

Midwifery basics: caring for women with medical conditions (1)

Hypertensive disorders of pregnancy



In the first article of the new series, **Anne Fallon** and **Christina Engel** look at the midwife's role in caring for women with hypertensive disorders of pregnancy

'Caring for women with medical conditions' is the eighth series of 'Midwifery basics' targeted at student midwives, and aims to raise awareness of the needs of these women during pregnancy and beyond. This first article considers hypertensive disorders in pregnancy. The aim is to provide an overview of the hypertensive disorders that may impact on a woman during her pregnancy, screening methods used, care required and a discussion of the role of the midwife in the provision of woman-centred care. Students are encouraged to seek further information through a series of activities relating to this topic.

Introduction

Hypertensive disorders affect approximately 6-8 per cent of women in pregnancy (National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy 2000). They remain the second leading direct cause of maternal deaths (Lewis 2007), with a significant effect on maternal morbidity (Kim et al 2005, Bellamy et al 2007), stillbirths, neonatal morbidity and mortality (Confidential Enquiry into Maternal and Child Health 2008). Maternal complications may include abruptio, DIC (Disseminated Intravascular Coagulation), HELLP (Haemolysis, Elevated Liver Enzymes, Low Platelets), pulmonary oedema, acute renal failure, eclampsia, liver failure or haemorrhage. Neonatal complications may include preterm birth, fetal growth restriction, hypoxic-neurological injury, perinatal death and long-term cardiovascular morbidity (Sibai et al 2005).

Despite the prevalence, serious consequences and research into hypertensive disorders in pregnancy, their exact cause remains unclear. However, it has been suggested that defective placental implantation (Sibai et al 2008) and an

immunological response to pregnancy play a major role (NHBPEP 2000). Conditions such as primigravid status, pre-existing hypertension, renal disease, diabetes mellitus, previous pre-eclampsia, a genetic tendency towards hypertension and change of partner have been associated with hypertension of pregnancy (Billington and Stevenson 2007).

Physiological changes in pregnancy

Physiological changes occurring in pregnancy have an effect on the woman's blood pressure. This is a normal response to pregnancy. This results in a fall in diastolic blood pressure of 10mmHg from non-pregnant values in the second trimester, with an increase in values to pre-pregnancy levels by the third trimester (Peters and Flack 2004).

Activity 1

- What effect would you expect to find on a woman's blood pressure as a result of the normal physiological response to pregnancy?
- How might this impact on the diagnosis of a hypertensive disorder in pregnancy?

Hypertensive disorders

Hypertensive disorders may predate pregnancy or develop in pregnancy, and may persist after the birth well into the postnatal period. Therefore, the classification of hypertension in pregnancy relates to the time of onset and the presence of other symptoms. Hypertensive disorders induced by pregnancy include gestational hypertension, pre-eclampsia, eclampsia or pre-eclampsia superimposed on chronic hypertension. Hypertensive disorders that predate pregnancy relate to chronic

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hypertension. The classification system described by the National High Blood Pressure Education Program Working Group (NHBPEP 2000) (Table 1) is used with the inclusion of a recent definition for hypertension and proteinuria of pre-eclampsia described by the National Institute for Health and Clinical Excellence guidelines on antenatal care (NICE 2008).

Gestational hypertension describes hypertension that originates in pregnancy without accompanying proteinuria. However, it is often not possible to diagnose correctly until the postpartum period when blood pressure returns to normal values after 12 weeks postpartum. Women who develop gestational hypertension are also at risk of developing pre-eclampsia and eclampsia; careful monitoring of these women is therefore required (Cunningham et al 2005).

Pre-eclampsia is a pregnancy-specific disorder that characteristically presents with hypertension and proteinuria after 20 weeks' gestation. It is a multi-system disorder, where there is potential for widespread endothelial damage; therefore, every organ can be affected, with significant haematological, renal, hepatic, neurological, placental and fetal effects (Table 2).

Hypertension is diagnosed with a single diastolic reading of 110mmHg or two consecutive readings of 90mmHg at least four hours apart, and proteinuria is defined as 300mg of protein in a 24-hour collection of urine, +2 protein on dipstick in two clean urine catches at least four hours apart, but increased surveillance with +1 proteinuria on dipstick is required (NICE 2008). However,

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as every system can be affected with this condition, the signs and symptoms may be more extensive than hypertension and proteinuria. Therefore, pre-eclampsia is also considered in the absence of proteinuria but in the presence of other symptoms. The woman is informed of the significance of these signs and symptoms, which may include severe headache, blurred vision or flashing before the eyes, severe pain below the ribs, vomiting and sudden swelling of the face, hands or feet (NICE 2008).

Severe pre-eclampsia occurs in 5/1,000 women during the maternity period (RCOG 2006). It is confirmed when the diastolic blood pressure is recorded as ≥ 110 mmHg on two occasions or when the systolic blood pressure reads ≥ 170 mmHg on two occasions and there is significant proteinuria of at least 1g/litre (RCOG 2006). However, a systolic blood pressure of 160mmHg on two consecutive occasions is significant and requires treatment (Lewis

2007, NICE 2008). Clinical signs of severe pre-eclampsia include:

- severe headache
- visual disturbances
- epigastric pain
- vomiting
- signs of clonus
- papilloedema
- liver tenderness
- platelet count below $100 \times 10^6/L$
- abnormal liver enzymes (ALT or AST rising to above 70 iu/l)
- HELLP syndrome (Haemolysis, Elevated Liver Enzymes, Low Platelets) (RCOG 2006).

Eclampsia occurs in approximately 5/10,000 women during the maternity period (RCOG 2006). It is defined as the occurrence of one or more seizures superimposed on pre-eclampsia. Seizures may occur in pregnancy, during labour or in the postnatal period.

It is important that the woman seeks preconception care so that a full examination, suitability of medications and risk assessment are carried out – and appropriate counselling provided

Chronic hypertension affecting approximately 5 per cent of women in pregnancy is diagnosed when a B/P of 140/90 (Seely and Maxwell 2007) has been recorded prior to pregnancy, or before 20 weeks' gestation or for up to 12 weeks postnatally.

Pre-eclampsia superimposed on chronic hypertension

The presence of chronic hypertension places the woman at increased risk of developing pre-eclampsia, with greater risk for mother and fetus than with either condition on its own (NHBPEP 2000). Difficulties can arise in differentiating between worsening chronic hypertension and superimposed pre-eclampsia. Close observation of mother and fetus is required when superimposed pre-eclampsia is suspected.

Activity 2

- Outline the five hypertensive disorders of pregnancy as classified by the NHBPEP (2000).
- Differentiate between gestational hypertension and pre-eclampsia.
- Differentiate between gestational hypertension and chronic hypertension.
- What gestational age is significant when considering a diagnosis of pre-eclampsia?
- What blood pressure measurement and proteinuria measurement is used to define pre-eclampsia according to NICE (2008)?

Table 1 Classification of hypertension in pregnancy

Onset	Classification	Markers
Hypertensive disorders that develop in pregnancy	Gestational hypertension	BP $\geq 140/90$ mmHg in pregnancy. No proteinuria. BP normal within 12 weeks postnatally.
	Pre-eclampsia	A single diastolic blood pressure of 110mmHg; <i>or</i> Any consecutive diastolic recording of 90mmHg on more than one occasion at least four hours apart. Proteinuria is defined as 300mg of protein in a 24-hour collection of urine, two clean urine samples at least four hours apart with +2 proteinuria on dipstix (NICE 2008).
	Eclampsia	Seizure with no other known cause in a woman with pre-eclampsia.
Hypertensive disorders that predate pregnancy	Pre-eclampsia superimposed on chronic hypertension	New onset proteinuria ≥ 300 mg/24 hours after 20 weeks' gestation in hypertensive women.
	Chronic hypertension	B/P $\geq 140/90$ mmHg before pregnancy; <i>or</i> Diagnosed before 20 weeks' gestation and persisting beyond 12 weeks postnatally.

(Adapted from NHBPEP 2000)

Preconception

The aim of preconception care is to 'identify and modify biomedical, behavioural and social risks to a woman's health or pregnancy outcome through prevention and management' (Lu 2007: 397). Risk factors can readily be identified when a comprehensive history is taken from the woman – health and lifestyle counselling may be an appropriate intervention. There can be a single factor or a combination of factors during the preconception period that may increase the woman's risk of developing hypertensive disorders. For some women this increased risk can be associated with

excessive use of alcohol, smoking and obesity. Underlying medical conditions such as diabetes mellitus and renal disease can predispose to hypertension (Billington and Stevenson 2007). In relation to hypertensive disorders, it is important that the woman seeks preconception care so that a full examination, suitability of medications (Seely and Maxwell 2007) and risk assessment are carried out – and appropriate counselling provided. Preconception counselling is offered in the postnatal period to women who have experienced a hypertensive disorder in pregnancy.

Identifying risk factors, screening for raised blood pressure and proteinuria at every antenatal visit, and informing women of symptoms of pre-eclampsia remain the cornerstone of good practice

TABLE 2 Pre-eclampsia – a multisystem disorder

System	Physiological processes	Symptoms	Investigations
Haematological	Haemoconcentration Widespread endothelial damage results in activated platelet production, leading to low platelets (Morley 2004)	Coagulation disorders may result in severe cases	Raised haematocrit and haemoglobin Thrombocytopenia Occasionally, fibrin degradation products are raised (NHBPEP 2000)
Renal	Perfusion and glomerular filtration are reduced (NHBPEP 2000)	Proteinuria	Hyperuricaemia Rise in creatinine levels with oligouria is suggestive of severe pre-eclampsia (August 2004)
Hepatic	Vasospasm in the liver results in small haemorrhages and hypoxic swelling. The effects can vary from mild to severe (Morley 2004)	Epigastric pain Vomiting	An AST or ALT above 75 iu/l significant (RCOG 2006)
Neurological	Eclampsia is the most common CNS disorder associated with pre-eclampsia Cerebral oedema and haemorrhage may occur	Headache Visual disturbances Seizure (Women with mild or moderate hypertension may experience seizures)	Neuroimaging studies reveal cerebral changes (Cunningham et al 2005)
Placental and fetal effects	Trophoblastic invasion is impaired, causing constriction of spiral arteries with restricted maternal uteroplacental blood flow (August 2004)	Placental insufficiency Intrauterine growth restriction (IUGR) Reduced growth on abdominal palpation Reduced liquor volume	Ultrasound for fetal growth, liquor volume and umbilical artery Doppler

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Activity 3

- Consider the midwife's role as part of a multidisciplinary team in providing preconception care to the woman at risk of hypertensive disorders.

Antenatal care: screening

The midwife has an important role in caring for women during the antenatal period in screening for hypertensive disorders. Although there is a growing body of work on various screening tests for pre-eclampsia, none are as yet recommended for routine use (NICE 2008). Therefore, identifying risk factors, screening for raised blood pressure and proteinuria at every antenatal visit, and informing women of symptoms of pre-eclampsia remain the cornerstone of good practice in screening for hypertensive disorders (NICE 2008).

1. Identifying risk factors

At the booking visit, an accurate and thorough history is taken from the woman to reveal any risk factors. These include:

- age over 40 years
- nulliparity
- pregnancy interval of more than 10 years
- previous history of pre-eclampsia
- body mass index of $30\text{kg}/\text{m}^3$
- pre-existing vascular disease – eg, hypertension
- pre-existing renal disease
- multiple pregnancy (NICE 2008).

2. Screening for raised blood pressure and proteinuria

All women should be screened for pre-eclampsia at every antenatal visit through blood pressure measurement and urinalysis for protein (NICE 2008). Women with risk factors may be required to have more frequent blood pressure measurements. It is important to note that supine hypotension will cause a severe fall in blood pressure if the woman's blood pressure is recorded while she is lying down. Standardised methods of blood pressure measurement are required, and caution is advised when automated devices are used to record blood pressure (RCOG 2006). The following recommendations on the procedure are from the NICE guidelines (2008):

- Remove tight clothing around the arm, support the arm at heart level and ensure the woman's hand is relaxed.
- Use appropriate cuff size.
- Inflate cuff to 20-30mmHg above palpated systolic pressure.
- Read and record blood pressure to nearest 2mmHg.
- Diastolic blood pressure is recorded at the disappearance of the Korotkoff sounds phase V (NICE 2008).

Urinalysis

A visual dipstick assessment is the most common method of protein estimation. However, false negatives and false positives have occurred. Therefore, a 24-hour urine collection is recommended to confirm significant proteinuria (RCOG 2006).

3. Symptoms of pre-eclampsia

All women in pregnancy should be informed to seek immediate advice if they experience symptoms of pre-eclampsia, which include:

- severe headache
- visual disturbances – eg, blurred vision and flashing in front of eyes
- severe pain below ribs
- vomiting
- sudden swelling of face, hands or feet.

Activity 4

- What are the risk factors for developing pre-eclampsia?
- Why is it important not to record a woman's blood pressure while she is lying down?
- What methods are used to measure the presence of protein in urine? Which method is more reliable?
- What are the symptoms of pre-eclampsia? What is the physiological basis for these symptoms?
- Perform an accurate midwifery assessment of the woman at her first antenatal visit.
- Develop a plan of care for the woman based on your assessment findings.

Antenatal care

Pre-eclampsia may develop in severity from a mild to a severe form. Expectant management is considered when the woman presents with a milder form of the disorder; however, should the woman's

Where there is concern about eclampsia developing, the drug of choice to prevent seizures is magnesium sulphate. However, it has a narrow therapeutic range, with toxicity resulting in respiratory depression. Careful monitoring of the woman's condition is therefore required

condition deteriorate, medication, fluid monitoring, regular assessment of blood picture and intensive maternal and fetal monitoring will be required (Billington and Stevenson 2007). Fetal assessment involves ultrasound assessment for growth, weight, liquor volume and umbilical arterial artery Doppler (RCOG 2006). In addition, the woman will be asked about fetal activity, and a cardiograph recording will be made. Hospitalisation will be required for any woman presenting with pre-eclampsia to allow for a thorough maternal and fetal assessment and intervention as appropriate.

Antihypertensive medication is indicated with a systolic blood pressure over 160mmHg or a diastolic blood pressure of more than 110mmHg (RCOG 2006). Treatment may also be considered when blood pressure recordings are lower but when the woman has other markers for severe pre-eclampsia. Labetalol (orally or intravenously), nifedipine (orally) or hydralazine (intravenously) may be used (RCOG 2006).

Where there is concern about eclampsia developing, the drug of choice to prevent seizures is magnesium sulphate (RCOG 2006). Its efficacy

was established through the Magpie Trial (Altman et al 2002). Magnesium sulphate acts as a smooth muscle relaxant, relieving cerebral vasospasm through vasodilation. However, it has a narrow therapeutic range, with toxicity resulting in respiratory depression. Careful monitoring of the woman's condition is required, with calcium gluconate, the antidote, being readily available (Morley 2004).

Activity 5

- Consult local guidelines in your hospital on caring for women with hypertensive disorders in pregnancy.

Care in labour

The only known treatment for pre-eclampsia is birth of the fetus and placenta. However, the effect of birth may not always occur straight away as complications may persist for several days after birth with a continued risk of eclampsia (Peters and Flack 2004). The decision about timing of birth is made with appropriate senior medical personnel once the woman's condition is stable. If the fetus is less than 34 weeks' gestation and birth is not urgent, corticosteroids are administered. Conservative management may improve perinatal outcomes; however, the maternal condition must be considered. The mode of birth depends on the presentation of the fetus, fetal condition and cervical assessment (RCOG 2006).

The third stage of labour is managed with syntocinon. Ergometrine and syntrometrine are avoided, due to the risk of increasing the woman's blood pressure further (RCOG 2006).

Activity 6

- Find out the reasons for giving corticosteroids. What is the dose and method of administration?
- Read the following guidelines:
 - NICE (2008). *Antenatal Care: Routine Care for the Healthy Pregnant Woman*, 2nd ed, Clinical Guideline No 62, London: RCOG Press, 218-228.
 - RCOG (2006). *The Management of Severe Pre-Eclampsia/Eclampsia*, Guideline No 10 (A), London: RCOG Press.

Postnatal care

The postnatal period is a time of immense change and emotion for the woman. For the woman with a hypertensive disorder – eg, pre-eclampsia – the situation may be much more complex due to the possibility of having a premature baby, separation from the baby and a continuing concern over the existing medical condition. Therefore, the midwife's role involves ongoing and close observation of the mother's and baby's wellbeing, continuous care and also support for the mother's transition to motherhood. If the mother and baby have been separated due to the need for neonatal intensive care, then further steps are taken to ensure that mother and baby are reunited as soon as possible.

During the postnatal period antihypertensive therapy will be continued as indicated by the woman's blood pressure, and in some cases it may be necessary to continue it for several weeks or months. It is also important during the postnatal period to ensure that any medication used is suitable for use with breastfeeding mothers. Close observation of the woman's condition will be required, with worsening signs and symptoms of pre-eclampsia requiring immediate referral and urgent action. The risk of eclampsia continues into the postnatal period.

A six-week postnatal assessment by the woman's GP should include a blood pressure and urinalysis assessment for proteinuria. If hypertension and proteinuria persist, further investigations will be required. If the woman experienced severe pre-eclampsia/eclampsia, she should be invited to return for a formal review to discuss the pregnancy and preconception counselling that would be offered (RCOG 2006).

Activity 7

- What are the signs and symptoms of a postpartum woman who may be at risk of developing eclampsia?
- What type of urine specimen would you obtain from the postpartum woman in order to check for proteinuria?

The role of the midwife

The World Health Organization (WHO) states that the midwife is the most

The only treatment for pre-eclampsia is delivery of the fetus and placenta. If the fetus is less than 34 weeks' gestation and delivery is not urgent, corticosteroids are administered

appropriate and cost-effective healthcare provider to be assigned to the care of women during normal pregnancy and normal birth, including risk assessment and the recognition of complications (WHO 1996). Pregnancy for the majority of women will be a physiologically normal journey that results in a healthy baby at approximately 40 weeks' gestation, and the holistic care of women along this journey of pregnancy and birth is well within the scope of practice of the midwife practitioner. The EEC Directive on the 'Activities of a Midwife' (Council of the European Communities 1980) states that a registered midwife has the competence and authority 'to recognise the warning signs of abnormality in the mother or infant which necessitate referral to a doctor and to assist the latter where appropriate'.

Provision of holistic care

The diagnosis of a medical condition, such as hypertension, may come as a complete shock to the pregnant woman, who up until the time of diagnosis would most likely have been feeling well. The onset of hypertensive disorders may be gradual or a sudden fulminating condition may present, and the woman's reaction to her diagnosis may reflect the gradual or sudden onset.

All women having babies require midwifery care. Central to midwifery is woman-centred care that is focused on the woman's needs and which respects the woman's choice. It is the woman's right that this care is delivered in a professional, safe and competent manner. Outlined in the Patient's Charter (Dimond 1994), women have the right to informed choice ▶

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For the majority of women who develop a medical condition during the childbirth period, this may be the first time in their lives they have faced a potentially life-threatening illness. As a result, many will suffer psychological responses

and informed consent; and, as a human right, they should be shown respect for their ethnicity and value system.

For women who develop a medical condition such as a hypertensive disorder during the childbirth period, the midwife will need to employ all her professional skills: midwifery care and accountability, meeting the woman's informational needs and those of her family, providing support and counselling in an empathic way, working effectively within the multidisciplinary team and appropriate documentation of all relevant data are all within the scope of practice of the midwife. It is also the midwife's professional duty of care to act as the woman's advocate in all matters relating to her healthcare (Nursing and Midwifery Council 2008).

For the majority of women who develop a medical condition during the childbirth period, this may be the first time in their lives they have faced a potentially life-threatening illness. As a result, many will suffer one or more of the following psychological responses: apprehension, anxiety, confusion, fear, denial and dread that may or may not be related to the severity of their illness. Hospitalisation alone can be a 'disabling' experience for many people. When a hypertensive disorder arises during pregnancy and/or labour, the majority of women will express more

concern for the vulnerability of the fetus/baby's life than for their own.

In the event of a preterm birth, or birth of a compromised baby, this will bring with it a huge array of emotions with which the midwife is professionally capable of dealing, 'all things being equal'. However, in the present climate midwives are frequently working under stressful conditions, so it is good to remind ourselves that giving that bit of extra time to someone in a warm and empathic way is one of the most precious things we can do for the woman and her baby and that 'being with women' is not generally taken for granted.

Women and their families will often remember gestures of kindness by a midwife or other healthcare professional – often when they have needed it most – for many years to come, and it can turn things around for consumers of care to know that professionals 'do care'. Unfortunately, the reverse can often be experienced by women in a busy maternity hospital environment, and as midwives we are only too aware of this from complaints and litigation – often brought about by the birth of less than professional care and inadequate communication and documentation (Lewis 2007) provided in our maternity units. Suffice to say that inadequate communication can relate both to our interaction with consumers of care and to sharing relevant information with other healthcare professionals.

Activity 8

- Demonstrate skills in reflective practice.
- Evaluate research related to women's satisfaction with midwifery care.

Conclusion

For many women, a hypertensive disorder of pregnancy is not a preventable condition, and we are still left with pre-eclampsia as a 'disease of theories' (Roberts and Cooper 2001: 53). However, risk factors are identifiable by effective history-taking, routine antenatal assessment and screening and prevention of an escalation of the woman's symptoms – all clearly within the scope of modern obstetric and midwifery care. Health promotion, health

education, assessment and support are core aspects of midwifery care; delivered in a professional and empathic way, they will enable the woman to have an awareness of her changing body and what changes may or may not be within the normal parameters of pregnancy and childbirth. We have only to look at the triennial publication of the Confidential Enquiry into Maternal and Child Health findings in recent years to learn that many women still die each year and many more suffer severe morbidity from undetected hypertensive

Effective communication and documentation are essential components of safe and effective healthcare

disorders during the childbirth period.

Routine antenatal care needs to be individualised and woman-centred; and, as in any aspect of maternity care, midwives and other healthcare professionals need to 'listen to the woman' as there may be a combination of factors that warrant further investigation and intervention if appropriate. Effective communication and documentation are essential components of safe and effective healthcare, and in our multicultural society it can sometimes be a challenge – albeit not an insurmountable one – to communicate effectively with women and their families from different cultural origins and who do not speak the same language as the caregiver.

Lest we forget, we are dealing not just with a disorder or a condition but with a woman who needs professional, woman-centred care. This is where our true role as midwives can come to the fore, and we will then understand what 'being with woman' really means. **TPM**

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