The importance of the cuff size

Using a blood pressure cuff that is too large or too small can give you inaccurate blood pressure readings. Cuffs that are too small may artificially produce a high blood pressure reading, whereas if the cuff is too large the reading may be too low.

Measure the circumference of the patient’s arm. The inflatable part of the blood pressure cuff should cover about 80 percent of the circumference of the upper arm. The cuff should cover two-thirds of the distance from the patient’s elbow to her shoulder.

Examples of cuff sizes:

- **Small**: 17–22 cm (6.75–8.75”)
- **Medium**: 22–32 cm (8.75–12.5”)
- **Large**: 32–42 cm (12.5–16.5”)

It is advisable to have a large cuff available. It is known that women with a body mass index above 30 are at increased risk of PE.
MAP in prediction of pre-eclampsia

Increased mean arterial blood pressure (MAP) at 11 to 13+6 weeks is one of the pre-eclampsia screening markers\(^1\). Combination of MAP with other markers by using a risk calculation algorithm facilitates a more effective method of screening for pre-eclampsia.

How to measure MAP for the prediction of preeclampsia

It is important to follow the standardized measurement protocol when using MAP as one of the pre-eclampsia screening markers. Accurate MAP is just as important as accurate biochemical testing.

Requirements for accurate MAP measurement:
- Follow the standardized protocol
- Use automated blood pressure monitors that are validated for pre-eclampsia.

Blood pressure monitors that can be used for pre-eclampsia screening

Automated blood pressure monitors have several advantages over traditional sphygmomanometric methods. The use of automated monitors reduces observer bias. Also the automated instruments do not employ mercury, which is toxic and an environmental hazard.

The blood pressure should only be measured using automated monitors, validated for pre-eclampsia (see the list of validated meters in the table). This is because some automated monitors recommended for the adult or pregnant population may not be accurate for pre-eclampsia.

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Automated monitors measure pressure waves (oscillations) of brachial artery and convert them to a blood pressure recording using an algorithm. Changes associated with PE (decreased arterial compliance, changes in cardiac output and interstitial edema) may delay the transmission of these oscillations leading to an unreliable recording.

Only certain monitors have the required technology and algorithms that work with pre-eclamptic patients. These monitors are also accurate for non-pre-eclamptic pregnant women.

If only one monitor is available, the measurements can be taken two times from just one arm (left or right). However, the detection rate will be about 4% lower compared to simultaneous measurements from both arms\(^6\). Measuring the BP from both arms sequentially using one monitor is not advisable.

Why measure from both arms?

The measurements should be performed simultaneously from both arms.
- The blood pressure should be recorded in both arms because of recognized inter-arm variations which are not limited to pathological conditions.
- There is evidence that the performance of screening for PE by MAP is best when readings from two arms were considered\(^9\).

Positioning

- The woman should be comfortably seated with her back supported and her legs uncrossed.
- The arms should be supported at heart level, and they should be free of clothing.
- Cuff size should be selected depending on the mid-arm circumference.
- Neither observer nor patient should talk during the measurement.

Measurement

- The blood pressure (BP) should be measured in both arms simultaneously.
- After the measurements, wait for 1 minute, and then take a repeat set of measurements (again from both arms)\(^9\).

How is the MAP calculated?

MAP is calculated from the systolic and diastolic readings:

\[
\text{MAP} = \text{Diastolic} + \frac{\text{Systolic} - \text{Diastolic}}{3}
\]

The risk calculator program will perform this calculation, using the two recordings you have made for each arm. The program will then calculate the MAP multiple of the median (MoM), adjusted for the mother’s weight.