blood count) and **DNA analysis**. Profile C consists of **6 tubes** (2 yellow, 1 light blue, 3 purple):

First 6mL Plain tube (yellow)	for Lipids, CRP, Liver & Kidney function
then 4mL EDTA tube (purple)	for HbA1c and ADMA
then 5mL Citrate tube (light blue)	for Fibrinogen
then 4mL EDTA tube (purple)	for DNA and Telomeres
then 6mL Plain tube (yellow)	for Leptin
then 4mL EDTA tube (purple)	for FBC

Profile D

Profile D includes analysis of **all blood analytes only** (leptin, lipids, C-reactive protein, liver/kidney function test, fibrinogen, HbA1c, ADMA, telomeres and full blood count) only. Please note that DNA analysis should not be performed. Profile D consists of **6 tubes** (2 yellow, 1 light blue, 3 purple):

First 6mL Plain tube (yellow)	for Lipids, CRP, Liver & Kidney function
then 4mL EDTA tube (purple)	for HbA1c and ADMA
then 5mL Citrate tube (light blue)	for Fibrinogen
then 4mL EDTA tube (purple)	for Telomeres
then 6mL Plain tube (yellow)	for Leptin
then 4mL EDTA tube (purple)	for FBC

Profile E

Profile E includes **DNA** analysis and **Storage**. Please note that telomere analysis should not be performed. Profile E consists of **3 tubes** (1 yellow and 2 purple):

EDTA tube (purple)	for DNA only (no telomere analysis)
Plain tube (yellow)	for Storage
EDTA tube (purple)	for Storage

Profile F

Profile F includes **DNA** analysis only. Please note that telomere analysis should not be performed. Profile F consists of **1 purple tube**:

EDTA tube (purple)	for DNA only (no telomere analysis)

Profile G

Profile G includes **Storage** only. Please note that DNA analysis should not be performed. Profile G consists of **2 tubes** (1 yellow and 1 purple):

Plain tube (yellow)	for Storage
EDTA tube (purple)	for Storage

Important

We cannot stress too much the importance of ensuring that you label each tube with the correct ID number for the person from whom the blood was obtained. Apart from the risk of matching up the blood analyses to the wrong person's data, we will be sending the GP the wrong results. Imagine if we detect an abnormality and you have attached the wrong label to the tube!

SHARPS

Sharps disposal containers conform to British Standard CE marking or BS7320 : 1990 should be assembled and labelled as instructed i.e. Nurse ID, Date assembled and Date closed. Ensure that the base and lid of the container are securely fitted together. The sharps disposal container should be carried to and from the interview in the backpack provided. Always carry the disposal container using the handle attached to the container when moving the disposal container at interview, holding away from the body.

Use the recommended butterfly needle and vacutainer to take blood from the respondent. Once the relevant bloods are drawn and the tubes **are closed**, follow the procedure below to dispose of the needle and vacutainer holder.

It is the responsibility of the person using the sharp to ensure its safe disposal.

- Sheath the needle before withdrawing from the respondent's vein.
- Ensure that the lid of the disposal container is fully open so that the needle and vacutainer will not catch as they are lowered in to the opening.
- Dispose of Safety Blood Collection Set and Vacutainer holder as a single unit.
- Place sharps into container aperture ensuring that fingers are never less than approximately 2 inches above the opening
- Ensure sharps containers are placed off the floor, out of reach of children, and as near as practicable to sites of use, and make certain that unauthorised people cannot gain access to them.
- **Do not** dispose of sharps with other clinical waste.

- **Do not** expose sharps containers to extreme temperatures unless this is part of the disposal process.
- **Do not** resheath needles.
- **Do not** throw sharps into disposal containers, or drop them from a great distance.
- **Do not** overfill sharps containers (fill line is clearly marked) - provide adequate numbers of containers.
- **Do not** attempt to retrieve items from sharps containers or press down on contents to make more room.
- If you take too many bottles by mistake, place the extra bottles in the sharps disposal container as well as the needle and vacutainer and press final closure
- Sharps disposal container to be finally sealed either when three-quarters full, when it contains a vacutainer bottle containing blood, when there has been a substantial spillage or at maximum intervals not exceeding two weeks.
- Closed Sharps disposal container should be disposed of at MRC Social & Public Health Sciences Unit, 4 Lilybank Gardens, Glasgow G12 8RZ. See the Survey Office to access the key for the disposal bin located in the back garden.
- Disposal of sharps disposal containers can be carried out at monthly meetings or at any time deemed necessary by the Research Nurse.
- Do not allow used sharps containers to accumulate. Store in a safe, secure area while awaiting final disposal in Sharps bin at MRC offices.
- It will be the responsibility of the Research Nurse to keep any closed sharps disposal containers in a safe, secure storage area whilst waiting disposal.

Use of Sharps

- **Never** leave sharps lying around.
- **Never** walk about with unguarded sharps.
- **Never** keep sharps in your pocket.
- **Always** take a sharps container to the point you use the sharp.

Accidental Spillage

i) Blood Spillage at Respondents Home

Should there be a situation where blood is spilled in the respondents' home then, as soon as possible and wearing gloves, simply clean with soap and water and dispose of paper towels into respondents' domestic waste. **Always** take a spare sharps disposal container with you in case you need to finally seal the one currently in use.

ii) Sharps Disposal Container Spillages outwith the Respondents Home

If there is the possibility of any spillage because of leakage of liquid in a sharps disposal container, the container should be finally sealed in the respondent's home and a replacement container used for the next respondent. In the unlikely event that a spillage occurs anywhere other than the location of the interview, the following steps should be taken

- Clean up all blood spillage as soon as possible. Use chlorine releasing agent e.g. Haz Tabs or Presept tablets added to tap water or Milton (undiluted). Disposable gloves should be worn (with aprons and eye protection if splashing is likely).
- Discard disposable gloves (and apron, eye protection if applicable) as 'Clinical Waste' in a yellow disposal bag and wash hands thoroughly
- Seek help to guard the area while dealing with spillage
- Prepare a new, correctly assembled sharps disposal container
- Consider a plastic dustpan to carefully collect spilled items and transfer to new sharps disposal container which you should finally seal
- Do not rush this procedure
- Store in a safe area while awaiting final disposal.
- Yellow Clinical Waste Disposal bags can be disposed of at MRC offices in the sharps disposal container bin

Needle-stick injury

Should you incur a needle-stick injury please refer to the Health and Safety section of the manual for what to do next.

TAKING PHOTOS

Photos of the localities in which our respondents lived since the study began in 1987 have previously been gathered, which provides us with a really effective visual way of showing how people's environments affect their health. These photos have been used in research papers, feedback leaflets to respondents as well as on the Study's website and in annual reports etc. We would like you to take photos of the neighbourhoods in which respondents live to continue this visual catalogue of respondents' neighbours so that we can illustrate how their environments have changed over time.

We would also like some photos of the interview process - although not including any respondents - these will be used for 'publicity' purposes in promoting participation in the Study via the website and newsletters to respondents that will be sent out during the course of the fieldwork, as well as general annual reports of the Unit to illustrate what we do when we are in the field. You have an option of taking photos before, during or after the interview. Please ensure that you do not photo any identifiable things e.g. street names, respondent's faces etc.

Using the Camera

1. Insert batteries at the base of the camera, as shown above.

2. Switch on the camera by pressing the Power On button.
3. Use the rotating button to set the camera to “Scene”, if the camera is being used at night set the camera to “ ”.
4. Point the camera, use the Zoom In button if necessary, before capturing the photo.
5. To look at the photos you have taken press the button on the back of the camera, see above. To take another photo press this button again.
6. After you have taken photos you should record them on the photo record excel sheet. This will allow us to tie up the photo with the respondent’s area!
7. For this you will need to know the photo number. Click on the  button (the bottom of the three buttons at the side of the screen). The number of the photo will appear in the top right hand corner of the screen. Press this button again to exit.
8. The form has 5 things to enter:
   - Your name
   - Date photo taken
   - number of the photo*
   - Respondent IDNO
   - Location of photo (Please provide as much detail as possible eg play ground off Byers Road, West End of Glasgow))
9. Please bring your **camera** with you to your monthly meeting along with your Bodystat and Reaction Timer for download.
10. I+ Once a month before the monthly meetings, please email the verification spreadsheet with your completed photo record to Elaine. (Elaine@sphsu.mrc.ac.uk)