

# Routine Blood Pressure Measurement in Pregnancy

Guidelines	Level of Evidence	References
Early in pregnancy all women should receive appropriate written information about blood pressure measurement and be given an opportunity to discuss the procedure with their midwife or doctor.	IV	6
Blood pressure should be recorded at every antenatal visit until the frequency of measurement is differently determined by research,	IV	1-4
In order to be measured women should sit down with feet supported. Measurements should be taken after two to three minutes resting in this position.	III-2	1-4
A standard size cuff should be used for women with an arm circumference 33 cm and a large cuff used for arm circumference >33 cms.	IV	3-5
Systolic blood pressure should be palpated at the brachial artery and the cuff inflated to 20 mmHg above this level. The cuff should be deflated slowly, at approximately 2 mmHg per second.	IV	3-5
Diastolic blood pressure readings should be recorded using the Korotkoff V sound. If phase V is not present then phase IV should be recorded.	II	3-5
Hypertension is defined when systolic blood pressure is 140 mmHg and/or diastolic blood pressure (Korotkoff V) is 90 mmHg or there is an incremental rise of 30 mmHg systolic or 15mmHg diastolic.	IV	3-5
Evidence supports the use of a mercury sphygmomanometer to measure blood pressure but only an anaeroid sphygmomanometer complies with the Occupational Health and Safety Recommendations (1999). It is necessary to recalibrate anaeroid machines regularly, especially in high use situations.	III	7,8
Automated devices and ambulatory blood pressure monitoring devices should not be used in routine clinical practice until more detailed information is available about their accuracy and effectiveness.	III	7,8

## Aim

The aim of these guidelines is to assist midwives and doctors in accurate measurement of blood pressure to identify the likely onset of hypertensive disorders of pregnancy.

## Evidence

Pre-eclampsia is a major cause of maternal and perinatal morbidity and mortality. Elevated blood pressure is one of the first signs of the condition. Consequently, guidelines recommend the practice of recording blood pressure at every antenatal visit as critical to detection and management of hypertensive disorders of pregnancy. Early detection is important, as underlying conditions can progress rapidly<sup>1-3</sup>.

Current Australasian consensus guidelines suggest a diagnosis of hypertension when systolic blood pressure is 140 mmHg and diastolic blood pressure is 90 mmHg taken on two or more consecutive occasions over several hours, or an increment of 15/30. Both diastolic and systolic pressures have been shown to be closely associated with fetal outcome. A clinical diagnosis of pre-eclampsia is usually made when hypertension occurs with one or more of proteinuria, renal insufficiency, liver disease, neurological problems, haematological disturbances or fetal growth restriction<sup>1</sup>.

Accurate measurement of blood pressure is impeded by lack of standardisation in:

- Patient position
- Use of Korotkoff sound for diastolic blood pressure
- Cuff size
- Rounding of measurement
- Selection of left or right arm
- Period of pre-measurement resting<sup>2-5</sup>.

## Methods of Search and Appraisal

Two main strategies were used to search and appraise evidence relating to blood pressure measurements in pregnancy.

### I. General Literature Search (February 2000)

The Centre for Clinical Effectiveness conducted a general search of the Medline and CINAHL for articles relating to blood pressure measurement.

### II. Search on Defined Questions (November 2000)

A research team from the Department of Perinatal Medicine at the Royal Women's Hospital searched The

Cochrane Library (2000). The OVID interface was used to search Medline 1980 - 2000, CINAHL April 1982 - 2000, and Best Evidence 2000 to answer:

1. In low risk pregnant women, does blood pressure measured by the same person at every visit detect hypertension and pre-eclampsia more accurately than measurements taken by more than one person?
2. In low risk pregnant women does blood pressure measurement taken in the semi-recumbent position (seated) detect hypertension and pre-eclampsia more accurately than measurements taken in other positions?

Search terms included blood pressure, blood pressure and pregnancy, pre-eclampsia and hypertension and pregnancy.

Bibliographies were also hand searched. Articles were excluded if they were not in English, or related to postnatal diagnosis, ultrasonography, biochemical diagnosis, treatment and/or management issues. Twenty-four citations were identified and included as relevant to the search questions. There was no Level I literature identified. However, there was one Level II, five Level III-2, eight Level III-3 and ten Level IV studies/documents. The review included a recent consensus statement by the Australian Society for the Study of Hypertension in Pregnancy. The coordinator searched grey literature and journals for additional evidence published between December 2000 and August 2001.

## References

1. US Preventive Services Task Force. *Guide to Clinical Preventive Services. 2nd Ed.* Baltimore: Williams and Wilkins, 1996. Level IV
2. Canadian Task Force on the Periodic Health Examination. *The Canadian Guide to Clinical Preventive Health Care.* Ottawa: Canada Publishing Group, 1994. Level IV
3. Australian Society for the Study of Hypertension In Pregnancy. The detection, investigation and management of hypertension in pregnancy: full consensus statement. *ANZIOG* 2000;40:139-155. Level IV
4. McAlister F and Strauss SE. Measurement of blood pressure: an evidence based review. *BMJ* 2001;322:908-911. Level IV
5. Brown MA, Buddle M, Farrell T, Davies G, Jones M. Randomised trial of management of hypertensive pregnancies by Korotkoff phase IV or phase V. *Lancet* 1998;352:777-781. Level II

6. Lumley J. *What do women really want? Satisfaction with care in pregnancy, birth and the postnatal hospital stay. A summary of current evidence to April 2000.* Unpublished report commissioned by The Royal Women's Hospital, Melbourne from the Centre for Studies on Mother's and Children's Health, La Trobe University, Melbourne 2000. Level IV
7. O'Brien E, Waeber B, Parati G, Staessen J, Myers MG. Blood pressure measuring devices: recommendations of the European Society of Hypertension. *BMJ* 2001;322:531-536. Level IV
8. Brown M A, Robinson A, Buddle M L. Accuracy of automated blood pressure recorders in pregnancy. *ANZJOG* 1998;38:3:262-267. Level III-2

