Appendix B

Measurement protocols

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Non fasting blood sample
Sending blood, saliva and urine to the laboratory
Saliva sample collection
Spot urine sample
Appendix B
Measurement protocols

HEIGHT, WEIGHT AND INFANT LENGTH MEASUREMENT

1.1 Eligibility
You should be able to measure the height and weight of most of the informants. However, in some cases it may not be possible or appropriate to do so. Do not force the informant to be measured if it is clear that the measurement will be far from reliable but whenever you think a reasonable measurement can be taken, do so. Examples of people who should not be measured are:

- Chairbound informants.
- If after discussion with an informant it becomes clear that they are too unsteady on their feet for these measurements.
- If the informant finds it painful to stand or stand straight, do not attempt to measure height.
- If an elderly informant is too stooped to obtain a reliable measurement.
- Pregnant women are not eligible for weight as this is clearly affected by their condition.
- Children under the age of 2 years do not have their height measurement taken.
- For small children, there is an option to weight them held by an adult. In this case, you weigh the adult on his/her own first and then the adult and the child. The computer will calculate the child’s weight.

1.2 Site
It is strongly preferable to measure height and weight on a floor which is level and not carpeted. If the entire household is carpeted, choose a floor with the thinnest and hardest carpet (usually the kitchen or bathroom).

1.3 Height measurements
The equipment
Portable stadiometer - collapsible device with a sliding head plate, a base plate and three connecting rods marked with a measuring scale.

Frankfort plane card

The protocol – adults (aged 16 and over)
1. Ask the informant to remove their shoes in order to obtain a measurement that is as accurate as possible.
2. Assemble the stadiometer and raise the headplate to allow sufficient room for the informant to stand underneath it. Double check that you have assembled the stadiometer correctly.

3. The informant should stand with their feet flat on the centre of the base plate, feet together and heels against the rod. The informant’s back should be as straight as possible, preferably against the rod but NOT leaning on it. They should have their arms hanging loosely by their sides. They should be facing forwards.

4. Move the informant’s head so that the Frankfort Plane is in a horizontal position (i.e. parallel to the floor). 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 (see diagram). 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.

To make sure that the Frankfort Plane is horizontal, you can use the Frankfort Plane Card to line up the bottom of the eye socket with the flap of skin on the ear. The Frankfort Plane is horizontal when the card is parallel to the stadiometer arm.

5. Instruct the informant to keep their eyes focused on a point straight ahead, to breathe in deeply and to stretch to their fullest height. If after stretching up the informant’s head is no longer horizontal, repeat the procedure. It can be difficult to determine whether the stadiometer headplate is resting on the informant’s head. If so, ask the informant to tell you when s/he feels it touching their head.

6. Ask the informant to step forwards. If the measurement has been done correctly the informant will be able to step off the stadiometer without ducking their head. Make sure that the head plate does not move when the informant does this.

7. Look at the bottom edge of the head plate cuff. There is a green arrowhead pointing to the measuring scale. Take the reading from this point and record the informant’s height in centimetres and millimetres, that is in the form 172.4, at the question Height. You may at this time record the informant’s height onto their Measurement Record Card and at the question Measurement you will be asked to check that you have done so. At that point the computer will display the recorded height in both centimetres and in feet and inches. At RelHit® you will be asked to code whether the measurement you obtained was reliable or unreliable.

8. Height must be recorded in centimetres and millimetres, e.g. 176.5 cms. If a measurement falls between two millimetres, it should be recorded to the nearest even millimetre. For example, if informant’s height is between 176.4 and 176.5 cms, you should round it down to 176.4. Likewise, if an informant’s height is between 176.5 and 176.6 cms, you should round it up to 176.6 cms.

9. Push the head plate high enough to avoid any member of the household hitting their head against it when getting ready to be measured.

The protocol – children (aged 2-15)

The protocol for measuring children differs slightly to that for adults. You must get the co-operation of an adult household member. You will need their assistance in order to carry out the protocol, and children are much more likely to be co-operative themselves if another household member is involved in the measurement. If possible measure children last so that they can see what is going on before they are measured themselves.

Children’s bodies are much more elastic than those of adults. Unlike adults they will need your help in order to stretch to their fullest height. This is done by stretching them. This is essential in order to get an accurate measurement. It causes no pain and simply helps support the child while they stretch to their tallest height.
It is important that you practice these measurement techniques on any young children among your family or friends. The more practice you get before going into the field the better your technique will be.

1. In addition to removing their shoes, children should remove their socks as well. This is not because the socks affect the measurement. It is so that you can make sure that children don’t lift their heels off of the base plate. (See point 5 below).

2. Assemble the stadiometer and raise the head plate to allow sufficient room for the child to stand underneath it.

3. The child should stand with their feet flat on the centre of the base plate, feet together and heels against the rod. The child’s back should be as straight as possible, preferably against the rod, and their arms hanging loosely by their sides. They should be facing forwards.

4. Place the measuring arm just above the child’s head.

5. Move the child’s head so that the Frankfort Plane is in a horizontal position. This position is as important when measuring children as it is when measuring adults if the measurements are to be accurate. To make sure that the Frankfort Plane is horizontal, you can use the Frankfort Plane Card to line up the bottom of the eye socket with the flap of skin on the ear. The Frankfort Plane is horizontal when the card is parallel to the stadiometer arm.

6. Cup the child’s head in your hands, placing the heels of your palms either side of the chin. Your fingers should come to rest just under the ears.

7. Firmly but gently, apply upward pressure lifting the child’s head upwards towards the stadiometer head plate and thus stretching the child to their maximum height. Avoid jerky movements, perform the procedure smoothly and take care not to tilt the head at an angle: you must keep it in the Frankfort plane. Explain what you are doing and tell the child that you want them to stand up straight and tall but not to move their head or stand on their tip-toes.

8. Ask the household member who is helping you to lower the head plate down gently onto the child’s head. Make sure that the plate touches the skull and that it is not pressing down too hard.

9. Still holding the child’s head, relieve traction and allow the child to stand relaxed. If the measurement has been done properly the child should be able to step off the stadiometer without ducking their head. Make sure that the child does not knock the head plate as they step off.

10. Read the height value in metric units to the nearest millimetre and enter the reading into the computer at the question Height. At the question Ask height you will be asked to check that you have entered the child’s height onto their Measurement Record Card. At that point the computer will display the recorded height in both centimetres and in feet and inches.

11. Push the head plate high enough to avoid any member of the household hitting their head against it when getting ready to be measured.

Additional points – all informants

1. If the informant cannot stand upright with their back against the stadiometer and have their heels against the rod (e.g. those with protruding bottoms) then give priority to standing upright.

2. If the informant has a hair style which stands well above the top of their head, (or is wearing a turban), bring the headplate down until it touches the hair/turban. With some hairstyles you can compress the hair to touch the head. If you can not lower the headplate to touch the head, and think that this will lead to an unreliable measure, record this at question RelHie. If it is a hairstyle that can be altered, e.g. a bun, if possible ask the informant to change/undo it.

3. If the informant 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.

1.4 Weight measurements

The equipment

Soehnle, Seca or Tanita electronic bathroom scales, calibrated for the Health Survey.

The reading is shown in metric units, but as for height, the computer provides a conversion. If the informant would like to know their weight in stones and pounds you will be able to tell them when the computer has done the calculation. You also have a conversion chart on the back of the coding booklet.

The scales have an inbuilt memory which stores the weight for 10 minutes. If during this time you weigh another object that differs in weight by less than 500 grams (about 1lb), the stored weight will be displayed and not the weight that is being measured. This means that if you weigh someone else during this time, you could be given the wrong reading for the second person.

So if you get an identical reading for a second person, make sure that the memory has been cleared. Clear the memory from the last reading by weighing an object that is more than 500 grams lighter (i.e. a pile of books, your briefcase or even the stadiometer). You will then get the correct weight when you weigh the second informant.

You will only need to clear the memory in this way if:

a) You have to have a second or subsequent attempt at measuring the same person

b) Two informants appear to be of a very similar weight

c) Your reading for an informant in a household is identical to the reading for another informant in the household whom you have just weighed.

The protocol

1. Turn the display on by using the appropriate method for the scales. In most cases, this will involve pressing firmly with your hand or foot on top of the scales (the scales will automatically turn off after a short time). The readout should display 888.8 (888 for the Seca 870) momentarily. If this is not displayed check the batteries, if this is not the case you will need to report the problem to the National Centre at Brentwood. While the scales read 888.8 do not attempt to weigh anyone.
2. Ask the informant to remove shoes, heavy outer garments such as jackets and cardigans, heavy jewellery, loose change and keys.

3. Turn the scales on with your foot again. Wait for a display of 0.0 before the informant stands on the scales.

4. Ask the informant to stand with their feet together in the centre and their heels against the back edge of the scale. Arms should be hanging loosely at their sides and head facing forward. Ensure the child is comfortable and not resisting.

The computer will then calculate the weight of the child and you will be asked to check that you have given the weight both in kilos and in stones and pounds.

The computer will then allocate the weight of the child and you will be asked to check that you have the weight both in kgs and in stones and pounds.

5. The scales have been calibrated to display the weight of the child in your chosen language. The computer will display your weight in the language you have selected. If the informant is not using the computer to record their child’s weight, they will be given a Measurement Record Card. This will help the child to relax and feel in control.

Additional points

If you are using one of the scales that has the read-out on a handle, it is possible that skirts, coats and the informant and their clothing may temporarily prevent the reading. Try to ensure that the child is in control and is able to relax.

6. You must get the cooperation of an adult household member. This will help the child to relax and feel in control. The child should be wearing their own clothing.

Weighting Children

You must get the cooperation of an adult household member. This will help the child to relax and feel in control. The child should be wearing their own clothing.

Children wearing pyjamas should be wearing a dry disposable. If the baby is wet, please ask the parent to change it for the child and explain that the wetness of the baby will affect the weight measurement.

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4. Move the child’s head so that Frankfort Plane is in a position at right angles to the floor/table (see diagram below). Ask the parent to hold the child in this position and make sure their head is in contact with the headpiece.

![Infant Frankfort Plane Card]

5. Straighten the child’s legs by holding the legs by the ankles with one hand and applying a gentle downward pressure.

6. With your free hand, move the foot rest on which the measuring tape is mounted to touch the child’s heels by depressing the red button on the tape measure.

7. The measurement is read from the red cursor in the tape window. The measurement is recorded in centimetres and millimetres to the nearest millimetre. If the measurement lies between two millimetres then you should round to the nearest even millimetre. For example, if the measurement is halfway between 68.3 and 68.4, then round up to 68.4. If the measurement is halfway between 68.8 and 68.9 then round down to 68.8.

2 Recording ambient air temperature

2.1 The thermometer

You have been provided with a digital thermometer and probe. This instrument is very sensitive to minor changes in temperature. It is therefore important that you record temperature at the appropriate time in your routine. It can also take a few minutes to settle down to a final reading if it is experiencing a large change in temperature (e.g. coming into a warm house from a cold outside).

Immediately after you have settled the informant down to rest for five minutes prior to taking their blood pressure set up the thermometer to take a reading. Just prior to recording the blood pressure note the temperature and record it when the computer prompts you to do so. Always switch it off after taking a reading, to avoid battery problems. The thermometer automatically switches off if you have left it on for more than 7 minutes. You will also need to enter the temperature before the lung function reading.

Place the thermometer on a surface near the Omron. Do not let the probe touch anything - you can for example let it hang over the edge of a table. Do not put it on top of the Omron as it will be warm.

Please note that you must enter the temperature to one decimal place - do not round it to the nearest degree. For example, enter ‘21.2’, not just ‘21’. If you do not enter a decimal point, the computer will give you a warning. If the temperature is exactly, say, 21 degrees, then all you need to do is press the warning and it will automatically fill in the ‘0’ for you. Otherwise, you must go back and amend your answer. As a further check, it will also ask you to confirm that a temperature ending in ‘0.0’ is correct.

2.2 Instructions for using the thermometer

1. The probe plug fits into the socket at the top of the instrument.
2. Press the completely white circle to turn the instrument on. To turn off, press the white ring.
3. Before taking a reading off the display, ensure that the reading has stabilised.
4. Be careful of the probe - it is quite fragile.
5. When “LO BAT” is shown on the display the battery needs replacing, take no further readings.
6. The battery in your thermometer is a long-life battery and should last at least one year. However, should it run low please purchase a new battery. Take the old one with you to ensure it is the same type. Claim in the usual way.
7. To remove old battery and insert a new one, unscrew the screw on the back of the thermometer.

3 BLOOD PRESSURE MEASUREMENT

3.1 Eligibility

High blood pressure is an important risk factor for cardiovascular disease. It is important that we look at the blood pressure of everyone in the survey using a standard method so we can see the distribution of blood pressure across the population. This is vital for monitoring change over time, and monitoring progress towards lower blood pressure targets set in the Health of the Nation.

The only people not eligible for blood pressure measurement are those who are pregnant or aged less than 5 years old. However, if a pregnant woman wishes to have her blood pressure measured, you may do so, but do not record the readings on the computer.

3.2 Protocol for blood pressure recording: Omron hem-907

This section describes the protocol for measuring blood pressure using the Omron HEM 907. More detailed information may be obtained from the instructions booklet inside the box. If you have any further questions or problems then please contact the Survey Doctor.

Protocol

Equipment

Omron HEM 907 blood pressure monitor
Small cuff (17-22 cm)
Standard adult cuff (22-32 cm)
Large adult cuff (32-42 cm)
AC adapter
The Omron HEM-907 blood pressure monitor is an automated machine. It is designed to measure systolic blood pressure, diastolic blood pressure and pulse rate automatically at pre-selected time intervals. On this study three readings are collected at one-minute intervals.

The Omron 907 is equipped with a rechargeable battery, which is usable for approximately 300 measurements when fully charged. To recharge the battery, connect the monitor to the mains. A battery symbol will appear in the CHARGING display when the battery is charging. When ready to use the symbol will disappear. A dark battery symbol in the BATTERY display indicates that the battery is charged and the machine is usable. The battery can be charged in approx. 12 hours. When the battery symbol in the BATTERY display starts to flash there are 20-30 measurements left, you need to charge the battery soon. When a light battery symbol appears in the BATTERY display the battery needs to be put on charge immediately. The Omron 907 is NOT designed to work off the mains adaptor; it should be run off the battery power pack. The mains adaptor should ONLY be used to charge the battery pack.

PLEASE REMEMBER TO CHARGE THE BATTERY!!

The picture below shows the main features of the Omron HEM-907.

3.3 Preparing the informant

The informant should not have eaten, smoked, drunk alcohol or taken vigorous exercise in the 30 minutes preceding the blood pressure measurement as blood pressure can be higher than normal immediately after any of these activities.

Ask the informant to remove outer garments (e.g. jumper, cardigan, jacket) and expose the right upper arm. The sleeve should be rolled or slid up to allow sufficient room to place the cuff. If the sleeve constricts the arm, restricting the circulation of blood, ask the informant if they would mind taking their arm out of the sleeve for the measurement.

3.4 Selecting the correct cuff

For adults aged 16 and over: Do not measure the upper arm circumference. Instead, choose the correct cuff size based on the acceptable range which is marked on the inside of the cuff. You will note that there is some overlap between the cuffs. If the informant falls within this overlap range then use the standard cuff where possible.

For children aged 5 to 15: It is important to select the correct cuff size. The appropriate cuff is the largest cuff which fits between the axilla (underarm) and the antecubital fossa (front of elbow) without obscuring the brachial pulse and so that the index line is within the range marked on the inside of the cuff. You will be provided with a child’s cuff as well as the adult cuffs. Many children will not need the child’s cuff and instead will require a small adult cuff or a standard adult cuff. You should choose the cuff that is appropriate to the circumference of the arm.

Adults and children: The appropriate cuff should be connected via the grey air tube to right end side of the monitor.

3.5 Procedure

Wrap the correct sized cuff round the upper right arm and check that the index line falls within the range lines. Use the left arm only if it is impossible to use the right. If the left arm is used, record this on the schedule. Locate the brachial pulse just medial to the biceps tendon and position the arrow on the cuff over the brachial artery. The lower edge should be about 1-2 cm above the cubital fossa (elbow crease).

Do not put the cuff on too tightly as bruising may occur on inflation. Ideally, it should be possible to insert two fingers between cuff and arm. However, the cuff should not be applied too loosely, as this will result in an inaccurate measurement.

The informant should be sitting in a comfortable chair with a suitable support so that the right arm will be resting at a level to bring the antecubital fossa (elbow) to approximately heart level. They should be seated in a comfortable position with cuff applied, legs uncrossed and feet flat on the floor.

Explain that before the blood pressure measurement we need them to sit quietly for five minutes to rest. They should not smoke, eat, drink or during this time. Explain that during the measurement the cuff will inflate three times and they will feel some pressure on their arm during the procedure.

It is important that children as well as adults rest for five minutes before the measurement is taken. However, making children sit still for five minutes can be unrealistic. They may move around a little, but they should not be running or taking vigorous exercise. As with adults, they should not eat or drink during this time.

After five minutes explain you are starting the measurement. Ask the informant to relax and not to speak until the measurement is completed as this may affect their reading.
3.6 How to operate the monitor

See Picture of Omron HEM-907 monitor on page XX.

1. Switch the monitor on by pushing the ON/OFF button. Wait for the READY TO MEASURE symbol to light, indicating the machine is ready to start the measurement (approx. 2 sec).

2. Check that the MODE Selector is set to AVG and the P-SET (pressure setting) Volume is set to AUTO.

3. Press the START button to start the measurement. The cuff will now start to inflate and take the first measurement. When the first measurement is complete the LCD displays show systolic pressure, diastolic pressure, and pulse rate. Record the readings on the interview schedule.

4. Blood pressure will then be recorded at one-minute intervals thereafter. After each interval record the reading from the LCD displays on the interview schedule.

5. After the three measurements are complete press the ON/OFF button to turn off the power and remove the cuff.

If there are any problems during the blood pressure measurements or the measurement is disturbed for any reason, press the STOP button and start the procedure again. If the informant has to get up to do something, then ask them to sit and rest for five minutes again.

3.7 Error readings

They appear on the LCD display:

Er1, Er2. Check that the tube connecting the cuff to the monitor is properly inserted and it is not bent. Check that the cuff is properly wrapped around the arm. Repeat the measurement.

Er3. Check that the tube connecting the cuff to the monitor is not bent. Repeat the measurement.

Er4. This could be because of a motion artefact. Ask the informant to sit as still as possible and take the measurement again. If you still get another Er4 error reading, it could be because the informant has a very high blood pressure. Set the P-SET Volume to 260 and repeat the measurement.

Er5, Er6. Check that the cuff is properly wrapped around the arm. Repeat the measurement.

If any of these errors readings persist record that it wasn’t possible to get a reading and explain to the informant that this sometimes happens. Then contact Brentwood and inform them that there is a problem with the monitor.

Er7, Er8. Check that the informant does not move, ask the informant to sit as still as possible and take the measurement again. If you still get an error reading the pulse may be irregular. Do NOT palpate the pulse. Record that it wasn’t possible to get a reading and explain to the informant that this sometimes happens.

Er9. Technical fault. Contact Brentwood immediately and inform them that there is a problem with the monitor.

3.8 Feedback to informants

If the informant/parent wishes, you should record details of their readings on their Measurement Record Card.

a) Child informants (age 5 to 15)

We do not wish you to comment on the child’s blood pressure readings to the parents. If they seek comment, reiterate what you have already said about not being able to interpret a single blood pressure measurement without checking to see whether it is normal for the child’s age and height. Reassure them that if it is found to be abnormal, the Survey Doctor will get in touch and advise them as to what steps they should take. This rule applies for all readings you obtain.

b) Adult informants (aged 16+)

In answering queries about an adults blood pressure it is very IMPORTANT to remember that it is not the purpose of the survey to provide informants with medical advice, nor are you in a position to do so as you do not have the informant’s full medical history. But you will need to say something. What you say in each situation has been agreed with the Department of Health, and you have been given a sheet with those comments to read out. It is very important that you make all the points relevant to the particular situation and that you do not provide a more detailed interpretation as this could be misleading. Read the instructions below very carefully and make sure you always follow these guidelines.

Your comments should be based on the last two of the first three readings you take from the Omron HEM-907. Base your advice on the higher of the last two readings. If the first reading is higher than the other two, explain that the first reading can be high because people are nervous of having their pressure taken.

Definitions of raised blood pressure differ slightly. The Department of Health has decided to adopt the ones given below for this survey. It is important that you adhere to these definitions, so that all informants are treated in an identical manner. These are shown below.

**ADULTS ONLY**

**SURVEY DEFINITION OF BLOOD PRESSURE RATINGS**

For men aged less than 50 and all women

<table>
<thead>
<tr>
<th>Rating</th>
<th>Systolic</th>
<th>Diastolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;140</td>
<td>&lt;85</td>
</tr>
<tr>
<td>Mildly raised</td>
<td>140 - 159</td>
<td>85 - 99</td>
</tr>
<tr>
<td>Moderately raised</td>
<td>160 - 179</td>
<td>100 - 114</td>
</tr>
<tr>
<td>Considerably raised</td>
<td>180 or more</td>
<td>115 or more</td>
</tr>
</tbody>
</table>

For men aged 50 or over

<table>
<thead>
<tr>
<th>Rating</th>
<th>Systolic</th>
<th>Diastolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;160</td>
<td>&lt;95</td>
</tr>
<tr>
<td>Mildly raised</td>
<td>160 - 169</td>
<td>96 - 104</td>
</tr>
<tr>
<td>Moderately raised</td>
<td>170 - 179</td>
<td>105 - 114</td>
</tr>
<tr>
<td>Considerably raised</td>
<td>180 or more</td>
<td>115 or more</td>
</tr>
</tbody>
</table>

NB: < less than
Points to make to a informant about their blood pressure (given on screen):

Normal:
‘Your blood pressure is normal’

Mildly raised:
‘Your blood pressure is a bit high today.’

‘Blood pressure can vary from day to day and throughout the day so that one high reading does not necessarily mean that you suffer from high blood pressure.’

‘You are advised to visit your GP within 3 months to have a further blood pressure reading to see whether this is a one-off finding or not.’

Moderate raised:
‘Your blood pressure is a bit high today.’

‘Blood pressure can vary from day to day and throughout the day so that one high reading does not necessarily mean that you suffer from high blood pressure.’

‘You are advised to visit your GP within 2-3 weeks to have a further blood pressure reading to see whether this is a one-off finding or not.’

Considerably raised:
‘Your blood pressure is high today.’

‘Blood pressure can vary from day to day and throughout the day so that one high reading does not necessarily mean that you suffer from high blood pressure.’

‘You are strongly advised to visit your GP within 5 days to have a further blood pressure reading to see whether this is a one-off finding or not.’

Note: If the informant is elderly and has severely raised blood pressure, amend your advice so that they are advised to contact their GP within the next week or so about this reading. This is because in many cases the GP will be well aware of their high blood pressure and we do not want to worry the informant unduly. It is however important that they do contact their GP about the reading within 7 to 10 days. In the meantime, we will have informed the GP of their result (providing the informant has given their permission).

3.9 Action to be taken by the nurse after the visit
If you need to contact the Survey Doctor, do not do this from the informant’s home - you will cause unnecessary distress.

Pulse - for all informants the survey doctor routinely checks fast and slow pulse rates so no further action is necessary.

a) Children
No further action is required after taking blood pressure readings on children. All high readings are viewed routinely by the Survey Doctor. However, in the rare event that you encounter a child with a very high blood pressure, i.e. systolic 160 or above or diastolic 100 or above please call the Survey Doctor.

b) Adults
The chart below summarises what action you should take as a result of the knowledge you have gained from taking an adult’s blood pressure readings. For this purpose you should only take into account the last two of the three readings you take. We do not want you to use the first reading as it is prone to error for the reason stated above.

<table>
<thead>
<tr>
<th>Blood Pressure</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal/mild/moderate bp</td>
<td>No further action necessary</td>
</tr>
<tr>
<td>Systolic &lt; 180 mmHg and Diastolic &lt; 115 mmHg</td>
<td>If you feel that the circumstances demand further action, inform the Survey Doctor who will then inform the informant’s GP immediately if she deems it necessary.**</td>
</tr>
<tr>
<td>Considerably raised bp</td>
<td>Contact the Survey Doctor at the earliest opportunity and she will inform the informant’s GP.**</td>
</tr>
<tr>
<td>Systolic &gt; 180 mmHg or Diastolic &gt; 115 mmHg</td>
<td>If the informant has any symptoms of a hypertensive crisis* contact the survey doctor immediately or call an ambulance. The Survey Doctor must be informed as soon as possible.**</td>
</tr>
</tbody>
</table>

NB. < less than; > greater than or equal to.

* A hypertensive crisis is an extremely rare complication of high blood pressure. Its signs and symptoms include diastolic bp > 135 mmHg, headache, confusion, sleepiness, stupor, visual loss, seizures, coma, cardiac failure, oliguria, nausea & vomiting.

** You must still contact the Survey Doctor even if informants tell you that their GP knows about their raised BP.

All high or unusual readings will be looked at by the Survey Doctor when they reach the office. If the reading is high, then the Survey Doctor will contact the informant directly.
4 PHYSICAL PERFORMANCE MEASURES (65+)

The purpose of these tests is to objectively measure the overall health and level of disability of a large population of people aged 65 and over. These measures form a battery of tests that have been shown to allow other physical performance measures to be compared. The tests are designed to be simple and easy to administer and to allow the participant to take part in the tests without any additional equipment. The tests are designed to be administered in turn with the inform.

4.2 Eligibility criteria for the tests

You should be able to take measurements of all the informants aged 65 or over. However, in some cases it may not be possible to take measurements of all the informants aged 65 or over. You should be able to take measurements of all the informants aged 65 or over if the informant is able to do so. Do not take measurements of all the informants aged 65 or over if the informant is unable to do so. In addition, the measurements should be taken in a quiet environment, such as a hospital or a community centre, where the informant can be assessed in isolation and in turn with the informant.

Almost all informants can have their grip strength measured, even those with arthritis, or with the use of only one hand. For the informed consent, leg strength and chair rise, informants should not be measured if:

- they are wheelchairs or wheelchair bound informants (although they may be able to do some of the measurements).
- they are unable to understand the instructions.
- they are unable to follow the instructions.

4.3 Encouragement

Follow the instructions in the Protocol closely as possible to describe the tests and how to perform it properly. Do not provide additional encouragement beyond the language provided by the detailed instructions. To some informants, the detailed verbal instructions may seem unnecessary. It may help to say that you are not taking too much time for their measurements.
4.8 Content of balance measures
The balance measure (including leg raises) evaluates the informants’ ability to balance, using five components: side-by-side, semi-tandem and full tandem, and for those aged 65 to 69, leg raise with eyes open and leg raise with eyes closed. The measures differ between age groups as follows:
- All ages start with the side by side for 10 seconds.
- If they pass the side by side they should then do the semi-tandem stand for 10 seconds.
- Informants who pass the semi-tandem stand should then do the full tandem stand. If the informant is aged 69 and under they should attempt the full tandem stand for 30 seconds. If the informant is over 70 they should only do the full tandem stand for 10 seconds.
- People aged 69 and under who successfully pass the side by side stand should attempt the one-leg stand with their eyes open for 30 seconds.
- If informants successfully pass the one-leg stand with their eyes open they should attempt it again with their eyes shut, again for 30 seconds.

For the side by side, semi-tandem and full-tandem stands, informants are not permitted to practice first.

The positioning of the feet correctly is very important. If a informant is unable to assume any of the positions themselves, do not help them – the only help you should offer is support. Do not move their feet for them. Record in the computer that the measure was not attempted. Splayed feet are also not permitted.

4.9 Equipment
The only equipment that you will need for the balance measures is a stopwatch.

4.10 Nurse script and record card
You have been provided with a script card for each measure so that you can read the instructions when you are away from the computer. You have also been given nurse record cards, so that you can note down the results if you complete any of these tests away from the laptop. You should return this card to the office, and not leave it with the informant. This is because we can’t offer any feedback on their results, nor would we expect a doctor or nurse to be able to, they are only useful from a survey point of view.

5. GRIP STRENGTH (AGED 65+)

5.1 Introduction
The grip strength measurements are taken from everyone aged 65 and over. These measurements are an indication of upper body strength, and with the walking speed, balance and chair rise give an objective, comparable measure of frailty. Hand-grip strength affects every day function (such as raising the body weight or holding heavy objects) and declines with age. It is measured with a gripometer which consists of a gripping handle with a strain-gauge and an analogue reading scale. The measurement will be given to all informants. There is no lower or upper age limit.

If someone is ambidextrous, enter either hand at MMGSDow, and put a note about this in a memo. If someone does not have the use of one hand the test should still be carried out with the other.

5.2 Demonstrations
Demonstrate the grip-strength test for the informant. It is very important that you demonstrate the measurement correctly. Experience has shown that informants follow more closely what the nurse does rather than what s/he says. If the informant indicates that s/he does not understand how to handle the gripometer, demonstrate it again rather than relying on repeating verbal instructions. Repeat the demonstration only once. If the informant still does not understand, skip the test and continue the interview. Do not ‘coach’ the informant.

5.3 Procedure
- Explain and demonstrate the test procedure. You can use the Grip Strength Protocol Script Card if you wish.
- The informant should preferably stand up – but if not possible then sitting in an upright chair is fine.
- Large rings may need to be removed.
- VERY IMPORTANT: Adjust the lever of the gripometer so it suits the informant’s hand. To do this:
  1. Put the black bar of the gripometer on the pads at the top of their palm. If it is in the right position the metal bar (the grip) should rest on the middle piece of the four fingers.
  2. If the metal bar is not in the right position you will need to lift the metal lever on the side of the gripometer and rotate the metal bar (the grip) until it is in a more suitable position for the informant. Then repeat step 1.
  3. You can check that there is a good fit by asking the informant to grip the gripometer – the middle section of their fingers should be flat across the top of the metal bar. If they are not then you will need to readjust it.
  4. When you have got a good fit, replace the lever on the side of the gripometer.
- Make sure the informant keeps their upper arm tight against their trunk.
- The forearm should be at a right angle to the upper arm. If the informant is finding the gripometer too heavy to hold it in this position then they can use their free hand to rest the gripometer on. You could also provide this support if appropriate. If the informant 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.
- Allow the informant to have a practice with one hand.
- Before each measurement, make sure that the arrow is reset at zero.
- Ask the participant to squeeze as hard as they can for a couple of seconds (the gripometer will retain the highest reading, so there is no need to hold onto it for longer than this)
- Record the value on the scale and round to the nearest whole number (e.g. 12). To get an accurate reading you should look directly down on the scale. Record the result on to the Nurse Record Card.
- Record three values with each hand alternating between hands, starting with the non-dominant hand (six values all together).
- Do not include measurements carried out incorrectly.

5.4 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 informant’s hands, just take measurements on the other hand.
6. TIMED WALK (aged 65+)

6.1 Purpose
The purpose of this test is to objectively measure the overall health and level of disability of a large population of people aged 65 years and above. Walking speeds in older people have been shown to be very predictive of level of disability, future use of health care and mortality. This test will allow us to gather very important information about the informants.

6.2 Content
The Timed Walk involves timing how long it takes to walk a distance of 8 feet (244 cm). Our target is to measure everyone seen by the nurse who is aged 65 or older. The test should only be performed if it is safe to do so.

6.3 Equipment
You will use a tape rule with the correct distance marked on it, a measurement card to record the time of each test and a stopwatch to carry out the timed walk.

The tape rule is easy to operate and has a lock on it to keep it open while it is being used. Please release this lock very carefully as it can easily hurt you or someone else. Please also ensure that it does not become an obstacle that could trip someone.

There is space on the nurse record card for the results of the timed walk. The card should be placed adjacent to the end of the walking course so that you can easily fill in the information after each walk is completed. Please make sure the informant won’t slip on the card.

6.4 Stopwatches
To change from time mode to stopwatch mode (if necessary):
Press the middle button labelled “Mode”.

To reset the stopwatch:
Press the button on the left-hand side. (if this restarts the stopwatch, press the right button once to stop it, then the left button twice, until zero appears)

To start and stop the stopwatch:
Press the yellow button on the right-hand side labelled “Start / Stop”.

When you record the timed walk it is very important that you do so accurately. The last four digits of the stopwatch will display the time in hundredths of a second e.g. 0.234. Please transcribe this carefully on to the nurse record card and from there into the computer programme.

6.5 Introducing the test
The detailed instructions and demonstration may seem unnecessary to some informants. Say that you are going to explain the test to the informant in detail since this is the best way to make sure that everyone does the test in a similar manner.

6.6 Performing the test safely
Your safety and that of the informants is paramount in this study. Before the informant performs the test, you will have the chance to assess the safety and the informant’s willingness to perform the test. If you do not believe the informant is safe then do not conduct the test.

Once the informant has consented to perform the test, make sure that there are no barriers to safety such as poor lighting, loose rugs, furniture or pets in the way. If possible, and with the informant’s permission, remove any barriers to safety as appropriate. Do not risk harming yourself by moving heavy furniture.

The test may be performed in a hallway or sheltered corridor if there is no suitable space elsewhere as long as the surface and lighting are good and the location is safe and reasonably private. In rare instances where these criteria are met, it could be conducted outside however it is vital that you avoid dark spaces or uneven floor surfaces. It is strongly preferable to conduct the timed walk on a floor that is level, not carpeted and not slippery (e.g. highly polished). If all the available space is carpeted, choose a floor with the thinnest and hardest carpet.

If the informant is wearing slippers or high-heeled shoes or is not wearing shoes, ask them if they can change into a pair of low-heeled shoes or trainers. If they do not have a suitable pair of shoes it would be safer for them to do the test in bare feet rather than in socks or tights.

Walking aids (such as a stick or zimmer frame) may be used on this test but the informant should not rely on the support of another person. Continue to record the time the test takes by watching the informant’s feet. That is to say, do not start or stop counting from the time the walking aid crosses the line. Instead, focus on when the first foot touches the floor, fully across the line.

6.7 Demonstrating the test
Demonstrate the walk for the informant at your own natural pace. Remind the informant not to begin to do the walk until after you have demonstrated it. It is very important that the interviewer demonstrates each step correctly. Experience has shown that informants follow more closely what the nurse does rather than what he or she says. If the informant indicates that he or she does not understand how to do the test, demonstrate it again rather than relying on repeating verbal instructions. Repeat the demonstration only once. If the informant still does not understand, skip the test. Do not ‘coach’ the informant.

6.8 Criteria for an acceptable test
Please note the following criteria must be met for a measurement to be considered acceptable. If they are not met, the walk should be repeated:

i) Informant begins with both feet together at the beginning of the course.

ii) The nurse starts timing when either foot is placed down on the floor across the start line. The whole foot must be across the line before the test is started, so if the informant is shuffling, or puts their foot down so that it straddles the line, start the stopwatch when the whole foot has crossed the line.

iii) The informant walks and does not race.
6.9 Safety during the test

You should not do the test if the informant appears to be in danger of falling. If you are able to assist, you should take the informant to safety. If you are not able to get the informant to safety, you should call for help immediately. The informant must be checked for any injuries before being assisted. If you are able to assist, you should take the informant to safety. If you are not able to get the informant to safety, you should call for help immediately. The informant must be checked for any injuries before being assisted.

The informant should be monitored throughout the test, and any changes in their condition should be noted. If the informant appears to be in distress, they should be reassured and offered a break if possible. If the informant does not improve, they should be checked for any injuries and medical assistance should be called immediately.

6.10 Timed walk script

The following script may be used to assess balance and walking ability:

1. "Are you ready to begin the test?"
2. "Now, I will walk you through the test."
3. "Your task is to walk as quickly as possible, without falling or losing your balance, from the starting point to the end of the course."
4. "You will be timed, so please walk as quickly as possible."
5. "If you need to stop or fall, please do so immediately."
6. "Thank you for your participation."

7. BALANCE TESTS

7.1 Side-by-side stance (at 60°)

Ensure that the informant is wearing appropriate footwear at all times. Do not allow the informant to walk on slippery surfaces. Ensure that the informant is able to stand on one foot at a time. If the informant loses balance, they should be assisted to a safe position. If the informant is unable to stand on one foot, they should be seated on the floor.

Ensure that the informant is able to maintain their balance while standing on one foot at a time. If the informant loses balance, they should be assisted to a safe position. If the informant is unable to maintain their balance, they should be seated on the floor.

Ensure that the informant is able to maintain their balance while standing on one foot at a time. If the informant loses balance, they should be assisted to a safe position. If the informant is unable to maintain their balance, they should be seated on the floor.
Procedures:

Explain the purpose of the tests.

Check the informant’s status. Discuss with him/her whether s/he should attempt each test given his/her physical problems after describing each test. Do not assume an informant is too physically limited to attempt a test without discussing it with him/her. However, remember that the informant’s health is paramount.

First explain and then demonstrate the side by side stand to the informant:

Now I will show you the FIRST movement. I want you to try to stand with your feet together, side by side, for about 10 seconds. You may use your arms, bend your knees or move your body to maintain your balance, but try not to move your feet. Try to hold this position until I tell you to stop. When I want you to start, I will say ‘ready, begin’. Do you feel that would be safe?

If the informant says ‘no’, do not attempt this movement.

If the informant says it is safe say ‘When I want you to start, I will say ‘ready, begin’. Ask the informant to stand up. Stand to the side of the informant. Say: ‘ready, begin.’ Press the start button to start the stopwatch as soon as the informant gets into the position and is free of support. If necessary provide gentle support to the informant’s arm to help them into the position. Say: ‘ready, begin’ and then let go of their arm.

Stop the stopwatch and say stop after 10 seconds or when the participant steps out of position or grabs your arm.

If the participant is unable to hold the position for 10 seconds, record the time in seconds to two decimal place in the CAPL. The programme will direct you to the chair raise. If the informant did not attempt the measure, record the reason.

If the participant is successful record this and the programme will direct you to the full tandem stand, which is held for 30 seconds if the informant is 65-69, or 10 if they are 70+.

7.3 Full Tandem stand - If the informant is aged 65-69

Explain and then demonstrate the full tandem stand to the informant using the following script:

Now I will show you the NEXT movement. I want you to try to stand with the heel of one foot in front of and touching the toes of the other foot for about 30 seconds. You may put either foot in front whichever is more comfortable for you. You may use your arms, bend your knees or move your body to maintain your balance, but try not to move your feet. Try to hold this position until I tell you to stop. Do you feel that would be safe?

If the informant says ‘no’, do not attempt this movement. Follow the stopping and timing rules as above.

Record the outcome in the CAPL. If the informant is successful the computer will direct you to the leg raises.

If the participant is unable to hold the position for 30 seconds, record the time in seconds to two decimal place in the CAPL. If the informant did not attempt the measure, record the reason.

7.4 Full Tandem stand - If the informant is aged 70+

Explain and then demonstrate the full tandem stand to the informant using the following script above, except that informants aged 70+ only attempt the full tandem stand for 10 seconds.

8. LEG RAISES - (INFORMANTS AGED 65 TO 69)

The leg raises should be performed adjacent to a stable surface, e.g. a table or wall and the nurse should be positioned to the other side of the participant.

8.1 Normal leg raise

First explain and then demonstrate the move to the informant:

Now I will show you the NEXT movement. I want you to try to stand on one leg, whichever one you want, and raise the other leg off the ground a few inches. Stand for as long as you can – I will stop you at 30 seconds. You may use your arm/s, bend your knees or move your body to maintain your balance, but try not to move your feet. Try to hold this position until I tell you to stop. Do you feel that it would be safe to do this?

If the informant says ‘no’, do not attempt this movement.

The informant should take their foot off the floor, and may hold it in any position which does not involve looking around or touching the other leg for support.
If the informant says it is safe to say ‘When I want you to start, I will say ‘ready, begin’. Ask the informant to stand up. Stand to the side of the informant. Say: ‘ready, begin.’ Press the start button to start the stopwatch as soon as the informant raises one foot off the ground and is free of support. If necessary provide gentle support to the informant’s arm to help them into position. Say: ‘ready, begin’ and then let go of their arm.

Stop the stopwatch and say ‘stop’ either a) when the raised leg touches the floor as the informant loses their balance or b) after 30 seconds, whichever happens first.

Record the outcome in the CAPI. If the participant is unable to hold the position for 30 seconds, record the time they held the position for. If participant is successful record this and the CAPI will direct you to the leg raise with eyes shut.

8.2 Leg Raise with eyes shut

First explain and then demonstrate the position to the informant:

Now I would like you to repeat the procedure one more time, this time with your eyes closed. I want you to close your eyes, and try to stand on one leg, whichever one you want, and raise the other leg off the ground a few inches.

Stand for as long as you can – I will stop you at 30 seconds. You may use your arms, bend your knees or move your body to maintain your balance, but try not to move your feet. Try to hold this position until I tell you to stop. Do you feel that it would be safe to do this?

If the informant says ‘no’, do not attempt this movement.

If the informant says it is safe to say ‘When I want you to start, I will say ‘ready, begin’. Ask the informant to stand up. Stand to the side of the informant. Say: ‘ready, begin.’ Press the start button to start the stopwatch as soon as the informant raises one foot off the ground, has their eyes closed and is free of support. If necessary provide gentle support to the informant’s arm to help them into position. Say: ‘ready, begin’ and then let go of their arm.

Stop the stopwatch and say ‘stop’ either a) when the raised leg touches the floor as the informant loses their balance, or b) if they open their eyes, or c) after 30 seconds, whichever happens first.

If the participant is unable to hold the position for 30 seconds, record the time they held the position for.

If participant is successful record this.

9. CHAIR RISE MEASURE (65+)

9.1 Content

The chair rise provides a measure of lower body strength, and has two components: a single rise without the use of arms, and repeated rises from a firm chair. The repeated chair rise test differs depending on the informant’s age, as follows:

- Age 65 to 69 = 10 chair rises
- Age 70 and over = 5 chair rises

9.2 Equipment

1. Stopwatch
2. Chair

This should be an armless, straight-backed chair. Kitchen or dining chairs may be suitable in many homes. If an ideal chair is not available, the following criteria for chair selection should be used in the order given:

- Armless, rather than with arms
- Firmness; the firmer the better
- Do not use beds, cots, folding chairs, garden chairs, chairs with wheels or chairs that swivel.

The informant’s feet should touch the floor when they are sitting, but the chair should not be too low – please record in the programme if you had to use a chair which made it easy or difficult to complete the chair rises.

9.3 Single Chair Rise

This is a measure of lower body strength. This exercise is also used to screen for the ability to do repeated chair stands. Please note the chair rise should not be conducted on anyone who is not able to stand up without assistance. Walking aids (such as walker or cane) are not permitted in this test.

Firstly check for availability of a suitable chair.

Explain and then demonstrate the move to the informant:

The next test measures the strength in your legs. I want you to try to stand up from a firm straight-backed chair, like a dining chair. First, fold your arms across your chest and sit so that your feet are on the floor, then stand up keeping your arms folded across your chest. Do you feel it would be safe to do this?

If the participant cannot rise without using arms, say ‘Okay, try to stand up using your arms.’

Place the back of the chair against a wall to steady it. You should stand next to the informant to provide assistance if s/he loses his/her balance.

Record the outcome of the single chair stand.

If the informant refuses to try the single chair stand or is unable to stand on his/her own without using arms to push off, then do not attempt to administer the repeated chair rises.

9.4 Repeated Chair Rises

This is a further test of lower body strength, balance, and endurance. It involves measuring the time required to stand up from a chair and sit down in a chair five or ten times without using their arms.

If the informant is aged between 65 and 69:
- Age 65 to 69 = 10 chair rises

If the informant completed the single chair rise without using his/her arms, they are eligible to attempt the repeated chair rises.
Ask the informant:
Do you think it would be safe for you to try to stand up from that chair 10 times quickly, without using your arms?

If yes, explain (and if necessary, demonstrate again): When I say 'ready', please stand up straight as quickly as you can 10 times, without stopping in between and without using your arms to push off. After standing up each time, sit down and then stand up again. Keep your arms folded across your chest. I'll be timing you with a stopwatch.

Use the same chair in the same place as in the single chair rise.

Ask the informant to resume the sitting position s/he was in just before standing up, with their feet resting on the floor and their arms folded across the chest. When the participant is properly seated, say 'ready, begin'. Start the stopwatch as soon as you say 'ready, begin'. Count out loud: “one” at the top of the first rise, and so on, at the top of each rise, up to ten times. A rise is complete when the informant is fully standing with their back straight. When informant completes the fifth rise, press the split timer on the stopwatch. Continue counting out loud. When the informant has straightened up completely for the tenth time, stop the stopwatch.

Stop if the participant becomes too tired or short of breath during the repeated chair stands. Also stop:
- If the participant uses his/her arms
- After 1 minute, if the participant has not completed all the rises
- At your discretion, if you are concerned for the participant’s safety

If the participant stops and appears to be fatigued before completing the ten stands, ask Can you continue? If the participant says “Yes,” continue timing until 60 seconds has elapsed. If s/he says ‘no’ stop the stopwatch and record the number of completed stands without using arms.

Be careful to enter the time from the first five stands first, before retrieving the time for the 10 stands from the stopwatch’s memory. Use the stopwatch instructions sheet if necessary.

If the informant is aged over 70:
If the informant completed the single chair stand without using his/her arms, they are eligible to attempt the repeated chair rises. Follow the procedure above, except to carry out 5 chair rises. You do not need to use the split time function, just time to the 5th rise. The timing and stopping rules are the same.

10. MEASUREMENT OF DEMISPAN –(AGE 65+)

10.1 Purpose

When the interviewer visits the informant s/he attempted to measure the informant’s height and weight. However, measuring height can be quite difficult if the informant cannot stand straight or is unsteady on their feet. This can occur with some elderly people, and with people who have particular disabilities. Additionally, height decreases with age. This decrease varies from person to person and may be considerable. It is becoming increasingly important to have information about the health of older adults. Therefore an alternative measure of skeletal size, the demi-span, was developed which can be measured easily and does not cause unnecessary discomfort or distress to older adults.

The demi-span measurement is the distance between the sternal notch and the finger roots with arm outstretched laterally. Two readings are taken. Explain to the informant that this is to improve accuracy.

10.2 Eligibility

Only those aged 65 and over are eligible for the demi-span measurement. Informants aged 65 and over who cannot straighten either arm, should not have this measurement taken.

Record any reasons why demi-span measurement was refused, not attempted or only one was obtained.

10.3 Equipment

A thin retractable demi-span tape calibrated in cm and mm and a skin marker pencil.

A hook is attached to the tape and this is anchored between the middle and ring fingers at the finger roots. The tape is then extended horizontally to the sternal notch (see illustration below). The tape is easily damaged if it is bent.

10.4 Preparing the informant

The measurement is made on the right arm unless this arm cannot be fully stretched in which case the left arm may be used.

Record which arm was used and whether the informant was standing, or sitting.

Although the measurement requires minimal undressing, certain items that might distort the measurement will need to be removed. These include:
- Ties
- Jackets, jumpers and other thick garments
- Jewellery items such as chunky necklaces/bracelets
- Shoulder pads
- High heeled shoes
- Shirts should be unbuttoned at the neck.

If the informant does not wish to remove any item that you think might affect the measurement, you should record that the measurement was not reliable when prompted by the computer.
10.5 Procedure

1. Locate a wall where there is room for the informant to stretch his/her arm. They should stand with their back to the wall but not support themselves on it. Ask the informant to stand 3 inches (7cm) away from it.

2. Ask the informant to stand with weight evenly distributed on both feet, head facing forward.

3. Ask the informant to raise their right arm until it is horizontal. The right wrist should be in neutral rotation and neutral inflexion. Rest your left arm against the wall allowing the informant’s right wrist to rest on your left wrist.

4. When the informant is standing in the correct position mark the skin at the centre of the sternal notch using the skin marker pencil. (explain to the informant that this mark will wash off afterwards). It is important to mark the sternal notch while the informant is standing in the correct position.

If the sternal notch is obscured by clothing or jewellery, use a piece of micropore tape on the clothing or jewellery. If the informant will not allow use of either the marker pencil or the tape, proceed with the measurement but record the measurement as unreliable and explain why in a notepad.

5. Ask the informant to relax while you get the demi-span tape.

6. Place the hook between the middle and ring fingers so that the tape runs smoothly along the arm.

7. Ask the informant to raise their arm. Check they are in the correct position, the arm horizontal, the wrist in neutral flexion and rotation.

8. Extend the tape to the sternal notch. If no mark was made, feel the correct position and extend the tape to this position.

8. When ready to record the measurement ask the informant to stretch his/her arm.

Check that:

- The informant is in the right position; no extension or flexion at the wrist or at the shoulders
- The hook has not slipped forward and the zero remains anchored at the finger roots
- The informant is not leaning against the wall or bending at the waist.

10. Record the measurement in cms and to the nearest mm when prompted by the computer. 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. Always record the response to one decimal point (e.g., .554). The computer will not allow you to enter a response without a decimal point, so even if the measurement comes to exactly 56cm, you must enter 56.0. If you do enter a measurement ending in 0, the computer will ask you to confirm this.

11. Ask the informant to relax and loosen up the right arm by shaking it.

12. Repeat the measurement from steps 4-11. If your second measurement differs from the first by 3cm or more, the computer will give you an error message, and instruct you to either amend one of your previous responses, or to take a third measurement. Amend a previous response if you have made a mistake when entering the measurement, e.g., entered 65.2 instead of 75.2. Take a third measurement if there is another reason for the measurements being different. If in doubt, take a third measurement rather than over-writing one of the previous two. The computer will automatically work out which two to use.

10.6 Using the tape

The tape is fairly fragile. It can be easily damaged and will dent or snap, if bent or pressed too firmly against the informant’s skin. Also the ring connecting the hook to the tape is a relatively weak point. Avoid putting more strain on this ring than necessary to make the measurements.

When extending the tape, hold the tape case rather than the tape itself as this puts less strain on the hook and tape. When looking the tape to the sternal notch, do not press into the sternal notch so much that the tape kinks.

10.7 Seated measurements

If the informant is unable to stand in the correct position, or finds it difficult to stand steadily, ask them to sit for the measurement. Use an upright chair and position it close to a wall. Still try to support the arm if possible. You may need to sit or kneel to take the reading.

If the informant is much taller than you, take the measurement with the informant sitting.

If the informant’s arm is much longer than yours, support the arm close to the elbow rather than wrist level. Your arm must not be between the elbow and shoulder as this will not provide sufficient support.

11 MEASUREMENT OF WAIST AND HIP CIRCUMFERENCES

11.1 Purpose

There has been increasing interest in the distribution of body fat as an important indicator of increased risk of cardiovascular disease. The waist-to-hip ratio is a measure of distribution of body fat (both subcutaneous and intra-abdominal). Analyses suggest that this ratio is a predictor of health risk like the body mass index (weight relative to height).

11.2 Equipment

Insertion tape calibrated in mm, with a metal buckle at one end.

The tape is passed around the circumference and the end of the tape is inserted through the metal buckle at the other end of the tape.

11.3 Eligibility

Waist and hip measurements will only be carried out on informants aged 11 and over.

The informant is ineligible for the waist and hip measurement if:

a. Chairbound
b. Has a colostomy/ileostomy.
If any of the previous apply, record this in the Nurse Questionnaire at WHNP/NRM. If there are any other reasons why the measurement was not taken, record this on the computer and type in the reason.

11.4 Preparing the informant

The interviewer will have asked the informant to wear light clothing for your visit. Explain to the informant the importance of this measurement and that clothing can substantially affect the reading.

If possible, without embarrassing you or the informant, ensure that the following items of clothing are removed:

- all outer layers of clothing, such as jackets, heavy or baggy jumpers, cardigans and waistcoats
- shoes with heels
- tight garments intended to alter the shape of the body, such as corsets, lycra body suits and support tights

If the informant 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 informant 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 on the Nurse Schedule at questions H/Ref and/or HJ/Ref.

If possible, ask the informant to empty their bladder before taking the measurement. If the person is over 16 they will be eligible to provide a urine sample – this may be collected earlier in the interview if the person needs to empty their bladder.

11.5 Using the insertion tape

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. Please note that you must enter the measurement to one decimal place - do not round it to the nearest centimetre. For example, enter `78.2`, not just `78`. If you do not enter a decimal point, the computer will give you a warning. If the measurement is exactly, say, 78cm, then all you need to do is suppress the warning and it will automatically fill in the `.0` for you. Otherwise, you must go back and amend your answer. As a further check, the computer will also ask you to confirm that a measurement ending in `.0` is correct.

Ensure the informant 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 possible, kneel or sit on a chair to the side of the informant.

Pass the tape around the body of the informant and insert the plain end of the tape through the metal ring at the other end of the tape.

To check the tape is horizontal you have to position the tape on the right flank and peer round the participant’s back from his/her left flank to check that it is level. This will be easier if you are kneeling or sitting on a chair to the side of the informant.

Hold the buckle flat against the body and flatten the end of the tape to read the measurement from the outer edge of the buckle. Do not pull the tape towards you, as this will lift away from the informant’s body, affecting the measurement.

11.6 Measuring waist circumference

1. The waist is defined as the point midway between the iliac crest and the costal margin (lower rib). To locate the levels of the costal margin and the iliac crest use the fingers of the right hand held straight and pointing in front of the participant to slide upward over the iliac crest. Men’s waists tend to be above the top of their trousers whereas women’s waists are often under the waistband of their trousers or skirts.

2. Do not try to avoid the effects of waistbands by measuring the circumference at a different position or by lifting or lowering clothing items. For example, if the informant 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.

3. Ensure the tape is horizontal. Ask the participant to breathe out gently and to look straight ahead (to prevent the informant from contracting their muscles or holding their breath). Take the measurement at the end of a normal expiration. Measure to the nearest millimetre and record this on the schedule.

4. Repeat this measurement again.

5. If you are of the opinion that clothing, posture or any other factor is significantly affecting the waist measurement, record this on the schedule.

11.7 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. Check the tape is horizontal and the informant is not contracting the gluteal muscles. Pull the tape, allowing it to maintain its position but not to cause indentation. Record the measurement on the schedule to the nearest millimetre, eg 95.3. If the length lies half-way between two millimetres, then round to the nearest even millimetre.

3. If clothing is significantly affecting the measurement, record this on the schedule.

4. Repeat this measurement again.

11.8 General points

The tape should be tight enough so that it doesn’t slip but not tight enough to indent clothing. If clothing is baggy, it should be folded before the measure is taken.

If the informant is large, ask him/her to pass the tape around rather than having to “hug” them. Remember though to check that the tape is correctly placed for the measurement being taken and that the tape is horizontal all the way around.
If your second waist or hip measurement differs by 3cm or more from the first, the computer will give you a warning. If you have made a mistake when entering the figures (e.g. typed 78.2 instead of 68.2), you should type over the mistake. If it was not a mistake, you should suppress the warning and take a third measurement.

If you have problems palpating the rib, ask the informant to breathe in very deeply. Locate the rib and as the informant breathes out, follow the rib as it moves down with your finger. If your informant has a bow at the back of her skirt, this should be untied as it may add a substantial amount to the waist circumference.

Female informants wearing jeans may present a problem if the waistband of the jeans is on the waist at the back but dips down at the front. It is essential that the waist measurement is taken midway between the iliac crest and the lower rib and that the tape is horizontal. Therefore in this circumstance the waist measurement would be taken on the waist band at the back and off the waist band at the front. Only if the waistband is over the waist all the way around can the measurement be taken on the waistband. If there are belt loops, the tape should be threaded through these so they don’t add to the measurement.

11.9 Recording problems

We only want to record problems that will affect the measurement by more than would be expected when measuring over light clothing. As a rough guide only record a problem if you feel it affected the measurements by more than 0.5cm. We particularly want to know if waist and hip are affected differently.

12 NON FASTING BLOOD SAMPLE

12.1 Eligibility

All persons aged 65 and over, with the following exceptions, are eligible to give blood.

a. People with clotting or bleeding disorder (see note below)
b. People who have ever had a fit
c. People who are not willing to give their consent in writing.
d. People who are currently on anticoagulant drugs, e.g. Warfarin therapy.

Check if the informant has a clotting or bleeding disorder or is on anticoagulant drugs, such as Warfarin, and record this at ClotB. These are very uncommon. If you find someone with these problems, do not attempt to take blood, even if the disorder is controlled.

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. The reason these informants are excluded from blood sampling is that:

a. the integrity of their veins is extremely precious
b. we do not wish to cause prolonged blood loss

For the purposes of blood sampling, those who have had, for example, a past history of thrombophlebitis, a deep venous thrombosis, a stroke caused by a clot, a myocardial infarction, an embolus are NOT considered to have clotting disorders.

Some informants might be taking anticoagulant drugs such as Warfarin which thins their blood so that they do not stop bleeding easily. If this is the case, then do not take a blood sample. You will need to check this out, particularly with older informants.

Aspirin therapy is not a contraindication to blood sampling. Informants who have ever had a fit (e.g. epileptic fit, convulsion) should not be asked to provide a blood sample. This applies even if the fit(s) occurred some years ago.

If you are uncertain whether a condition constitutes a contraindication to blood sampling, the Survey Doctor will be happy to answer your queries.

12.2 Purpose

A non-fasting blood sample will be collected from those aged 65 and over, who give consent for this. The blood will be analysed for total cholesterol, HDL cholesterol, glycated haemoglobin, fibrinogen, haemoglobin, ferritin, mean corpuscular volume, serum albumin, vitamins D and B12 and soluble transferrin receptor.

Total cholesterol and fibrinogen are being measured because raised levels are associated with higher risks of heart attacks, while HDL cholesterol has a protective role.

Glycated haemoglobin is a measure of the informant’s glycaemic status. High levels are indicative of diabetes.

Haemoglobin and ferritin are being measured because they are indicators of nutritional status, being reduced if there is an inadequate iron supply in the diet. Frequently, an inadequate iron supply can imply a more general nutritional problem.

Soluble transferrin receptor is also a useful measure of iron stores. For older adults, it is more useful than ferritin, because it is not affected by infection or chronic conditions.

Vitamin B12 is an important marker of nutritional status (as is albumin), and because of its link with folate can provide some information on CVD risk factors.

Vitamin D reflects both dietary sources and exposure to UV light, and is especially relevant to older adults.

The blood will not be tested for any viruses, such as HIV (AIDS) and will not be used for genetic testing.

12.3 Equipment

- Tourniquet
- Alcohol swabs
- Dental rolls
- Vinyl gloves
- Adhesive dressing
- Plastic postal containers
- Padded envelopes
- Sealable plastic bags
- Kitchen roll
- Micropore tape
- Set of labels for blood sample tubes

Vacutainer holder
Vacutainer needles 21G (green)
Vacutainer needles 22G (black)
Butterfly needles 23G
Needle disposal box
Vacutainer plain red tubes
Vacutainer EDTA purple tubes
Vacutainer citrate blue tubes
Amotop gel
Tegaderm dressings
12.4 The blood tubes

Three tubes need to be filled. They should be filled in the following order so that, if a situation arises where there will be insufficient blood to fill all the tubes, the analyses with the highest priority can still be undertaken.

1. Plain (red, large) tube.
2. EDTA (purple, small) tube.
3. Citrate (blue, small) tube.

12.5 Ametop gel

All informants who consent to give a blood sample must be offered Ametop gel.

Informants who have had a reaction to any anaesthetic (local or general) are not eligible to have Ametop gel. This means that you may not take a blood sample from these informants, unless they consent to give a sample without using Ametop.

12.6 Procedure for taking blood sample

1. Ask the screening question to check whether the informant has a clotting or bleeding disorder, or is currently on anticoagulant therapy e.g. Warfarin.
2. Ask the screening question to find out whether the informant has ever had a fit.

Informants who have a clotting or bleeding disorder, or are currently on anticoagulant therapy, or who have ever had a fit, are NOT ELIGIBLE to give a blood sample.

3. Explain the purpose and procedures for taking blood.
   In addition:
   - explain that there is the option of using Ametop gel - but that a sample can be given without Ametop;
   - give the informant the information sheet about AMETOP GEL and allow them time to read it;
   - answer any questions about use of Ametop, advantages and disadvantages - side effects, time taken to work, etc.
   - explain that AMETOP GEL cannot be used if the young person has a known allergic reaction to any local or general anaesthetic.

4. Ask if informant is willing to give blood sample

5. If yes
   Ask if informant wishes Ametop gel to be used.

6. If informant wishes Ametop gel to be used
   Ask screening question to determine whether informant has ever had allergic reaction to anaesthetic. If they have had an allergic reaction, they are not eligible to use Ametop gel, so you cannot take a blood sample unless they are willing to give a sample without Ametop.

7. If informant wishes Ametop gel to be used
   Decide with informant whether you will take blood sample now or arrange another time to return to take the sample. Remember you will need to allow 30 minutes for the Ametop gel to work before taking the blood sample.

NB. THE CONCEPT OF BLOOD TAKING AND USE OF AMETOP GEL MUST NOT BE RAISED WITH THE INFORMANT BEFORE THE APPROPRIATE POINT IN THE CAPI SCHEDULE. DO NOT INTRODUCE BLOOD TAKING BEFORE THIS, AS THIS MIGHT RISK AFFECTING OTHER MEASUREMENTS (E.G. BLOOD PRESSURE).

If blood sample will be taken NOW, follow 9 onwards. If you will be returning on a separate occasion, complete remainder of interview and arrange separate appointment to return to take blood sample.

8. WHEN YOU ARE SET TO COMMENCE BLOOD-TAKING PROCEDURE:

   Obtain necessary written consents to give blood sample, notify GP of results, and storage of blood sample on consent sheet R(S).A.

Obtaining consents

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 informant in all cases. If you cannot obtain written consent, the computer will direct you to ring consent codes 04, 06, 08 and 10 on the Consent Booklet and filter you round the remaining questions.

There are two further written consents we wish to obtain in respect of blood sampling - consent to send the results to the GP and consent to store a small amount of the blood - you should seek to obtain all these consents before you take any blood. On no account should you ever take blood before you have obtained written consent to do so from the informant.

The Blood Sample Consent Form is BS (A) is divided into three sections - consent to take the blood, consent to send the results to their GP, consent for blood storage. A signature is needed for each section. Small quantities of blood are being stored in special freezers in order that further analysis may be undertaken in the future. Future analysis will definitely not involve a test for viruses (e.g. HIV AIDS test) or any genetic testing. Any analysis will be unlinked which means that the researcher doing the analysis will not be able to link it back to the informant and informants will therefore not receive the results of any tests done on their blood in the future.

The questions on the Nurse Schedules take you step by step through all the procedures for obtaining consents. Make sure you follow these carefully - recording consent codes as instructed and giving reasons for refusals, if applicable. In summary, what you do is:

- Ask the informant if they would be willing to have a blood sample taken. Try to reassure informants about the process, and be prepared to answer their concerns. You will need to explain to the informant the need for written consent and how important it is.
- Obtain written consents on the appropriate Blood Sample Consent Form. Remember to enter their name at the head of this form before asking the informant to sign.
- Remember to enter your name in the space provided for the qualified nurse name on each form.
- For ALL informants you will need to tick the box to indicate whether consent to give the blood sample was with or without the use of AMETOP GEL.
- Obtain consent to send results to GP.
* Check that you have ringed the correct consent codes on the front of the Consent Booklet.

Blood samples using AMETOP gel
For all informants there is the option of using AMETOP gel. Informants, should be given an AMETOP information sheet before the informant agrees to giving a blood sample. If the informant has a known allergic reaction to any local or general anaesthetic they will not be able to use AMETOP gel.

9. IF AMETOP GEL IS TO BE USED:
Apply Ametop gel following the instructions in Section 12.8.

10. Take blood sample following the instructions in Section 12.9.

12.7 General information about Ametop gel
Ametop gel is an effective local anaesthetic cream with minimal side-effects. Occasionally mild local skin reactions are experienced. You will need to explain the pros and cons of using AMETOP GEL to each informant and parent, in addition to giving them the written note to read. It is important that informants understand that you are not a doctor and cannot treat unexpected reactions.

Pros:
- reduces sensation of needle prick
- easy to apply
- generally safe

Cons:
- takes half an hour to work, and so may increase anxiety
- risk of local reaction in people known to be allergic to similar drugs
- other possible side effects:
  - reddening of skin
  - whitening of skin
  - itching

None of the local skin side-effects (if they occur) requires treatment. The whitening or reddening will disappear by itself over a period of hours. A local allergic reaction may involve itching, but is unlikely to required treatment.

AMETOP GEL contains an anaesthetic called amethocaine. It is important that you ask the question below (also within CAPI) to determine whether the informant has any known anesthetic allergies.

Has the person giving this blood sample ever had a bad reaction to a local or general anaesthetic bought over the counter at a chemist, or given by a doctor, dentist or in hospital?

If the informant has ever had a bad reaction to an anaesthetic then Ametop gel MUST NOT be used. However the informant can still give a blood sample without AMETOP GEL if they are willing.

AMETOP GEL is a prescription medication, so it is very important that you account for all AMETOP GEL tubes used on the record sheet supplied. Any AMETOP GEL tubes you have left at the end of your assignment should be returned to the Brentwood office with the record sheet. For safety, AMETOP GEL must not be left lying around where young children could get at it.

12.8 Applying Ametop gel
Ametop gel must only be applied to healthy skin; therefore it must not be applied to sore or broken skin (eg. eczema or cuts). Make sure the Ametop gel is kept away from eyes or ears.

If the young person requires AMETOP GEL to be applied prior to venepuncture, inspect the antecubital fossa and decide which arm you will use for blood-taking. If both arms are suitable, use the left arm.

Ametop gel must be applied to ONE arm only. This means that, if you encounter problems during blood-taking (eg. collapsing vein), NO ATTEMPT can be made to take blood from the other arm.

Apply Ametop gel over the antecubital fossa. Cover with a Tegaderm dressing (a vapour permeable and self-sticking film dressing) to keep the AMETOP GEL in place. See details about how to apply AMETOP GEL below. Please note the illustration shows AMETOP GEL being used on the hand. National Centre policy is to only take blood samples from the arm.

As you may well be aware, removing the Tegaderm is sometimes painful so take care on hairy arms!

It is very important that the used tubes of AMETOP GEL should not be left lying around. Make sure you have removed them from the household on completion of the phlebotomy.

Use the AMETOP GEL record sheet to record the informant’s serial number and the date Ametop gel was used. Return this sheet with any unused tubes of Ametop gel to the Brentwood office.

12.9 Preparing the informant
Ask the informant if they have had any problems having blood taken before.

1. Explain the procedure to the informant. The informant should be seated comfortably in a chair, or if they wish, lying down on a bed or sofa.

2. IF NO AMETOP GEL HAS BEEN USED: Ask the informant to remove their left sleeve 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.

The antecubital fossae may then be inspected. It may be necessary to inspect both arms for a suitable choice to be made, and the informant may have to be repositioned accordingly.
IF AMETOP GEL HAS BEEN USED: Remove the Tegaderm dressing and wipe away excess Ametop gel.

3. Do not ask the informant to clench his/her fist.

Select a suitable vein and apply the tourniquet around the informant’s arm. However, 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.

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

4. Put on your gloves at this point.

Clean the venepuncture site gently with an alcohol swab. The swab used must be 70% or over ETOH content.

ETOH wipes should only be used if the skin is intact. The only time you can take blood without using a sterile wipe first is if the skin is not intact.

Allow the area to dry completely before the sample is drawn (allow 30 seconds).

12.10 Taking the sample

The vacutainers should be filled to capacity in turn and inverted gently on removal to ensure complete mixing of blood and preservative. Remember that you should fill three vacutainers (Plain Red, EDTA Purple and Citrate).

Release the tourniquet (if not already loosened) as the blood starts to be drawn into the tube. Remove the needle and place a dental roll firmly over the venepuncture site. Ask the informant to hold the pad firmly for three minutes to prevent haematoma formation.

If venepuncture is unsuccessful on the first attempt, make a second attempt on the other arm. If a second attempt is unsuccessful, DO NOT attempt to try again. Record the number of attempts on the Schedule.

Record which arm the sample was drawn from (or both).

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.

Check on the venepuncture site and affix an adhesive dressing, if the informant is not allergic to them. If they are allergic, use a dental roll secured with micropore.

12.11 Fainting informants

If a informant looks or feels faint during the procedure, it should be discontinued. The informant should be asked to lie down with feet elevated.

If they are happy for the test to be continued after a suitable length of time, it should be done so with the informant supine and the circumstances should be recorded. They may wish to discontinue the procedure at this point, but willing to give the blood sample at a later time.

12.12 Disposal of needles and other materials

Place the used needles, the used cotton wool balls and the vacutainer holders in the sharps box and put gloves etc in the self-seal disposal bag. The needle disposable box should be taken to your local hospital or GP practice for incineration. Telephone them beforehand, if you are not sure where to go.

If you have difficulties with finding a hospital or practice, contact your local pharmacist. If you need to pay a fee for the sharps box disposal, you will be fully reimbursed. Please telephone Brentwood to let them know the cost per sharps box before you give them to you pharmacy. If you come across any problems with the disposal, contact the Survey Doctor or Brentwood. The sealed bag can be disposed of with household waste as long as it does not have any items in it that are contaminated by blood.

12.13 Needle stick injuries

Any nurse who sustains such an injury should seek immediate advice from their GP. The nurse should inform his/her nurse supervisor of the incident, and the nurse supervisor should inform the Survey Doctor.

12.14 Informants who are HIV or Hepatitis B positive

If an informant volunteers that they are HIV or Hepatitis B positive, do not take a blood sample. Record this as the reason on the Schedule. You should never, of course, seek this information.

13. SENDING BLOOD, SALIVA AND URINE SAMPLES TO THE LABORATORY

The samples are sent to the Royal Victoria Infirmary Laboratory in Newcastle-upon-Tyne. It is important that all samples are sent properly labelled and safely packaged and that they are despatched immediately after it has been taken.

13.1 Labelling the Blood Tubes

Label the tubes as you take the blood. It is vital that you do not confuse blood tubes within a household.

Use the set of serial number and date of birth labels (blue) to label the vacutainers. Attach a serial number label to every tube that you send to the lab. Enter the serial number and date of birth very clearly on each label. Make sure you use blue biro - it will not run if it gets damp. Check the Date of Birth with the informant again verbally.

Stick a green label over the label already on the tube. The laboratory needs to be able to see on receipt how much blood there is in the tube.
We cannot stress too much the importance of ensuring that you label each tube with the correct serial 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!

13.2 Packaging the blood samples

Pack the tubes for each informant separately from those of other members of the household. All tubes from one person should be packed together in one despatch container. You have been provided with two different types of despatch containers, a small one and a large one. Depending on the total number of samples each informant provides, you will need to use the appropriate packaging:

As a rough guide, those aged 65 and over in a core address will need a large despatch container (3 blood tubes, plus urine) for each informant. Those aged 65 and over in a screening address will need a small one (3 blood tubes only).

“Saliva-only” households: you would only have a saliva-only household if all adults had refused nurse visits or samples. In this case, all saliva samples from the same household can go in the same despatch container. In this case all relevant despatch notes should be put into the box.

“Urine-only” households: you would have a urine-only household if there were only informants aged 16-64 in the household, or if any children and older adults had refused the saliva and blood samples respectively. In this case, all urine samples from the same household can go in the same package. In this case all relevant despatch notes should be put into the box. NB this only applies to informants for whom a blood sample was not collected.

You should not mix saliva and urine obtained from different informants. If you have taken more than one sample type in a household, then each household member must have their samples dispatched separately. If you have a blood only household, then each household member must have their samples dispatched separately.

13.3 The packaging comprises

Small Packaging
- Absorbent insert
- Plastic container
- Cardboard mailing box with foam

Using the small packaging
1. Insert the blood sample tubes in the pockets of the absorbent insert.
2. Roll the insert with the folded despatch note.
3. Place the rolled insert in the plastic container and close.
4. Push the plastic container into the foam and put in the cardboard box.

Large packaging
- Sealable bubble wrap pouch
- Plastic container
- Cardboard mailing box
- A moisture absorbent sachet (stays at the bottom of the plastic container)

Using the large packaging:
1. Insert the sample tubes in the bubble wrap pouch.
2. Remove the red tape and seal the bubble wrap pouch.
3. Roll the insert with the folded despatch note.
4. Place the rolled insert in the plastic container and close.
5. Put the large plastic container in the cardboard box.

* If you find it difficult to insert the despatch note in the plastic tube, fold it and put in the cardboard box.

Please note:
- Use a separate package for each informant.

- Do not seal the mailing box with tape.
- Check there is a label firmly attached and addressed to the RVI lab in Newcastle.

12.4 Posting the blood samples

The size of the packaging means you will not be able to post blood samples in a letter box. The samples will have to be taken to the post office for posting.

The samples should be posted within 24 hours of the sample been taken. Try to avoid taking samples if you think that you will be unable to post it within 24 hours.

Weekend posting
If you miss the Saturday post collection, the sample must be posted on the following Monday morning.

Storage of blood samples
If you are unable to post the samples immediately, they can be stored at room temperature.

When you have posted the samples, fill in the time and date of posting on the office copy of the Despatch Notes.

13.5 Completing the Blood Despatch Notes

The Consent Booklet contains one lab Despatch Note. This should be filled in with a black pen and sent to the laboratory with the blood samples.

- Enter the informant’s serial number very carefully. This should both correspond to your entry on page 1 of the Consent Booklet and to the serial numbers you have recorded on the tubes.
- Complete items 2, 3 and 4. Check that the date of birth is correct and consistent with entry on nurse schedule and tube label. Do not forget to code which age group category the informant belongs to.
Complete item 5.

On the **DESPATCH NOTE**:

- At item 6 ring a code to tell the laboratory whether or not permission has been obtained to store part of the blood. Your entry here should correspond to your entry at item 9e on the front page of the booklet.
- At item 7 enter your Nurse Number.

Tear off the appropriate despatch note and send with the samples to the laboratory.

On the last page of the consent booklet complete the **Office DESPATCH note** for the non fasting blood samples, saliva and urine samples. This tells us the date you sent the samples to the lab and indicates what we should expect back from the laboratory.

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

**14 SALIVA SAMPLE COLLECTION**

We wish to obtain a measure of exposure to passive smoking. This can be detected by measuring the level of cotinine in saliva. Cotinine is a derivative of nicotine and shows recent exposure to tobacco smoke, either because the individual is a smoker or because they have been exposed to other people’s tobacco smoke. Note that informants’ cotinine analysis results will not be sent to them or their GP.

**14.1 Eligibility**

A saliva sample should be obtained from all informants aged 4 to 13. A sample will not be requested from pregnant girls, as mentioned earlier, you should not ask for this information if it has not been volunteered.

**14.2 Equipment**

* For all informants:
  - Plain 5 ml tube
  - Short wide bore straw.
  - Kitchen paper

The straw makes it easier for people to direct their saliva sample into the tube. Its use will also minimise the amount of other items that are included in saliva, such as crumbs, which might enter the tube.

If an informant prefer to dribble directly into the tube, then this method should be used.

**Obtaining consents**

There is a separate consent form for the saliva sample **Saliva Sample Consent Form – S**. This is to obtain consent to take the sample and should be signed by the parent or the person with legal parental responsibility.

Before taking the sample, check that you have the written consent and that you have circled the correct code on the front of the booklet. If the informant agrees to the saliva sample, you should circle code 11 on the front of the consent booklet. If the informant refused the saliva sample or you were unable to obtain the sample you would code 12.

Once you have obtained the sample, write the informant’s date of birth and serial number on a blood tube label in blue biro and attach it to the saliva syringe.

**14.3 Procedure**

The aim is to get as much saliva as possible into the tube.

The protocol:

1. Remove the cap from the plain tube.
2. Give the straw to the informant. Explain that you want him/her to gather up their saliva (spit) in their mouth and then let it dribble through the straw into the tube. Make sure that you are not getting sputum i.e. that the informant is not clearing their chest for the spit.
3. Allow the informant about three minutes to do this. Collect as much as you can in this time. The saliva will be frothy, so it is easy to think you have collected more than you actually have, so do not give up too soon. You should have at least 0.5cm depth in the tube (not including froth).
4. If informants find it difficult to use the straw they may dribble directly into the tube. This is acceptable, but encourage them to use the straw where possible.
5. If the informant’s mouth is excessively dry and they can not produce saliva allow them to have a drink of plain water. Wait for a few minutes to ensure that no water is retained when they provide the saliva sample.
6. Record on the computer that you have taken the sample along with any problems you may have encountered.

**14.4 Packaging the saliva sample**

1. Make sure that the lid of the salivary tube is secure.
2. Label the tube (using the red labels provided for blood samples). Enter the informant’s serial number and date of birth on the label.
3. Insert the tube in the packaging, either together with that informant’s blood container and urine sample (if obtained), or on its own. The choice of the appropriate size of packaging will depend on the total number of samples obtained by each informant as explained in Section 13.2.

Continue to pack as instructed in Section 13.2 ‘Packaging the blood samples’.

“Saliva-only” households: If no blood and urine samples are obtained, all saliva samples from the same household can go in the same despatch container. In this case all relevant despatch notes should be put into the box.
15 Spot Urine Sample

15.1 Introduction
Dietary sodium (salt) consumption has been shown to relate to high blood pressure and cardiovascular disease. Sodium consumption can be assessed by measuring its levels in urine.

15.2 Eligibility
All informants aged 16 years and over in the core sample will be eligible. Women who have their periods are still eligible to give a urine sample. Informants with a catheter are eligible. If the sample is taken from the catheter bag this should be recorded in the questionnaire. Women who are pregnant will not be asked to give a urine sample.

15.3 Feedback to informants
We will not be sending the results of individual urine tests to informants or their GPs. If asked, use the information below to explain to informants why this is the case.

The level of salt in an individual’s urine is heavily influenced by their dietary salt intake during that day. If we were able to measure an individual’s salt levels over a three or four day period and take an average from all the measurements, we would obtain an accurate estimate of their salt levels. However, if for example an individual has had a Chinese takeaway on the day we take our sample, higher levels will be higher than normal on that occasion and the individual measurement (spot sample) will not be an accurate reflection of the individual’s salt levels.

The spot sample is therefore an inadequate indicator of dietary sodium on an individual basis, and individual results will not be useful or meaningful to individuals or their GPs. However, at a population level the peaks and troughs will even out, providing us with useful information for analysis.

15.4 Equipment
- A 100ml Polypropylene disposable beaker for urine collection
- A 10ml Sarstedt urine collection syringe containing a small amount of a preservative
- An instructions card on how to use and fill the Sarstedt syringe
- Labels

Obtaining consents
There is a separate consent form for the urine sample the Urine Sample Consent Form - U(A). Before taking the sample, check that you have the written consent and that you have circled the correct code on the front of the booklet. If the informant agrees to the urine sample, you should circle code 13 on the front of the consent booklet. If the informant refused the urine sample or you were unable to obtain the sample you would code 14.

15.5 Procedure
Nurses will explain the procedure to informants and show them how to fill the Sarstedt syringe from the urine collection beaker. A demonstration set that consists of a syringe and a beaker which can be filled with water can be used for this purpose. The instruction card (see next page) can be left with the informant for easy reference while performing the urine collection in private, if required.

Informants will be asked to wash their hands with soap and water prior to voiding. The syringe should be filled immediately following voiding. The idea is to minimise specimen exposure to air. It is important that the inside of the urine collection container is not touched or allowed to come into contact with any part of the informant’s body or clothing or any external surfaces.

Please ask informants to collect a mid-flow sample of their urine. The urine will be passed in the disposable collection beaker. The syringe has a removable extension tube for withdrawing the urine from the beaker. After the syringe has been filled, the extension tube is removed, the end of syringe sealed with a plastic cap, and the syringe plunger stalk snapped. The instruction card shows the steps for the urine sample collection. Ask the informants to wash the outside of the filled and sealed syringe and dry it using toilet roll when the sample collection is complete.

If the informant is unable to fill the syringe themselves, or would rather not do so, you can offer to do this for them. Ask the informant to give you the urine collection container immediately after voiding, and fill the syringe yourself.

13.6 Packaging, labelling and despatching the urine sample
1. Make sure that the plastic cap is securely sealed, and the syringe plunger stalk snapped.
2. Label the urine sample tube (using the red labels provided for blood samples). Enter the informant’s serial number and date of birth on the label using a blue biro.
3. Insert the tube in the despatch container, either together with that informant’s blood container and/or saliva sample (if obtained), or on its own. The choice of the appropriate size of packaging will depend on the total number of samples obtained by each informant as explained in Section 13.2 (three or fewer samples which include urine go in a small despatcher, more than 3 samples go in a large despatcher).

Continue to pack as instructed in Section 13.2 ‘Packaging the blood samples’.

“Urine-only” households: If no blood and saliva samples are obtained, all urine samples from the same household can go in the same package. In this case all relevant despatch notes should be put into the box.
NB this only applies to informants for whom a blood or saliva sample was not collected.
Urine Sample Syringe Instructions

1. Collect your sample in the disposable pot

2. Remove the small push cap.

3. Push the extension tube on the syringe nozzle.

4. Pull back the syringe plunger to fill the syringe.

5. Replace the cap.

6. Pull the syringe plunger until it clicks...

...and break off the stalk.
Appendix C

Coding frame for medicines

The codes given below are the BNF section numbers for the class of medications listed. These numbers, with leading zeros, form the first four digits of the six digit drug code. For example, diuretics are coded on the dataset as 020201-020208. The last 2 digits of the six digit code indicate the BNF subsection where the specific drug is listed.

(British National Formulary classifications from BNF No. 48 September 2004)

1 Gastro-intestinal system
   1.1 Dyspepsia and gastro-oesophageal reflex disease
   1.2 Antispasmodics and other drugs altering gut motility
   1.3 Ulcer-healing drugs
   1.4 Acute diarrhoea
   1.5 Treatment of chronic bowel disorders
   1.6 Laxatives
   1.7 Local preparations for anal and rectal disorders
   1.8 Stoma care
   1.9 Drugs affecting intestinal secretions

2 Cardiovascular system
   2.1 Positive inotropic drugs
   2.2 Diuretics
   2.3 Anti-arrhythmic drugs
   2.4 Beta-adrenoceptor blocking drugs
   2.5 Drugs affecting the renin-angiotensin system and some other antihypertensive drugs
   2.6 Nitrates, calcium-channel blockers, and potassium-channel activators
   2.7 Sympathomimetics
   2.8 Anticoagulants and protamine
   2.9 Antiplatelet drugs
   2.10 Myocardial infarction and fibrinolysis
   2.11 Antifibrinolytic drugs and haemostatics
   2.12 Lipid-regulating drugs
   2.13 Local sclerosants
3 Respiratory system

3.1 Bronchodilators
3.2 Corticosteroids
3.3 Cromoglicate and related therapy and leukotriene receptor antagnotics
3.4 Antihistamines, hyposensitisation, and allergic emergencies
3.5 Respiratory stimulants and pulmonary surfactants
3.6 Oxygen
3.7 Mucolytics
3.8 Aromatic inhalations
3.9 Cough preparations
3.10 Systemic nasal decongestants

4 Central nervous system

4.1 Hypnotics and anxiolytics
4.2 Drugs used in psychoses and related disorders
4.3 Antidepressant drugs
4.4 Central nervous system stimulants
4.5 Drugs used in the treatment of obesity
4.6 Drugs used in nausea and vertigo
4.7 Analgesics
4.8 Antiepileptics
4.9 Drugs used in parkinsonism and related disorders
4.10 Drugs used in substance dependence
4.11 Drugs for dementia

5 Infections

5.1 Antibacterial drugs
5.2 Antifungal drugs
5.3 Antiviral drugs
5.4 Antiprotozoal drugs
5.5 Anthelmintics

6 Endocrine system

6.1 Drugs used in diabetes
6.2 Thyroid and antithyroid drugs
6.3 Corticosteroids
6.4 Sex hormones
6.5 Hypothalamic and pituitary hormones and anti-oestrogens
6.6 Drugs affecting bone metabolism
6.7 Other endocrine drugs

7 Obstetrics, gynaecology, and urinary-tract disorders
7.1 Drugs used in obstetrics
7.2 Treatment of vaginal and vulval conditions
7.3 Contraceptives
7.4 Drugs for genito-urinary disorders

8 Malignant disease and immunosuppression
8.1 Cytotoxic drugs
8.2 Drugs affecting the immune response
8.3 Sex hormones and hormone antagonists in malignant disease

9 Nutrition and blood
9.1 Anaemias and some other blood disorders
9.2 Fluids and electrolytes
9.3 Intravenous nutrition
9.4 Oral nutrition
9.5 Minerals
9.6 Vitamins
9.7 Bitters and tonics
9.8 Metabolic disorders

10 Musculoskeletal and joint diseases
10.1 Drugs used in rheumatic diseases and gout
10.2 Drugs used in neuromuscular disorders
10.3 Drugs for the relief of soft-tissue inflammation

11 Eye
11.1 Administration of drugs to the eye
11.2 Control of microbial contamination
11.3 Anti-infective eye preparations
11.4 Corticosteroids and other anti-inflammatory preparations
11.5 Mydriatics and cycloplegics
11.6 Treatment of glaucoma
11.7 Local anaesthetics
11.8 Miscellaneous ophthalmic preparations
11.9 Contact lenses
12 Ear, nose, and oropharynx
12.1 Drugs acting on the ear
12.2 Drugs acting on the nose
12.3 Drugs acting on the oropharynx

13 Skin
13.1 Management of skin conditions
13.2 Emollient and barrier preparations
13.3 Topical local anaesthetics and antipruritics
13.4 Topical corticosteroids
13.5 Preparations for eczema and psoriasis
13.6 Acne and rosacea
13.7 Preparations for warts and calluses
13.8 Sunscreens and camouflagers
13.9 Shampoos and some other scalp preparations
13.10 Anti-infective skin preparations
13.11 Skin cleansers and antiseptics
13.12 Antiperspirants
13.13 Wound management products and elastic hosiery
13.14 Topical circulatory preparations

14 Immunological products and vaccines
14.1 Active immunity
14.2 Passive immunity
14.3 Storage and use
14.4 Vaccines and antisera
14.5 Immunoglobulins
14.6 International travel

15 Anaesthesia
15.1 General anaesthesia
15.2 Local anaesthesia
This glossary explains terms used in the report, other than those fully described in particular chapters.

**Acute sickness**
An illness or injury which caused the informant to cut down on any of the things he or she usually does about the house, at work or school or in his or her free time (in the two weeks prior to the interview).

**Age standardisation**
Age standardisation has been used in order to enable different groups to be compared after adjusting for the effects of any differences in their age distributions.

When different sub-groups are compared in respect of a variable on which age has an important influence, any differences in age distributions between these sub-groups are likely to affect the observed differences in the proportions of interest.

Age standardisation was carried out for adults aged 65 and over, using the direct standardisation method. The standard population to which the age distribution of sub groups was adjusted was the mid-year 2005 population estimates for England. All age standardisation has been undertaken separately within each sex.

Age standardisation was carried out using the age-groups: 65-69, 70-74, 75-79 and 80 and over.

**Anthropometric measurements**
See **Body mass index** (BMI) and **Waist circumference**

**Arithmetic mean**
See **Mean**

**Balance measure**
Balance and co-ordination are needed to carry out successfully everyday locomotor function at reasonable speeds and to prevent falls. The exercise is used as a screen for the ability to do the semi- and full tandem stands. See also **Leg Raise**

**Blood analytes**
See **Cholesterol** (total and HDL), **Fibrinogen**, **Haemoglobin**, **Ferritin**, **Glycated Haemoglobin**, **Mean Corpuscular Volume** (MCV), **Serum albumin**, **Serum transferrin**, **Vitamin D** and **Vitamin B12**.

**Blood pressure**
Systolic (SBP) and diastolic (DBP) blood pressure were measured in informants aged 5 and over using a standard method (see Appendix B for measurement protocol). In adults, high blood pressure is defined as SBP ≥140 mmHg or DBP ≥90 mmHg or on drugs prescribed to control hypertension. In children under 16 there are no generally accepted levels of SBP and DBP that define high blood pressure.

**Body mass index**
Weight in kg divided by the square of height in metres. Adults (aged 16 and over) can be classified into the following BMI groups:

<table>
<thead>
<tr>
<th>BMI (kg/m²)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.5 or less</td>
<td>Underweight</td>
</tr>
<tr>
<td>Over 18.5 to 25</td>
<td>Desirable</td>
</tr>
<tr>
<td>Over 25 to 30</td>
<td>Overweight</td>
</tr>
<tr>
<td>Over 30</td>
<td>Obese</td>
</tr>
</tbody>
</table>
In those with a BMI over 40, the condition is defined as ‘morbid obesity’. Although the BMI calculation method is the same, there are no fixed BMI cut-off points defining overweight and obesity in children. Instead, overweight and obesity are defined using several other methods including age and sex specific BMI cut-off points or BMI percentiles cut-offs based on reference populations.

**Cardiovascular disease**
Informants were classified as having cardiovascular disease (CVD) if they reported ever having any of the following conditions diagnosed by a doctor: angina, heart attack, stroke, heart murmur, irregular heart rhythm, ‘other heart trouble’. In contrast with the definition used in early HSE reports but in keeping with the definition used in HSE 2003 and 2004, high blood pressure and diabetes are not included in this definition, since they are risk factors for CVD and are dealt with separately. For the purpose of this report, informants were classified as having a particular condition only if they reported that the diagnosis was confirmed by a doctor. No attempt was made to assess these self-reported diagnoses objectively. There is therefore the possibility that some misclassification may have occurred, because some informants may not have remembered (or not remembered correctly) the diagnosis made by their doctor.

**Chair rise**
The chair rise provides a measure of lower body strength, and has two components: a single rise without the use of arms, and repeated rises from a firm chair.

**Creatinine**
This is excreted in urine. Unlike sodium and potassium, the quantity of creatinine excreted is relatively stable over time. Therefore in the analysis of urinary sodium and potassium as a proxy measure for dietary sodium and potassium, the ratio of sodium to creatinine and the ratio of potassium to creatinine are analysed. See also Urine, Sodium, Potassium.

**Equivalised household income**
Income was not included in the Health Survey series until 1997. Making precise estimates of household income, as is done for example in the Family Resources Survey, requires far more interview time than was available in the Health Survey. Household income was thus established by means of a card (see Appendix A) on which banded incomes were presented. Information was obtained from the household reference person (HRP) or their partner. Initially they were asked to state their own (HRP and partner) aggregate gross income, and were then asked to estimate the total household income including that of any other persons in the household. Household income can be used as an analysis variable, but there has been increasing interest recently in using measures of equivalised income that adjust income to take account of the number of persons in the household. Methods of doing this vary in detail: the starting point is usually an exact estimate of net income, rather than the banded estimate of gross income obtained in the Health Survey. The method used in the present report was as follows. It utilises the widely used McClemens scoring system, described below.

1. A score was allocated to each household member, and these were added together to produce an overall household McClemens score. Household members were given scores as follows.
First adult (HRP) 0.61
Spouse/partner of HRP 0.39
Other second adult 0.46
Third adult 0.42
Subsequent adults 0.36
Dependant aged 0-1 0.09
Dependant aged 2-4 0.18
Dependant aged 5-7 0.21
Dependant aged 8-10 0.23
Dependant aged 11-12 0.25
Dependant aged 13-15 0.27
Dependant aged 16+ 0.36

2. The equivalised income was derived as the annual household income divided by the McClements score.

3. This equivalised annual household income was attributed to all members of the household, including children.

4. Households were ranked by equivalised income, and quintiles q1 – q5… were identified. Because income was obtained in banded form, there were clumps of households with the same income spanning the quintiles. It was decided not to split clumps but to define the quintiles as ‘households with equivalised income up to q1’, ‘over q1 up to q2’ etc.

5. All individuals in each household were allocated to the equivalised household income quintile to which their household had been allocated. Insofar as the mean number of persons per household may vary between quintiles, the numbers in the quintiles will be unequal. Inequalities in numbers are also introduced by the clumping referred to above, and by the fact that in any sub-group analysed the proportionate distribution across quintiles will differ from that of the total sample.

In 2005, to inhibit the income distribution being skewed by the boost sample of adults aged 65 and over, the income quintiles were only calculated on the general population sample. These quintiles were then applied to both core and boost samples.

**EQ-5D**

The EQ-5D questionnaire is a standardised instrument used as a measure of health outcome. It provides a simple descriptive profile and a single index value for health status. The EQ-5D comprises five different dimensions; Mobility; Self care; (ability to perform) Usual Activities; Pain/Discomfort and Anxiety/Depression. Informants are asked to rate their health state using a standard scale. This three-way classification for each dimension gives rise to a possible 243 ‘health states’. These range from 11111 (no problems across all dimensions) to 33333 (severe problems across all dimensions). It is also possible to allocate a tariff score to each health state.

**Ferritin**

Ferritin is the main form in which iron is stored in the liver, spleen and bone marrow. A small fraction of ferritin circulates in the bloodstream and this fraction correlates with body iron status. A definition of ferritin <45ng/ml was used as a discriminator for iron-deficiency in people aged 65 and over.

**Geometric mean**

The geometric mean is a measure of central tendency. It is sometimes preferable to the arithmetic mean, since it takes account of positive skewness in a distribution. The geometric mean of a continuous variable is calculated by taking the antilog of the mean of the logged original values. See also *Arithmetic mean*.
**Geriatric Depression Score**
The 10-item Geriatric Depression Scale (GDS10) is a shortened version of the 30-item Geriatric Depression Scale, which was designed to diagnose depression in older people. The GDS10 is self-administered and was included in the self-completion booklet for informants aged 65 and over. The questionnaire comprises 10 questions, which measure depressive symptoms, such as feeling unhappy, feeling empty, helpless, or hopeless.

**GHQ12**
The General Health Questionnaire (GHQ12) is a scale designed to detect possible psychiatric morbidity in the general population. It was administered to informants aged 13 and above. The questionnaire contains 12 questions about the informant’s general level of happiness, depression, anxiety and sleep disturbance over the past four weeks. Reference: Goldberg D, Williams PA. *User’s Guide to the General Health Questionnaire*. NFER-NELSON, 1988.

**Glycated Haemoglobin**
The percentage of glycated haemoglobin is the percentage of haemoglobin in the circulation to which glucose is bound. Glycated haemoglobin (HbA₁c) concentration is an indicator of average blood glucose concentration over three months and has been suggested as a diagnostic or screening tool for diabetes. Diabetic patients with elevated glycated haemoglobin are at increased risk of microvascular and macrovascular events. Raised glycated haemoglobin has been taken as equal to or greater than 7%.

**Government Office Region**
Government Office Region (GOR) is the key classification system used for regional statistics. There are nine Government Office Regions in England: North East, North West, Yorkshire and the Humber, East Midlands, West Midlands, East of England, London, South East and South West. The nine category system has been used since 1998, however, GOR boundaries may change from year to year as they reflect administrative boundaries.

**Grip Strength**
One of the measurements of physical function carried out on informants age 65 and over, grip strength is an indication of upper body strength, and with the *walking speed*, *balance* and *chair rises* give an objective, comparable measure of frailty. Hand-grip strength affects everyday function (such as raising the body weight or holding heavy objects) and declines with age. It is measured with a gripometer which consists of a gripping handle with a strain-gauge and an analogue reading scale.

**Haemoglobin**
The iron-containing molecule in red blood cells. Low haemoglobin (anaemia) is most commonly caused by iron deficiency or chronic disease. When analysing HSE 2005 data from older people aged 65 and over, two sets of criteria were used to define anaemia:

- The WHO criteria (<13g/dl in men, <12g/dl in women) and
- The Joosten’s criterion (<11.5g/dl).

**High Blood Pressure**
See *Blood Pressure*.

**Household**
A household was defined as one person or a group of people who have the accommodation as their only or main residence and who either share at least one meal a day or share the living accommodation.

**Household Reference Person**
The household reference person (HRP) is defined as the householder (a person in whose name the property is owned or rented) with the highest income. If there is more than one householder and they have equal income, then the household reference person is the oldest.
The Index of Multiple Deprivation 2004 (IMD) provides a measure of area deprivation based on deprivation in seven domains, namely income, employment, health deprivation and disability, education, skills and training, barriers to housing and services, crime and living environment. Within each domain, data are collected from a variety of sources.

For example, health deprivation is assessed on the basis of measures such as the years of potential life lost and emergency admissions to hospital for 32,482 Super Output Areas in England (SOAs). SOAs are ranked on the basis of deprivation from 1 (most deprived) to 32,482 (least deprived). In the Health Survey, deprivation quintiles are used to reflect broad categories of deprivation.

### Income

See *Equivalised household income*

### Ischaemic heart disease

Informants were classified as having ischaemic heart disease (IHD) if they reported ever having angina or a heart attack diagnosed by a doctor.

### Leg raise

A more advanced test for balance, the leg raise has two components, firstly taking one foot off the floor and then repeating this but with eyes closed.

### Logistic regression

Logistic regression was used to investigate the effect of two or more independent or predictor variables on a two-category (binary) outcome variable. The independent variables can be continuous or categorical (grouped) variables. The parameter estimates from a logistic regression model for each independent variable give an estimate of the effect of that variable on the outcome variable, adjusted for all other independent variables in the model.

Logistic regression models the log ‘odds’ of a binary outcome variable. The ‘odds’ of an outcome is the ratio of the probability of its occurring to the probability of its not occurring. The parameter estimates obtained from a logistic regression model have been presented as odds ratios for ease of interpretation.

For *continuous* independent variables, the odds ratio gives the change in the odds of the outcome occurring for a one unit change in the value of the predictor variable.

Parameter estimates for *categorical* independent variables have been presented by selecting one category of the categorical variable as a baseline or reference category, with all other categories compared to it. Therefore there is no parameter estimate for the reference category and odds ratios for all other categories are the ratio of the odds of the outcome occurring between each category and the reference category, adjusted for all other variables in the model.

The statistical significance of independent variables in models was assessed by the likelihood ratio test and its associated p value. 95% confidence intervals were also calculated for the odds ratios. These can be interpreted as meaning that there is a 95% chance that the given interval for the sample will contain the true population parameter of interest. In logistic regression a 95% confidence interval which does not include 1.0 indicates the given parameter estimate is statistically significant.

### Longstanding illness and limiting LI

Longstanding illness was defined as an illness, disability or infirmity that had troubled the respondent over a period of time or was likely to affect them over a period of time. Longstanding illnesses were coded...
into categories defined in the International Classification of Diseases (ICD), but it should be noted that the ICD is used mostly to classify conditions according to the cause, whereas HSE classifies according to the reported symptoms. A longstanding illness was defined as limiting if the respondent reported that it limited their activities in any way.

**Mean**

Means in this report are mostly *Arithmetic means* (the sum of the values for cases divided by the number of cases). In a few cases the *Geometric mean* has been used.

**Mean Corpuscular Volume (MCV)**

The mean volume of red blood cells in the blood. Iron deficiency leads to smaller red blood cells; folate and vitamin B12 deficiency lead to abnormally large red blood cells. Immature (newly formed) red blood cells are also larger, so MCV also rises when large numbers of new red blood cells are formed, for example in response to blood loss.

**Median**

The value of a distribution which divides it into two equal parts such that half the cases have values below the median and half the cases have values above the median.

**Morbid obesity**

See *Body mass index*.

**NS-SEC**

The National Statistics Socio-economic Classification (NS-SEC) is a social classification system that attempts to classify groups on the basis of employment relations, based on characteristics such as career prospects, autonomy, mode of payment and period of notice. There are fourteen operational categories representing different groups of occupations (for example higher and lower managerial, higher and lower professional) and a further three ‘residual’ categories for full-time students, occupations that cannot be classified due to lack of information or other reasons. The operational categories may be collapsed to form a nine, eight, five or three category system. The Health Survey for England generally uses the five category system in which respondents are classified as managerial and professional, intermediate, small employers and own account workers, lower supervisory and technical, and semi-routine and routine occupations. Because of its basis in employment status, it is a less useful socio-economic classification system for people aged 65 and over.

**Obesity**

See *Body mass index*.

**Odds ratio**

See *Logistic regression*.

**Overweight**

See *Body mass index*.

**Percentile**

The value of a distribution which partitions the cases into groups of a specified size. For example, the 20th percentile is the value of the distribution where 20 percent of the cases have values below the 20th percentile and 80 percent have values above it. The 50th percentile is the median.

**Potassium**

The intake of potassium (K) can be estimated by measuring urinary excretion. This was analysed in HSE 2005 using a spot urine sample. There is an inverse association between potassium intake and blood pressure. See also *Urine, Sodium, Creatinine*.

**p value**

A p value is the probability of the observed result occurring due to chance alone. A p value of less than 5% is conventionally taken to indicate a statistically significant result (p<0.05). It should be noted that the p value is dependent on the sample size, so that with large samples differences or associations which are very small may still be statistically significant. Results should therefore be assessed for their importance.
on the magnitude of the differences or associations as well as on the p
value itself.

**Quintile**
Quintiles are percentiles which divide a distribution into fifths, i.e., the
20th, 40th, 60th and 80th percentiles.

**Region**
See **Government office region**.

**Serum albumin**
The main protein in blood plasma serum involved in maintaining
osmotic pressure of the blood. Low levels of serum albumin occur in
people with malnutrition, inflammation, and serious liver and kidney
disease.

**Serum transferrin**
The transferrin receptor is a membrane glycoprotein. Its function is to
mediate cellular uptake of iron from a plasma glycoprotein, transferrin.
Raised soluble transferrin receptor (sTfR) of >2.3g/L, is an indicator of
iron deficiency for both men and women.

**Social support**
The perceived social support scale, originally used in the Health and
Lifestyle Survey, was based on seven questions about emotional
aspects of social support. Informants were asked about the amount of
support and encouragement they received from family friends. These
questions were combined into a single scale categorising informants
as having ‘a severe lack’, ‘some lack’ or ‘no lack’ of social support.
Reference: Cox BD et al. The Health and Lifestyles Survey. The Health Promotion

**Sodium**
The intake of sodium (Na) can be estimated by measuring urinary
excretion. This was analysed using a spot urine sample. There is an
association between sodium intake and blood pressure. See also
Urine, Potassium, Creatinine.

**Spearhead Primary Care Trust**
The Local Authority areas that are in the bottom fifth nationally for three
or more of the following five indicators are classed as being in a
Spearhead group:
• Male life expectancy at birth
• Female life expectancy at birth
• Cancer mortality rate in under 75s
• CVD mortality rate in under 75s
• Index of multiple deprivation 2004 (LA summary), average score.

These local authority areas are then mapped onto primary care trust
boundaries to produce Spearhead PCTs.

**Standardisation**
In this report, standardisation refers to standardisation (or ‘adjustment’)
by age (see **Age standardisation**).

**Strategic Health Authority (SHA)**
From July 2006 a new configuration of Strategic Health Authorities
(SHAs) was introduced in England reducing the number from 28 to 10
SHAs. The boundaries are the same as those of the Government Office
Regions with the exception of the South East that has been divided into
South East Coast SHA and South Central SHA.

**Unit of alcohol**
A unit of alcohol is 8g of ethanol. It is the amount contained in half a
pint of ordinary beer or lager, or in a small glass of wine, or in a measure
of spirits.

**Urine analysis**
A spot urine sample was collected from adults (16 and over) in the core
sample. This was used for the analysis of dietary **Sodium**, **Potassium**
and **Creatinine**. Epidemiological, clinical and animal-experimental
evidence shows a direct relationship between dietary electrolyte
consumption and blood pressure (BP).
**Vitamin D**

A fat-soluble vitamin required for normal growth of teeth and bones, and produced in general by ultraviolet irradiation of sterols found in milk, fish, and eggs. Insufficient vitamin D status in the elderly is clinically manifested commonly as the demineralisation of the adult skeleton, osteomalacia and osteoporosis. These are characterised by deformed and brittle bone, increased risk of bone fractures, muscle weakness and loss of neurological control of balance/neuromuscular function.

**Vitamin B12**

Vitamin B12 is a water soluble compound which acts as a co-factor, i.e. helps in different enzyme systems in the body. Vitamin B12 aids in the formation of fatty acids, DNA and red blood cells, as well as helping the nervous system function. Dietary sources are mainly from animal products, although B12 is also manufactured by micro-organisms (bacteria, fungi and algae). It has been shown that B12 in fortified foods (such as breakfast cereals) is easier to absorb than the B12 in meat, poultry and fish sources, particularly in the elderly. Vitamin B12 cannot be absorbed on its own, therefore it has to combine with ‘intrinsic factor’ which is produced by the stomach lining. Deficiency results in abnormalities in bone marrow, small intestine and the nervous system.

**Waist circumference**

Waist circumference is a measure of deposition of abdominal fat, i.e. central obesity. A raised waist circumference has been taken to be 102cm or more in men and 88cm or more in women.


**Walking speed**

The purpose of this test is to measure objectively the overall health and level of disability of a large population of people aged 65 years and above. Walking speeds in older people have been shown to be very predictive of level of disability, future use of health care and mortality.
**National Centre for Social Research**

The National Centre for Social Research is the largest independent social research institute in Britain, specialising in social survey and qualitative research for the development and evaluation of policy. NatCen specialises in research in public policy fields such as health, housing, employment, crime, education and political and social attitudes. Projects include ad hoc and continuous surveys, using face-to-face, telephone and postal methods; many use advanced applications of computer assisted interviewing. NatCen has approximately 300 staff, a national panel of over 1,000 interviewers and 200 nurses who work on health-related surveys.

**Department of Epidemiology and Public Health at the Royal Free and University College Medical School**

The Department houses over 165 staff, in 11 main research groups, namely: the Joint Health Surveys Unit, part of the Health and Social Surveys Research Group; Cancer Research UK funded Health Behaviour Unit (including Weight Concern); Central and Eastern Europe Research Group; Dental Public Health; Healthcare Evaluation Group; Life Course Social Science and Health Research Group (including the ESRC Priority Network: Capability and Resilience Research); MRC National Survey of Health and Development Unit; Psychobiology Group; Public Health Research Group; Clinical Epidemiology Group; and the Whitehall II Study. A joint post links the Department to the Department of Economics, whilst a great deal of collaborative research is conducted through the International Institute for Society and Health, housed within the Department, and across those departments forming the Division of Population Health. In addition to Epidemiology and Public Health, the Division comprises the Departments of Mental Health Sciences; Primary and Population Sciences; and the MRC Clinical Trials Unit.

The Department’s research programme is concerned particularly with social factors in health and illness, including national cross-sectional surveys of health and behaviour (such as diet), longitudinal studies of cardiovascular disease (Whitehall studies) and the English Longitudinal Study of Ageing (ELSA); international studies of cardiovascular disease and diabetes; the socio-dental indicators of need; and the socio-economic and policy implications of an ageing population.