ANTENATAL CARE

MEASURING BLOOD PRESSURE

AIM

To correctly perform blood pressure measurements enabling accurate diagnosis of abnormal blood pressure in pregnancy.

BACKGROUND INFORMATION

10% of all pregnant women are susceptible to hypertension\(^1\). Hypertension in pregnancy is defined as a systolic blood pressure (BP) greater than or equal to 140 mmHg and/or diastolic BP greater than or equal to 90 mmHg. Detection of a rise in BP from the ‘booking’ or preconception BP ( >30/15 mmHg ) is not diagnostic of hypertension, however closer monitoring is recommended.\(^2\)


KEY POINTS

1. Evidence supports the use of a mercury sphygmomanometer to measure blood pressure, but only an aneroid sphygmomanometer complies with the Occupational Health and Safety Recommendations (1999). It is necessary to recalibrate aneroid machines regularly, especially in high use situations.

2. The use of automated BP measurement reduces ‘white coat response’ compared to manual BP measurements.\(^3\)

3. A recent randomised study has shown the use of an automated blood pressure measurement using a correctly sized and positioned cuff is accurate and better than manual BP measurements. However, more research is required to determine if it can be recommended to replace manual readings.\(^3\)

4. If an abnormal BP reading is found using the automated BP machine, then a manual reading should also be performed.

5. The midwife should contact the medical team to discuss ongoing management if a women attending the midwives clinic is found to have an abnormal BP reading.

6. Correct cuff size is essential for accuracy of BP measurements.
### PERFORMING A BLOOD PRESSURE MEASUREMENT

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<th>PROCEDURE</th>
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<td><strong>Hand hygiene</strong></td>
<td>As per standard hospital guidelines. See <a href="#">Infection Control Policy Manual 2.4 Hand Hygiene</a>.</td>
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<tr>
<td><strong>Positioning</strong></td>
<td>Seat the woman for 5 minutes prior to BP measurement. The arm should be supported at heart level and the legs uncrossed. A supported back or arm enhances muscle relaxation improving BP accuracy. Positioning of the woman's arm supported at mid-sternum level closely approximates the right atrium level allowing a more accurate BP assessment.</td>
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<tr>
<td><strong>BP Measurement machine</strong></td>
<td>Calibrate machines as recommended by the manufacturer. BP measurement with an automated machine may be preferable if a woman's has a 'white-coat response' leading to an increase in recordings when her BP taken.</td>
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| **Cuff size** | Available are:  
  - Standard cuff (12cm x 26cm) should be used for arms < 33 cm circumference  
  - Large, long cuff size 27.5cm x 36.5 cm  
  - Large, extra long cuff 35cm x 46 cm  
  The length of the bladder (inside the cuff) should be at least 80% of the circumference of the bare arm, and the width should cover 33-50% of the adult's upper arm. |
| **Cuff placement** | Apply directly to the bare arm on the woman's upper arm 2-3 cm above the brachial artery. |
| **Placement of the stethoscope** | Place over the brachial artery (medially over the antecubital space) at the point of maximum pulsation. Ensure the stethoscope is not placed under the cuff as this can increase pressure over the brachial artery which can result in a false low diastolic BP measurement, generate extraneous noise, or cause discomfort to the patient. |
### PROCEDURE

**Booking BP**

At the booking visit the BP should be performed on both arms to provide a guidance for subsequent BP measurements.

Record the site of both BP recordings.

**ADDITIONAL INFORMATION**

A difference of 10 mmHG is a common finding in some pathological conditions such as dissection or coarctation of the aorta, peripheral vascular disease and unilateral neurological and musculoskeletal abnormalities. BP inter-arm differences occur in a significant proportion of pregnant women, and its prevalence has been shown to increase with increasing BP.⁶

**Measuring the systolic BP**

Locate the radial pulse, inflate the cuff to a pressure of 30mmHg above the estimated systolic level seen when the radial pulse is no longer felt.⁴

The BP cuff should be deflated at a rate of 2-3 mmHg, or by per heart beat if the pulse rate is slow.⁵

Readings should be recorded to the nearest 2 mmHg.

**ADDITIONAL INFORMATION**

Systolic BP is the first appearance of faint, repetitive, clear tapping sounds that gradually increase in density.⁴

A faster deflation rate can cause underestimation of the systolic pressure and overestimation of the diastolic pressure.⁵

**Measuring the diastolic BP**

Diastolic BP is recorded at the Korotkoff phase V sound (i.e. when there is loss of all sounds). If phase V is not present, then Korotkoff phase IV, (i.e. when sounds muffle), should be recorded.³

**ADDITIONAL INFORMATION**

REFERENCES

