Mid Essex Hospital Services NHS
NHS Trust

MANAGEMENT OF PRE-ECLAMPSIA AND HYPERTENSION ON THE DAY ASSESSMENT UNIT	CLINICAL GUIDELINES Register No: 11006 Status: Public

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Consulted With	Post/Committee/Group	Date
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Related Trust Policies (to be read in conjunction with)	04071 Standard Infection Prevention 04072 Hand Hygiene 06036 Guideline for Maternity Record Keeping including Documentation in Handheld Records 05110 Management of eclampsia and severe pre-eclampsia 06033 Referral and Care of Women on The Antenatal Assessment and Treatment Unit 07043 Abdominal palpation and examination in pregnancy 06034 Reduced Fetal Movements

Review No	Reviewed by	Review Date
1.0	Sue Alcide	October 2011
1.1	Sarah Moon - clarification to 6.2	December 2012

It is the personal responsibility of the individual referring to this document to ensure that they are viewing the latest version which will always be the document on the intranet

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1.0 Purpose of Guideline

1.1 To ensure a system of clear referral pathways are established, so that pregnant patients who require additional care are managed and treated by the appropriate specialist team when problems are identified.

1.2 To set clear definitions of pregnant patients who will be appropriate for referral/ admission.

1.3 To provide an individualised service, during assessment, treatment or admission. Antenatal care should be readily and easily accessible to all patients and should be sensitive to the needs of the individual patient and local community.

2.0 Equality and Diversity

2.1 Mid Essex Hospital Services NHS Trust is committed to the provision of a service that is fair, accessible and meets the needs of all individuals.

3.0 Incidence

3.1 Hypertension is the most frequent complication of pregnancy, occurring in 10% of pregnancies, and Pre-eclampsia is one of the main causes of maternal and fetal morbidity and mortality. Hypertension is the most common first sign of pre-eclampsia.

3.2 Hypertensive disorders are the second commonest direct cause of maternal death and the leading single identifiable risk factor in pregnancy associated with stillbirth, about 7% of which are directly caused by pre-eclampsia.

4.0 Background

4.1 Pre-eclampsia is also associated with fetal growth restriction, low birth weight, preterm delivery, small for gestational age infants and respiratory distress syndrome.

4.2 New hypertension can occur without significant proteinurea (gestational hypertension) or with significant proteinurea (pre- eclampsia).

4.3 Hypertensive disorders during pregnancy can occur in women with chronic hypertension, (pre existing hypertension).

4.4 Treatment and care should take into account women's individual needs and preferences. Good communication is essential supported by evidence based information, to allow women to reach informed decisions about their care.

5.0 Definitions

5.1 Degrees of hypertension

- **Mild** diastolic blood pressure: 90-99 mmHg, systolic blood pressure: 140-149 mmHg
- **Moderate** diastolic blood pressure: 100-109 mmHg, systolic blood pressure: 150-159 mmHg
- **Severe** diastolic blood pressure: > 110mmHg, systolic blood pressure: > 160mmHg

- **New hypertension** - hypertension at or after 20 weeks gestation in a patient with a diastolic blood pressure of less than 90mmHg before 20 weeks

- **Gestational hypertension** - new hypertension presenting after 20 weeks without significant proteinurea
- **Chronic hypertension** - a diastolic blood pressure pre-pregnancy or at booking (before 20 weeks) of 90mmHg or more or that is being treated at the time of referral to maternity services

5.2 Degrees of proteinuria:

- **New proteinuria** - the presence of proteinuria as shown by 1+ (0.3g/l) or more on proteinuria dipstick testing o or a urine protein excretion of 300mg or more per 24 hours
- **Significant proteinuria** - urine protein excretion ≥ 300mg per 24 hours

5.3 Degrees of hypertension:

- **Pre-eclampsia** - new hypertension and significant proteinuria at or after 20 weeks of pregnancy, confirmed if it resolves after delivery
- **Superimposed pre-eclampsia** - the development of features of pre-eclampsia in the context of existing hypertension, existing proteinuria or both
- **Severe pre- eclampsia.** Pre- eclampsia with severe hypertension and/or with symptoms, and/or biochemical and/or haematological impairment
- **Eclampsia** Convulsive condition associated with pre-eclampsia

6.0 Assessment in the Day Assessment Unit (DAU)

(Refer to Appendix A)

6.1 Midwifery assessments should be conducted as follows:
(Refer to points 4.1 to 4.)

6.2 Maternal and fetal assessment to be undertaken within 30 minutes of admission to unit; once the woman has been shown to her bed or assessment area.

6.3 Large cuffs must be used for patients with an arm circumference of 41cm or more. Use equipment that is accurate in measuring hypertensive individuals; automated devices that are accurate in pregnancy can under-read by clinically significant amounts in patients with pre-eclampsia. The most accurate is the standard mercury sphygmomanometer. The environment should be relaxed, quite and preferably after rest.

6.4 Clinical assessment by the midwife should be consistent and documented as follows in the patients healthcare records:

- Dipstick test for proteinuria - dipstick proteinuria (none, trace, 1+, 2+, >2+ protein)
- Clinical assessment of maternal symptoms relating to pre-eclampsia – visual disturbance (‘tunnelling’), headaches, nausea, epigastric pain/ right upper quadrant pain
- Clinical assessment of fetal size and wellbeing relating to pre-eclampsia. This generally includes measurement of symphysis -fundal height and clinical enquiry about fetal movements
  (Refer to the guideline entitled ‘Abdominal palpation and examination in pregnancy’ register number 07043; and the guideline entitled ‘Reduced fetal movements’, register number 06034)
- Perform a CTG cardiotocograph) if _> 28weeks gestation
- An ultrasound scan should be arranged for monitoring fetal growth

- Patients with maternal symptoms relating to pre-eclampsia and/or any clinical suspicion of fetal compromise are not included
- Review of current obstetric history - note the most recent community dipstick test result and date; gestational age; booking blood pressure; booking dipstick protein results; booking risk factors

7.0 Role of the DAU Midwife in Relation to Mild Hypertension

(Refer to Appendix A)

7.1 The DAU midwife should undertake the following action in relation to mild hypertension

7.2 New proteinuria without hypertension - if there is no clinical suspicion of fetal compromise, no maternal symptoms but there is 1+ of proteinuria on the dipstick the following should be performed:

- In the presence of significant proteinuria, arrange for the patient to be reviewed by the obstetric registrar/ consultant on call
- No significant proteinuria - contact the community lead to arrange the next pre-eclampsia assessment in the community within one week
- If there are 2+ or more proteinuria on the dipstick, blood tests relating to pre-eclampsia (full blood count (FBC), clotting, liver function tests (LFT's) should be obtained and sent for analysis
- The patient should be reviewed by the obstetric registrar/ consultant on call
- Arrange 24 hour urine collection
- Obtain and send a mid stream specimen of urine for culture and sensitivity (MSU) to exclude infection
- Ultrasound: growth/ liquor/umbilical artery Doppler, abnormal blood tests and/or Doppler or significant proteinuria

7.3 Diastolic BP 90-99mmHg:

- Blood tests relating to pre-eclampsia
  (Refer to point 5.2)
- Cardiotocograph (CTG) monitoring
- Ultrasound growth and liquor
- Arrange an appointment to attend DAU as an outpatient
- Abnormal blood test and/or Doppler results arrange a obstetric review
- Normal blood tests and Doppler results allocate patient to a named obstetric consultant
- Monitor at least weekly from DAU, do not routinely repeat blood tests

7.4 Diastolic BP 90 - 99mmHg and 1+ proteinuria:

- 24 hour urine collection as an out-patient (if no maternal symptoms or clinical suspicion of fetal compromise)
- Blood tests relating to pre-eclampsia, the patient should wait for the result
- Perform a CTG
- Ultrasound for growth and liquor
- Attend DAU as an outpatient

7.5 Diastolic BP 90-99mmHg and new proteinuria ≥ 2+ on dipstick:

- 24 hour urine collection as out-patient (if no maternal symptoms or clinical suspicion of fetal compromise)
- The patient should be admitted and reviewed by the obstetric registrar or consultant on call
- Blood tests relating to pre-eclampsia (Refer to point 5.2)
- Perform a CTG
- Ultrasound growth/ liquor/Umbilical artery Doppler should be considered following assessment

8.0 Role of the DAU Midwife in Relation to Moderate Hypertension
(Refer to Appendix A)

8.1 Diastolic BP 100 - 109mmHg or Systolic BP 150-159 mmHg:

- Arrange an obsteric review to consider admission
- Blood tests relating to pre-eclampsia (Refer to point 5.2)
- Perform a CTG
- Umbilical artery Doppler's should be considered following assessment

8.2 Diastolic BP 100-109mmHg with new proteinuria of 1+:

- The patient should be reviewed by the obstetric registrar or consultant on call to consider admission
- 24 hour urinary collection
- Blood test relating to pre-eclampsia (Refer to point 5.2)
- Perform a CTG
- Ultrasound growth/ liquor/Umbilical artery Doppler

8.3 Significant proteinuria with hypertension

- The patient should be admitted and reviewed by the obstetric registrar or consultant on call
- Abnormal blood and/or Doppler results arrange a review of the results by the obstetric registrar or consultant on call

8.4 No significant proteinuria and normal blood and Doppler results

- Allocate patient to a named obstetric consultant
- Monitor at least weekly from DAU

9.0 Role of the DAU Midwife in Relation to Severe Hypertension

(Refer to Appendix A)

9.1 Diastolic BP ≥ 110mmHg or Systolic BP ≥ 160 mmHg:

- The patient should be admitted to labour ward and reviewed by the obstetric registrar/ consultant on call
- Blood tests should be obtained relating to pre-eclampsia i.e. full blood count, urea and electrolytes, uric acid and clotting studies (consider cannulation)
- A cardiotocograph (CTG) should be performed
- Umbilical artery Doppler's should be considered following assessment

9.2 Diastolic BP ≥ 110mmHg with new proteinuria of 1+:

- The patient should be admitted to labour ward and reviewed by the obstetric registrar/ consultant on call
- 24 hour urinary collection
- Blood test relating to pre-eclampsia (consider cannulation)
- Perform a CTG
- Ultrasound growth/ liquor/Umbilical artery Doppler

10.0 Blood Tests Relating to Pre-eclampsia

10.1 The blood tests relating to pre-eclampsia are as follows:

- Platelet count
- Transaminases -AST
- Serum urate and serum creatinine
  (Serum urate is not required if there is no proteinuria)
- Protein creatinine ratio
- Full blood count

10.2 Use pregnancy-specific normal ranges for platelets, transaminases and creatinine; gestational age dependent ranges for serum urate as shown below:

	AST	**ALT**
Non –pregnant	7 - 40	0 - 40
1st trimester	10 - 28	6 - 32
2nd Trimester	11 - 29	6 - 32
3rd Trimester	11 - 30	6 - 32
Platelet count	<150x10 $^{9/L}$	
Creatinine	>90microgmol/L	

10.3 Liver function tests: gestation specific 95% reference ranges (2.5th centile – 97.5th centile) in normal population.

10.4 It is imperative that the DAU midwife follows up all results within 24 hours of the blood sample being obtained by accessing the results/sample diary.

10.5 Laboratory test results should be available within no more than 24 hours of the patient attending and the same day where practically possible, with a mechanism to review the tests and talk to the patient concerned within those 24 hours.

10.6 If any of the blood tests results are outside the normal range, the obstetric registrar/ consultant on call should review the results. The DAU midwife should contact the patient concerned to discuss the results with the revised antenatal care plan.

10.7 If the blood tests are within the normal range, contact the pregnant patient and arrange/ confirm appointment in DAU to repeat assessments in one week
(Refer to 4.1)

11.0 Laboratory Tests for Proteinuria

11.1 The DAU midwife should test the urine to exclude or confirm significant proteinuria in patients with 1+ dipstick proteinuria. If there is a trace of proteinuria apparent from the Day Assessment Unit sample and 1+ of proteinuria from the community sample; use the community result. Greater than or equal to one plus of protein requires further investigations.

11.2 A 24 hour urine collection of ≥ 300mg in 24 hours both confirms and quantifies proteinuria. It is not necessary to repeat this once proteinurea has been confirmed.

11.3 In addition, a protein creatinine ratio (PCR) can be analyised by the MEHT laboratory technicians which is an instant assessment of protein; but the 24 hour urine collection remains the gold standard for the quantitative proteinuria. For example:

- PCR < 30mg/mmol excludes significant proteinuria
- PCR > 30mg/mmol does not reliably quantify proteinuria, so a 24 hour urine collection may be required

11.4 For patients with new hypertension between 90-99mmHg diastolic and 1+ proteinuria in this guideline the decision to admit should been deferred until the results of the urinary proteins are known. This is appropriate only when there are no maternal symptoms or clinical suspicion of fetal compromise. An ultrasound appointment should be arranged by the obstetric registrar/ consultant on call for an umbilical artery Doppler.

12.0 Umbilical Artery Doppler

12.1 The Pre-eclampsia Community Guideline (PRECOG) group recommend umbilical artery Doppler as the best test for predicting an at-risk fetus relating to pre-eclampsia in a patient with pre-term new hypertension and no clinical suspicion of fetal compromise.

12.2 Abnormal umbilical artery Doppler thresholds include:

- Umbilical artery PI > 2SD
- Absent or reverse end diastolic flow

13.0 DAU Obstetric Review

13.1 An obstetric review should be arranged within the Day Unit attended by the obstetric registrar/ consultant on call for the following patients in line with this guideline:

- If a patient has an abnormal blood test result
- An abnormal Doppler
- Patients with new hypertension (100-109mmHg diastolic or 150-159mmHg systolic) without proteinuria

13.2 Following review of the patient the obstetric registrar/ consultant on call should amend the patient's individual antenatal care plan, documented in the patient's healthcare records.

14.0 Allocation to a Named Consultant

14.1 All patients who reach the threshold for a midwifery assessment in DAU, (Diastolic >90mmHg) are at higher risk of pre-eclampsia and poor outcomes associated with ithe diagnosis. The DAU midwife should ensure that all patients who have had midwifery assessment have been allocated to a named obstetric consultant before they leave the DAU (with the exception to the patients who after a midwife assessment in DAU have no hypertension, no proteinuria, no relevant symptoms and a healthy baby).

14.2 The named obstetric consultant will either directly or indirectly determine subsequent management which should recorded in the patient's plan of care, documented in the healthcare records.

15.0 Follow-up Monitoring on the Day Assessment Unit and Community Setting

15.1 The DAU midwife should arrange a subsequent assessment no longer than 7 days (minimum standard) after the initial assessment and sooner if appropriate. Frequency of assessments should be determined on an individual basis, depending on blood test/ Doppler results, gestational age, history and following an antenatal care plan determined by the named consultant in consultation with the pregnant patient.

15.2 For patients with new hypertension of 90-99mmHg without proteinuria with no relevant symptoms, a normal umbilical artery Doppler and blood tests that are within the normal range at the first assessment; this assessment should be repeated in one week.

15.3 If there is no change in signs or symptoms, do not routinely repeat the blood tests. A review by the obstetric registrar/ consultant on call may be appropriate if the hypertension is persistent. Progression, as shown by changing blood parameters, emerging symptomatology or change in signs will require reviewed by the obstetric registrar/ consultant on call review resulting in a possible admission episode.

15.4 Arrange for the patient to be assessed in the community within a maximum of 7 days of leaving the Day Assessment Unit if she has no hypertension, no new or significant proteinuria, no symptoms and there is no suspicion of fetal compromise.

15.5 In the subsequent plan of care there should be an interval of no more than 2 weeks between assessments; these patients are no longer within the NICE guideline recommendations for routine antenatal care and all are at higher risk of developing pre-eclampsia.

15.6 Some patients will have had transient signs/ symptoms that will recur. Offer a DAU assessment to detect and act on any signs and symptoms.

15.7 Before a patient leaves her initial DAU assessment she should have the following:

- Information to understand the signs and symptoms of fulminating pre-eclampsia, the rate at which it may develop and the potential seriousness of her situation to include the hypertension and pre-eclampsia patient information leaflet (Refer to Appendix B)
- A mechanism to report and act on any new symptoms that she may notice herself; encourage her to self monitor
- Patient handheld records or a DAU summary from her assessment
- A follow-up appointment
- Allocation to a named obstetric consultant
- Agreed mechanisms by which the patient will be informed of her test results and discuss any change to her antenatal care plan within 24 hours
- An understanding that she can be proactive in following up any results and arranging a follow up appointment if the contact arrangements do not work

16.0 Staffing and Training

16.1 All midwifery and obstetric staff must attend yearly statutory training which includes skills and drills training.

16.2 All midwifery and obstetric staff are to ensure that their knowledge and skills are up-to-date in order to complete their portfolio for appraisal.

17.0 Infection Prevention

17.1 All staff should follow Trust guidelines on infection control by ensuring that they effectively 'decontaminate their hands' before and after each procedure.

17.2 All staff should ensure that they follow Trust guidelines on infection prevention. All invasive devices must be inserted and cared for using High Impact Intervention guidelines to reduce the risk of infection and deliver safe care. This care should be recorded in the Saving Lives High Impact Intervention Monitoring Tool Paperwork (Medical Devices).

18.0 Audit and Monitoring

18.1 As an integral part of the knowledge, skills framework, staff are appraised annually to ensure competency in computer skills and the ability to access the current approved guidelines via the Trust's intranet site.

18.2 Quarterly memos are sent to line managers to disseminate to their staff the most currently approved guidelines available via the intranet and clinical guideline folders, located in each designated clinical area.

18.3 Guideline monitors have been nominated to each clinical area to ensure a system whereby obsolete guidelines are archived and newly approved guidelines are now downloaded from the intranet and filed appropriately in the guideline folders. 'Spot checks' are performed on all clinical guidelines quarterly.

18.4 Quarterly Clinical Practices group meetings are held to discuss 'guidelines'. During this meeting the practice development midwife can highlight any areas for further training; possibly involving 'workshops' or to be included in future 'skills and drills' mandatory training sessions.

18.5 Where a patient's notes have demonstrated that the appropriate action has not been taken a 'risk event form' is to be completed. This will address any further training needs for staff that require updating.

18.6 During the investigative process of reviewing 'risk event forms', numerous sets of notes will be requested and analysed in relation to compliance with the guidelines and identify where there is either non-compliance and where the guidance does not support the evidence based practice. This can be demonstrated in the Risk Management data trend analysis. Furthermore this process can also identify areas of good practice.

19.0 Communication

19.1 A quarterly 'maternity newsletter' is issued and available to all staff including an update on the latest 'guidelines' information such as a list of newly approved guidelines for staff to acknowledge and familiarise themselves with and practice accordingly.

19.2 Approved guidelines are published monthly in the Trust's Staff Focus that is sent via email to all staff.

19.3 Approved guidelines will be disseminated to appropriate staff quarterly via email.

19.4 Regular memos are posted on the 'Risk Management' notice boards in each clinical area to notify staff of the latest revised guidelines and how to access guidelines via the intranet or clinical guideline folders.

20.0 References

Brown MA, Buddle ML (1995) Inadequecy of dipstick proteinuria in hypertensive pregnancy, Australian and New Zealand of Obstetrics & Gynaecology 35(4):366-369.

CEMACH, Why Mothers Die. (2004) 6th Peport of confidential Enquiries into Materna and Child Health.2000-2003 CEMACH RCOG London:

CEMACH Saving Mothers Lives (2007) 7th report of confidential Enquiries into Maternal and Child Health, 2003-2005. CEMACH RCOG London: 2007.

Royal College of Obstetricians and Gynaecologists (2006) Management of severe pre-eclampsia/eclampsia, Green Top Guideline10 (A), RCOG, London.

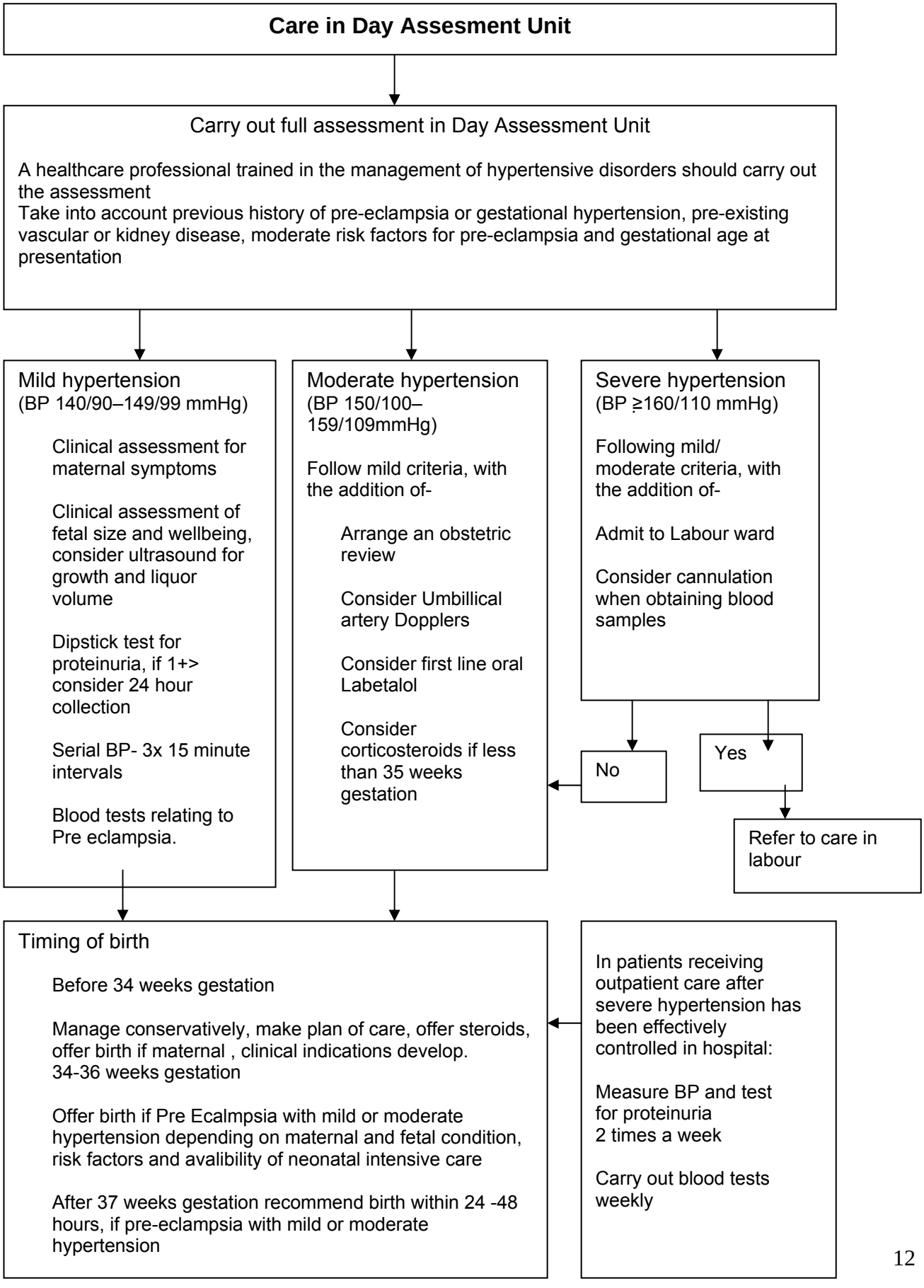
Pre-eclampsia Community Guideline (2004) March. PRECOG

Pre-eclampsia Community Guideline PRECOG DAU Guideline. 2008. (www.apec.org.uk)

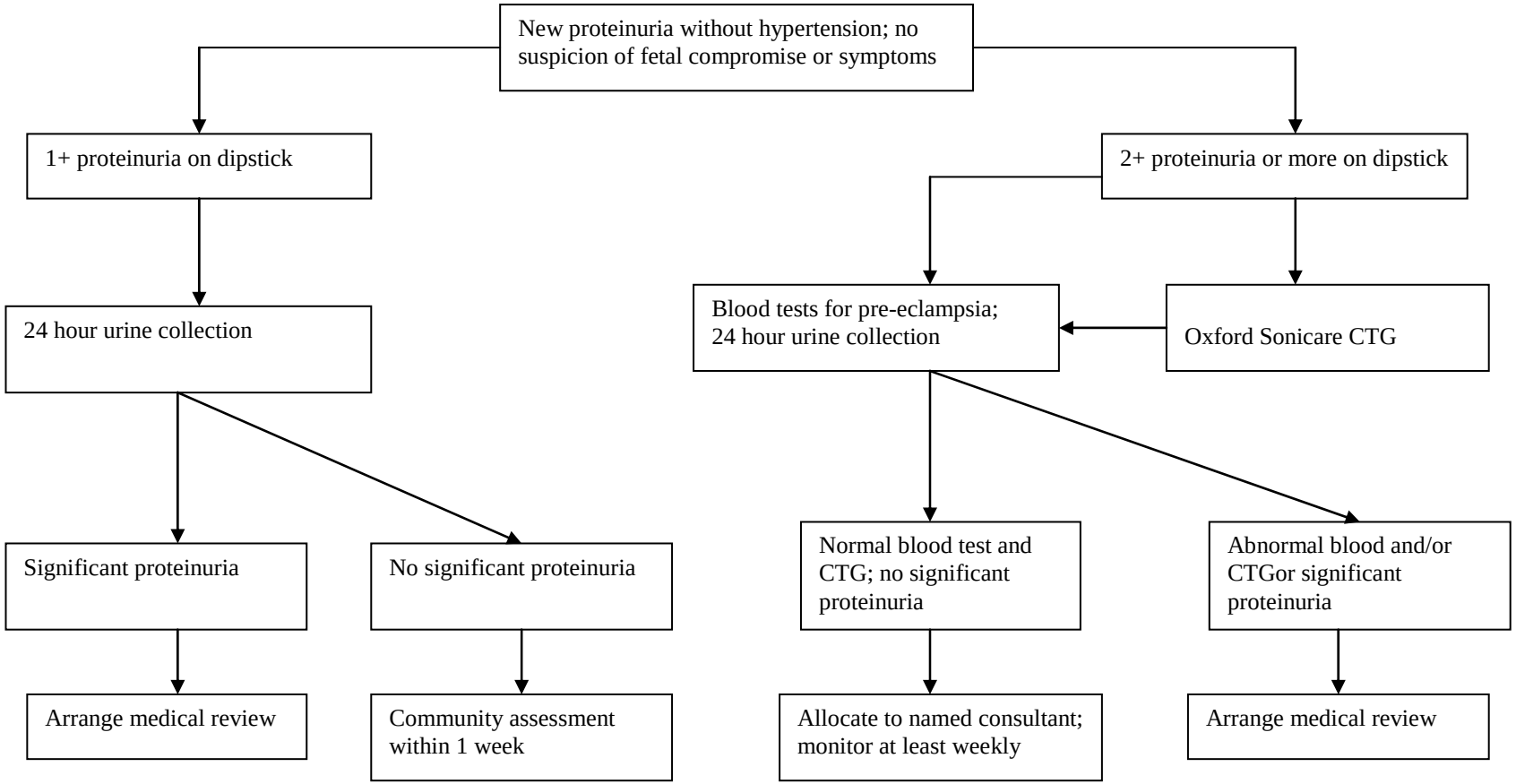
Quinn M (1997) Blood pressure measurement in pregnancy, British Journal of Obstetrics and Gynaecology 104(4):509-510.

Appendix A

Hypertension/ Pre Eclampsia Flowchart



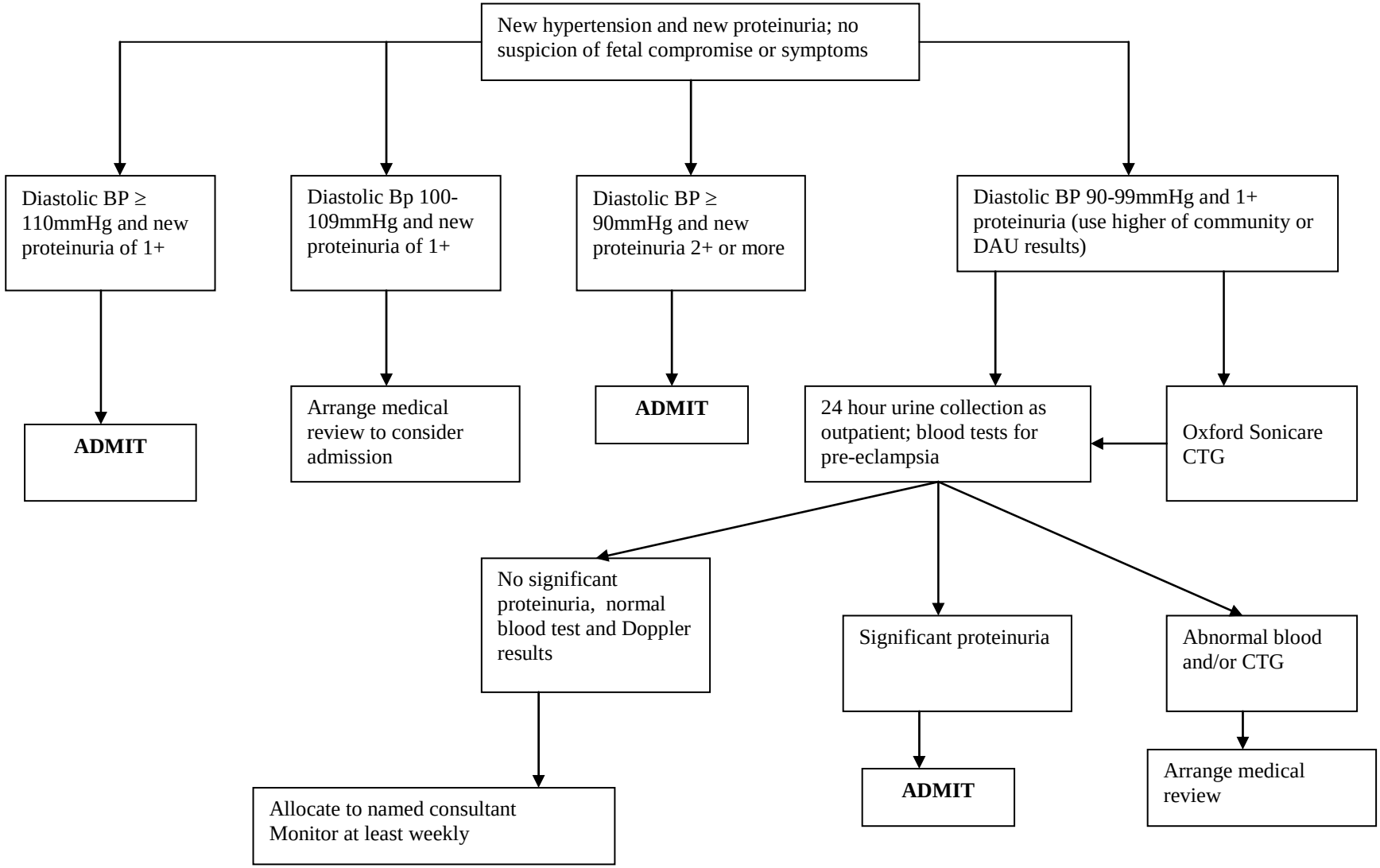
RECOMMENDATION 10: FLOWCHART 1



Key: PCR: Urinary protein creatinine ratio Blood tests for pre-eclampsia: platelet count; AST or ALT; serum creatinine; serum urate

Guideline: precog DAU/ recommendation 10 flowcharts

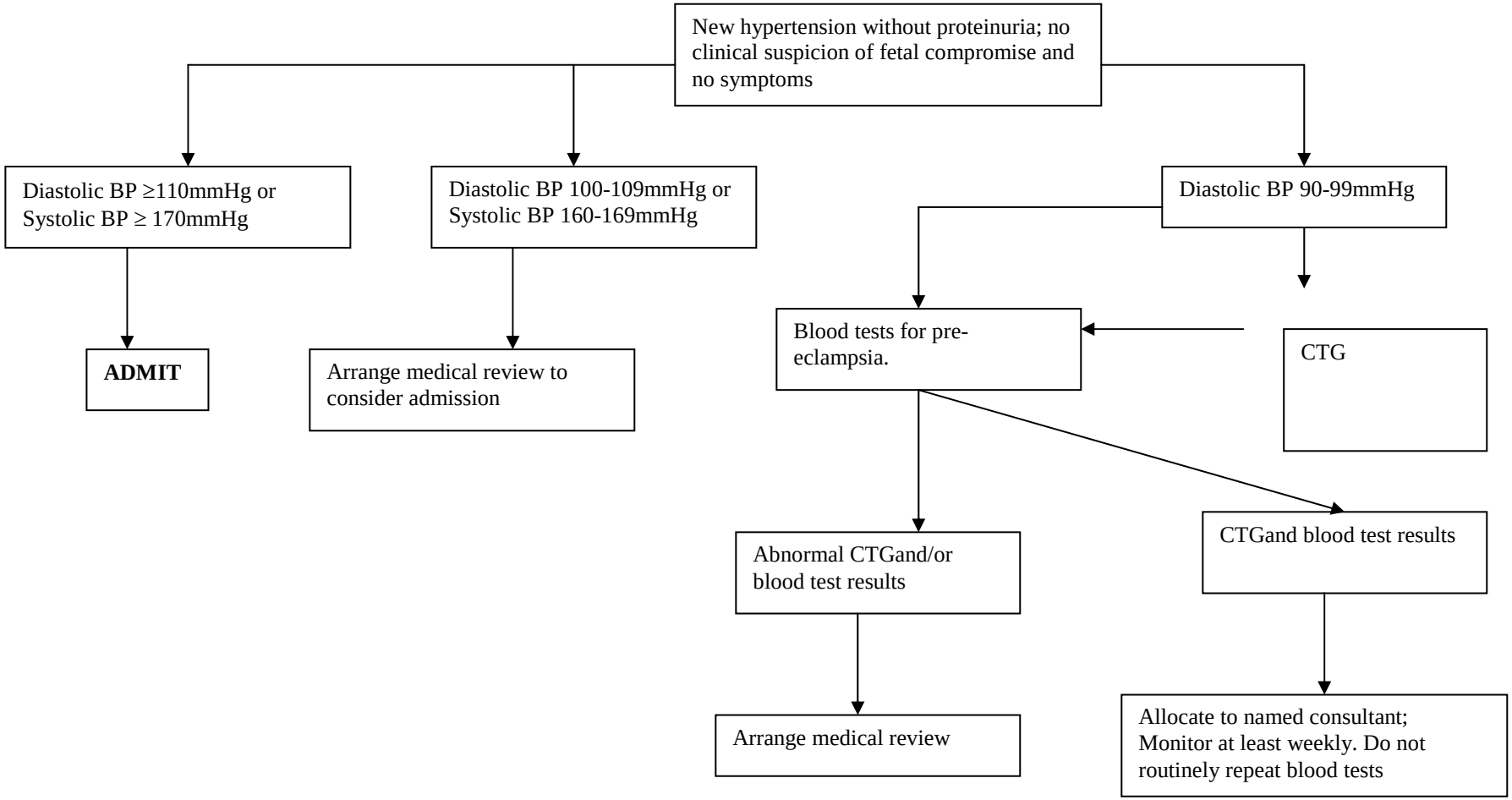
RECOMMENDATION 10: FLOWCHART 2



Key: PCR: Urinary protein creatinine ratio Blood tests for pre-eclampsia: platelet count; AST or ALT; serum creatinine; serum urate

Guideline: precog DAU/ recommendation 10 flowcharts

RECOMMENDATION 10: FLOWCHART 3



Key: PCR: Urinary protein creatinine ratio Blood tests for pre-eclampsia: platelet count; AST or ALT; serum creatinine; serum urate

Guideline: precog DAU/ recommendation 10 flowcharts

Maternity Department

High Blood Pressure and Pre-eclampsia

Information for pregnant women

What is blood pressure?

It is a measure of force at which blood pumps around your body. Your blood pressure recording at your first antenatal checks gives us an idea of what is normal for you, and is useful to compare later recordings in the pregnancy.

What is high blood pressure?

Normal blood pressure varies from person to person; so it follows that high blood pressure will also vary from person to person.
If the doctor or midwife feel that your blood pressure id obviously higher than your normal reading they will monitor you by doing regular checks on your blood pressure; they may refer you to the Day Assessment Unit for further tests. In some cases this may include giving you medication that can help control your blood pressure. This medication will be safe for you to use while pregnant.

What is pre-eclampsia?

It is a serious disturbance in blood pressure, which becomes excessively raised and can affect the function of the kidneys and the central nervous system. This condition only occurs in women during pregnancy or sometimes shortly after the birth of the baby. It affects about 1:10 pregnancies and is more common in first pregnancies or in women who are having a baby with a new partner.
Pre-eclampsia usually only develops in the last eight weeks of pregnancy. It can sometimes develop earlier or it may develop only during labour of after the baby is born.

1. **If you have pre-eclampsia during pregnancy, the condition disappears once the baby is born.**
2. **If you have pre-eclampsia after the baby is born (which is less common), you will need treatment with medications.**

Who is at risk?

If you already have one of the following existing conditions, you run a greater risk of developing pre-eclampsia;

- High blood pressure.
- Diabetes.
- Kidney problems, or have had pre-eclampsia in a previous pregnancy

What are the signs of pre-eclampsia?

- A significant rise in your blood pressure compared to normal blood pressure.
- Bad headaches that don't go away, particularly at the front of your head.
- Blurred vision or tunnelling.
- Discomfort below your ribs, particularly to the right.
- Vomiting –(not morning sickness). Feeling generally unwell.
- Swelling of your hands, feet or face.
- Not all women will develop all the signs of pre-eclampsia but should report any of the above symptoms to your midwife or doctor.

What next?

- Once the condition starts to develop during pregnancy, it will not stop until the baby is born; for this reason, if you have pre-eclampsia you will need to be closely monitored in hospital.
- Monitoring involves regular checking of blood pressure, urine tests, blood tests, and checking the baby's wellbeing and growth.
- If you become unwell as a result of pre-eclampsia, you may well need to have labour induced or a caesarean section earlier than normal to deliver your baby, as this is the only effective cure!
- If you develop pre-eclampsia after the baby is born you will need treating with medications.
- The doctor and midwives will keep you and your partner fully informed at all stages of this condition.
- Not all women will develop all the signs of pre-eclampsia but you should report any of the above symptoms to your midwife or doctor.

For further information please contact:

Day Assessment unit 01245 513355