

PRECOG: The Pre-eclampsia Community Guideline

The Pre-eclampsia Community Guideline

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Why is a guideline needed?

Pre-eclampsia is a major cause of poor pregnancy outcome, including maternal and fetal mortality and severe obstetric morbidity. The category 'Hypertensive diseases of pregnancy' remains the second leading cause of direct maternal deaths in the UK (*Confidential Enquiries into Maternal Deaths*, 2001) and pre-eclamptic conditions (severe pre-eclampsia, HELLP syndrome, eclampsia) represent one in three cases of severe obstetric morbidity as reported by Waterstone et al, 2001.

For the infant, hypertension and/or proteinuria is the leading single identifiable risk factor in pregnancy associated with stillbirth (one in five stillbirths in otherwise viable babies). About 7% of stillbirths are directly caused by pre-eclampsia (*Confidential Enquiry into Stillbirths and Deaths in Infancy* 1999, 2001). Pre-eclampsia is also associated with fetal growth restriction, low birth weight, preterm delivery, small for gestational age (SGA) infants and respiratory distress syndrome (The Magpie Collaborative Group, 2002).

Most of the deaths due to pre-eclampsia have been associated with substandard care, and with two main areas within primary care. One is the failure to identify and act on known risk factors at booking and the second is the failure to recognize and act appropriately on signs and symptoms from 20 weeks' gestation. In 80% of maternal deaths and 65% of fetal deaths, the woman and baby received "major substandard" care: in other words, care that contributed significantly to the death, and where different management would reasonably have been expected to alter the outcome (*Confidential Enquiries into Maternal Deaths* 2001, *Confidential Enquiry into Stillbirths and Deaths in Infancy* 1999, 2001).

While there are a number of guidelines available for the in-patient management of pre-eclampsia, there is no guideline for the screening and early detection of pre-eclampsia in the community. Nor is there a national guideline for referral from community to step-up care: a survey of all UK maternity units (Action on Pre-eclampsia, 2002) has shown that while obstetric day units are available in 75% of hospitals, and all investigate women with suspected pre-eclampsia, there is no uniformity in referral thresholds to the units or in the subsequent management.

What can be done?

This guideline therefore includes:

- A simple assessment that can be conducted at booking, to identify women who are more likely to develop pre-eclampsia in that pregnancy.
- Factors related to pre-eclampsia which require referral for specialist input early in pregnancy.
- A systematic community assessment for indications of onset of pre-eclampsia from 20 weeks' gestation. The frequency of assessment is determined by the likelihood of developing pre-eclampsia.

The guideline therefore offers a framework for antenatal care in the community in which a pregnant woman with pre-eclampsia receives specialist care at the appropriate time for the best outcome for her and her baby.

How the guideline has been developed

The guideline has been developed by a multi-professional and lay working group (the PRECOG development group) representing parties involved in the provision or use of maternity services in the UK. The group was convened by the national charity Action on Pre-eclampsia and has been funded in part through educational grants or grants in kind from Bayer plc and GlaxoSmithKline plc. The group included obstetricians and obstetric physicians who specialise in pre-eclampsia; representatives from teaching hospitals, district general hospitals and day-care obstetric units; general practitioners; midwives; and a health economist. Among the group were nominated representatives of the Royal College of Midwives, Royal College of General Practitioners, and from two key user groups: the National Childbirth Trust and Action on Pre-eclampsia. Please see page 20 for names of participants.

The group followed a guideline development process that drew on methodology outlined in the NHS National Institute for Clinical Excellence publication, *The Guideline Development Process – Information for National Collaborating Centres and Guideline Development Groups* (December 2001) and the British Medical Journal criteria for guidelines, which is adapted from the US Agency for Healthcare Policy and Research.

The PRECOG development group first defined the remit of the guideline, after which a systematic review of the literature was conducted. The recommendations were developed by the group and graded according to the levels of evidence on which they were based. In the guideline, the recommendations are explicitly linked to the highest level of evidence available.

The accompanying document, *Evidence Used to Develop the PRECOG Guideline*, gives more detail of the methodology of the process, and the evidence supporting each recommendation. It includes:

- A description of each relevant study or meta-analysis of studies, from systematic review, which were considered in the development of the recommendation. Each piece of evidence is graded.
- A summary of the evidence, consideration of other guidelines and consensus of the Pre-eclampsia Community Guideline (PRECOG) development group.
- The subsequent recommendation graded according to the highest level of evidence available.

At the same time, a national survey of maternity units across the UK (Action on Pre-eclampsia, 2002) provided data on the patterns of referral into hospital day units for suspected pre-eclampsia, and assessment procedures and policies. This information was fed into the development group and also used to provide a statement on resource implications.

Minutes of the three PRECOG guideline development meetings are held at the APEC offices and are available on request. All members of the group have been invited to report conflicts of interest and none were recorded.

Validation

The guideline validation process included these stages:

- Peer review by independent reviewers not involved in the development of the guideline (see page 20 for names). Their comments and the PRECOG group responses are available from the offices of Action on Pre-eclampsia.
- Presentation at the following national society conferences: International Society for the Study of Hypertension in Pregnancy 2003 (plenary session), Royal College of Midwives Annual Conference 2004 (poster presentation), British Congress of Obstetrics and Gynaecology 2004 (oral presentation).
- The official review process of the Royal College of Obstetrics and Gynaecology, the Royal College of Midwives, the Royal College of General Practitioners, the National Childbirth Trust and other relevant bodies.
- Submission for publication to a peer-review journal.

Pre-pilot and extended pilot

In 2004, the guideline and associated materials and the audit form have been tested for:

- ease of use;
- issues concerning the integration of the guideline into existing policies and procedures at local level;
- the response of pregnant women;
- outcome measures.

The guideline will be reviewed no later than four years after first publication.

Incorporating the guideline into local policy and practice

Under the auspices of the charity Action on Pre-eclampsia, there is an active implementation process with the primary aim of supporting the incorporation of the PRECOG guideline into local antenatal care schedules at the Trust level. To facilitate this, the guideline is available as part of a PRECOG package, available by e-mail, CD-ROM (Word documents or pdf files) or hard copy. The PRECOG package includes:

- PRECOG adoption, training and implementation flowcharts;
- resource implication audit tool;
- the guideline with supporting graded evidence and summary evidence tables;
- PRECOG slide resource kit for presentation and training;
- user aids including PRECOG stickers, A4 laminated care cards, woman information leaflets;
- audit form and audit support sheet.

The remit

The guideline actively complements the NHS National Institute for Clinical Excellence (NICE) antenatal care guideline (*Routine care for the healthy pregnant woman*) in England and Wales and can be adapted for use within Scotland and Northern Ireland. The PRECOG guideline provides recommendations for the antenatal care of pregnancies where pre-eclampsia is more likely to develop. It also outlines the appropriate response to indications of the onset of pre-eclampsia for all pregnant women. Relevant recommendations from NICE are listed in the "Evidence Used to Develop the PRECOG Guideline" document.

Within the PRECOG guideline, the first two recommendations are applicable from the first contact that a woman has with a health professional after her pregnancy is confirmed and the remainder

are applicable from 20 weeks' gestation until delivery of the baby. The guideline applies only to midwife- or GP-led care in the community in the UK. It is not within the remit of this guideline to prescribe specialist-led care or to exclude GP- or midwife-led care. It is complementary to the National Services Framework recommendation that all women benefit from a continuity of care and need midwifery care as part of their individual antenatal care plan.

It does not cover hospital obstetric day unit or in-patient care, post-natal onset or post-natal management of pre-eclampsia. A separate guideline covering step-up assessment within a hospital Day Assessment unit is in development. This will link the PRECOG community guideline with the RCOG guideline which is in development for the management of pre-eclampsia.

Who will use the guideline?

This evidence-based resource is intended to be incorporated into existing local or national policies and procedures, as local circumstances and needs dictate. Feedback from the pre-pilot has shown that implementation is most successful when carried out at Trust level.

Its foremost aim is to help pregnant women and frontline healthcare professionals who provide GP- or midwife-led antenatal care.

It will therefore also be of relevance to those who input into antenatal planning at a local, regional and national level in the UK, including:

- local policy/ protocol developers – for incorporation into local antenatal care policies and protocols;
- commissioners of maternal health services (Primary Care Trusts).

How parents are involved in effective antenatal care

It is a widely accepted policy that maternity service users – the pregnant women themselves – have a full and equal right to determine and be involved in their antenatal care. The mother's full involvement in the antenatal care plan outlined in the PRECOG guideline has been assumed.

Women can only do this if they are given the opportunity to have an understanding of the relevance of the process to themselves and their babies from the first contact with the healthcare professional. Information leaflets for pregnant women are available as part of the PRECOG package. Providers have an obligation to make appropriate information available to women in these circumstances.

An individual and flexible antenatal care plan can then be developed by all concerned which takes fully into account the emotional needs and cultural issues of the pregnant woman, her individual likelihood of developing pre-eclampsia and any specialist input in care that has been identified.

In this way a pregnant woman can be reassured that she has the best possible antenatal care plan for her and her baby, enabling her to have the confidence to enjoy her pregnancy, whatever her likelihood of developing pre-eclampsia.

Definitions and terminology

There are several definitions and classifications of pre-eclampsia, reflecting its wide clinical variability and complex pathophysiology. Higgins and de Swiet (2001) distinguished between a definition used for research purposes – which provides strict criteria to ensure that only women with pre-eclampsia are included – and a definition for clinical management – which seeks to identify pregnant women with higher risk either to the women themselves or their fetuses.

The guideline development group has adopted a similar policy. The PRECOG guideline uses the following simple working definitions based on the recommendations of Redman (1988) and Davey (1988):

Term	Definition used in the guideline
Fetal compromise	Reduced fetal movements, small for gestational age infant.
Hypertension	A diastolic blood pressure of 90 mmHg or more.
New hypertension	Hypertension at or after 20 weeks' gestation in a woman with a diastolic blood pressure of less than 90mmHg before 20 weeks.
Pre-existing hypertension	A diastolic blood pressure pre-pregnancy or at booking (before 20 weeks) of 90mmHg or more.
New proteinuria	The presence of proteinuria as shown by 1+ (0.3g/l) or more on proteinuria dipstick testing, a protein/creatinine ratio of 30mg/mmol or more on a random sample or a urine protein excretion of 300mg or more per 24 hours.
Significant proteinuria	Urine protein excretion \geq 300mg per 24 hr.
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 pre-existing hypertension, pre-existing proteinuria or both.

Note that there are no uniformly adopted definitions for pregnancy induced hypertension, gestational hypertension or severe pre-eclampsia. The terms are only used in the guideline when referring to a study definition, which is given in parentheses and/or in the evidence tables.

Abbreviations and acronyms used in the guideline documentation

ALT	Alanine aminotransferase
AST	Aspartate aminotransferase
APEC	Action on Pre-eclampsia
BMI	Body mass index
BP	Blood pressure
CEMD	Confidential Enquiries into Maternal Deaths in the United Kingdom
CESDI	Confidential Enquiry into Stillbirths and Deaths in Infancy
CI	Confidence interval
CTG	Cardiotocograph(y)
DIC	Disseminated intravascular coagulopathy (other than HELLP)
FGR	Fetal growth restriction
HELLP syndrome	Haemolysis, elevated liver enzymes and low platelet count
ISSHP	International Society for the Study of Hypertension in Pregnancy
LGA	Large for gestational age
MAP	Mean arterial pressure
NCT	National Childbirth Trust
NICE	National Institute for Clinical Excellence
NICU	Neonatal intensive care unit
OR	Odds ratio
PRECOG	Pre-eclampsia Community Guideline
RCGP	Royal College of General Practitioners
RCM	Royal College of Midwives
RCOG	Royal College of Obstetricians and Gynaecologists
RR	Relative risk
SGA	Small for gestational age
SR	Systematic review
UTI	Urinary tract infection

Grading of recommendations and evidence

Grading of recommendations

Grade A*	Directly based on category I evidence.
Grade B	Directly based on category II evidence or extrapolated recommendation from category I evidence.
Grade C	Directly based on category III evidence or extrapolated recommendation from category I or II evidence.
Grade D	Directly based on category IV evidence or extrapolated recommendation from category I, II or III evidence.

Good practice point: the view of the guideline development group.

(Note the grading of recommendations follows that adopted in the NICE guideline and differs from recent PRECOG recommendations: see “Evidence used to develop the PRECOG guideline” for further details.)

*A is the highest grade.

Grading of evidence

Level Evidence

- 1a* Evidence obtained from meta-analysis of randomised controlled trials.
- 1b Evidence obtained from at least one randomised controlled trial.
- IIa Evidence obtained from at least one well-designed controlled study without randomisation. Includes cohort studies.
- IIb Evidence obtained from at least one other type of well-designed quasi-experimental study. Includes case control studies.
- III Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.
- IV Evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities.

*1a is the highest level of evidence.

The guideline

PRECOG Recommendation 1

Identify the presence of any one of the following factors that predispose a woman in a given pregnancy to pre-eclampsia. [Grade B/C]

Box 1: Factors that can be measured early in pregnancy that increase the likelihood of pre-eclampsia developing in any given pregnancy.

FACTOR	PRECOG Grade
First pregnancy	B
Multiparous with: <ul style="list-style-type: none">• pre-eclampsia in any previous pregnancy	B
<ul style="list-style-type: none">• ten years or more since last baby	B
Age 40 years or more	B
Body mass index of 35 or more	B
Family history of pre-eclampsia (in mother or sister)	B
Booking diastolic blood pressure of 80mmHg or more	B
Booking proteinuria (of $\geq 1+$ on more than one occasion or quantified at $\geq 0.3\text{g}/24\text{ hr}$)	C
Multiple pregnancy	B
Certain underlying medical conditions: <ul style="list-style-type: none">○ Pre-existing hypertension○ Pre-existing renal disease○ Pre-existing diabetes○ Antiphospholipid antibodies	B

PRECOG Recommendation 2

Offer pregnant women with the following predisposing factors for pre-eclampsia referral early in pregnancy for specialist input to their antenatal care plan [Grade D/Good Practice Point]. The factors indicate an underlying pathology, concomitant condition, or otherwise high level of obstetric risk related to pre-eclampsia, which would benefit from specialist input: this may be for further specialist investigation, for clarification of risk, or to advise on early intervention or pharmacological treatment.

It is not within the remit of this guideline to prescribe specialist-led care or to exclude GP- or midwife-led care. It is recognised that all women benefit from a continuity of care and need midwifery care as part of their individual antenatal care plan, whatever their obstetric risk.

Box 2: Factors for referral in early pregnancy for specialist input to care

FACTOR	PRECOG Grade
<ul style="list-style-type: none">• Multiple pregnancy• Underlying medical conditions<ul style="list-style-type: none">○ Pre-existing hypertension or booking diastolic BP ≥ 90 mmHg○ Pre-existing renal disease or booking proteinuria ($\geq 1+$ on more than one occasion or quantified at $\geq 0.3g/24$ hour)○ Pre-existing diabetes○ Antiphospholipid antibodies• Pre-eclampsia in any previous pregnancy• Any two other pre-disposing factors from Recommendation 1 ie first pregnancy, age 40 years or more, BMI ≥ 35, family history, booking diastolic BP ≥ 80 mmHg < 90mmHg	D D D D D GPP*

***Note** that the effect of two predisposing factors on the overall likelihood of developing pre-eclampsia has not yet been studied, so there is no evidence. Therefore, the recommendation that these women would benefit from specialist input to assess their obstetric risk is the opinion of the pre-eclampsia specialists in the PRECOG group.

PRECOG Recommendation 3a

Offer pregnant women one of two levels of midwife/GP-led community monitoring after 20 weeks* for indications of pre-eclampsia, according to their level of risk of developing pre-eclampsia. [Grade B]

Box 3: Frequency of community monitoring after 20 weeks for indications of pre-eclampsia.

Frequency level	Women who qualify**	Frequency interval	
		24 to 32 weeks gestation	32 weeks gestation to delivery
LEVEL 1	None of the predisposing factors listed in Recommendation 1.	As per local protocols/ NICE Antenatal Guideline for low risk multiparous women.	As per local protocols/ NICE Antenatal Guideline for low risk multiparous women.
LEVEL 2	One predisposing factor listed in Recommendation 1. No factor that requires referral in early pregnancy (Recommendation 2).	Minimum standard no more than three week interval between assessments, adjusted to individual needs and any changes during pregnancy***.	Minimum standard no more than two week interval between assessments, adjusted to individuals needs and any changes during pregnancy***.

* By definition pre-eclampsia cannot be diagnosed before 20 weeks' gestation.

** Note that women who have been referred early in pregnancy (see Recommendation 2) do not qualify for level 1 or level 2 of midwife or GP-led PRECOG community monitoring.

*** Interval corresponds to NICE Antenatal Guideline for primiparous women.

PRECOG Recommendation 3b

All pregnant women should be aware that after 20 weeks' gestation pre-eclampsia may develop between antenatal assessments, and that it is appropriate for them to self-refer at any time. [Grade B]

PRECOG Recommendation 4

At every PRECOG assessment, the healthcare provider and pregnant women should identify the presence of any one of the five significant signs and symptoms of the onset of pre-eclampsia and act according to Recommendation 5. [Grade B and C]

Box 4: Community monitoring – content

Signs and significant symptoms	PRECOG Grade
<ul style="list-style-type: none">• New hypertension	B
<ul style="list-style-type: none">• New and/or significant proteinuria	B
<ul style="list-style-type: none">• Maternal symptoms of headache and/or visual disturbance	C
<ul style="list-style-type: none">• Epigastric pain and/or vomiting	C
<ul style="list-style-type: none">• Reduced fetal movements, small for gestational age infant	B

Description of symptoms [GPP]

As there are limited data from studies, the following are descriptions and comments from the pre-eclampsia specialists in the PRECOG group and from CEMD [Good Practice Points]:

Headache and visual disturbances

- Severe pounding headache, partial loss of visual acuity, bright/flashing visual disturbances. Migraines can continue during pregnancy and any migraine can be excruciating without being life-threatening or associated with signs of pre-eclampsia.
- A headache of sufficient severity to seek medical advice. (CEMD)

Epigastric pain

- Epigastric pain, especially if severe or associated with vomiting. The most sinister epigastric pain is described by the sufferer as severe and is associated with definite tenderness to deep epigastric palpation (the woman winces).
- New epigastric pain (CEMD).

PRECOG Recommendation 5

Box 5: Community monitoring – thresholds for further action

Description	Definition	Action by midwife/GP	PRECOG Grade
New hypertension without proteinuria after 20 weeks	Diastolic BP ≥ 90 and < 100 mmHg	Refer for hospital step-up assessment within 48 hours	C
	Diastolic BP ≥ 90 and < 100 mmHg with significant symptoms*	Refer for same day hospital step-up assessment	C
	Systolic BP ≥ 160 mmHg	Refer for same day hospital step-up assessment	C
	Diastolic BP ≥ 100 mmHg	Refer for same day hospital step-up assessment	C
New hypertension and proteinuria after 20 weeks	Diastolic BP ≥ 90 mmHg and new proteinuria $\geq 1+$ on dipstick	Refer for same day hospital step-up assessment	A
	Diastolic BP ≥ 110 mmHg and new proteinuria $\geq 1+$ on dipstick	Arrange immediate admission	A
	Systolic BP ≥ 170 mmHg and new proteinuria $\geq 1+$ on dipstick	Arrange immediate admission	A
	Diastolic BP ≥ 90 mmHg and new proteinuria $\geq 1+$ on dipstick and significant symptoms*	Arrange immediate admission	A
New proteinuria without hypertension after 20 weeks	1+ on dipstick	Repeat pre-eclampsia assessment in community within 1 week.	C
	2+ or more on dipstick	Refer for hospital step-up assessment within 48 hours	C
	$\geq 1+$ on dipstick with significant symptoms*	Refer for same day hospital step-up assessment	C
Maternal symptoms or fetal signs and symptoms without new hypertension or proteinuria	Headache and or visual disturbances with diastolic blood pressure less than 90mmHg and a trace or no protein	Follow local protocols for investigation. Consider reducing interval before next PRECOG assessment	C
	Epigastric pain with diastolic blood pressure less than 90mmHg and a trace or no protein	Refer for same day hospital step-up assessment	C
	Reduced movements or small for gestational age infant with diastolic blood pressure less than 90mmHg and a trace or no protein	Follow local protocols for investigation of fetal compromise. Consider reducing interval before next full pre-eclampsia assessment	C

*Symptoms include: epigastric pain, vomiting, headache, visual disturbances, reduced fetal movements, small for gestational age infant.

PRECOG Recommendation 6: Reducing errors in blood pressure measurement

- Use accurate equipment (mercury sphygmomanometer or validated alternative method). [Grade C]
- Use sitting or semi-reclining position so that the arm to be used is at the level of the woman's heart. [GPP]
- Do not take the blood pressure in the upper arm with the woman on her side as this will give false, lower readings. [Grade D]
- Use an appropriate size of cuff:
 - standard size (13x23cm) for an arm circumference of up to 33cm;
 - a large size (33 x 15 cm) for an arm circumference between 33 and 41cm);
 - a thigh cuff (18x36cm) for an arm circumference of 41cm or more. There is less error introduced by using too large a cuff than by too small a cuff. [Grade C]
- Deflate the cuff slowly, at a rate of 2 mmHg to 3 mmHg per second, taking at least 30 seconds to complete the whole deflation. [Grade D]
- Use Korotkoff V (disappearance of heart sounds) for measurement of diastolic pressure, as this is subject to less intra-observer and inter-observer variation than Korotkoff IV (muffling of heart sounds) and seems to correlate best with intra-arterial pressure in pregnancy. [Grade A] In the 15% of pregnant women whose diastolic pressure falls to zero before the last sound is heard, then both phase IV and phase V readings should be recorded (eg 148/84/0 mmHg). [GPP]
- Measure to the nearest 2 mmHg to avoid digit preference. [Grade D]
- Obtain an estimated systolic pressure by palpation, to avoid auscultatory gap. [Grade D]
- If two readings are necessary, use the average of the readings and not just the lowest reading. This will minimize threshold avoidance (the tendency to repeat a reading until one that is below a known threshold is recorded that requires no action). [GPP]

PRECOG Recommendation 7: Improving reliability of proteinuria estimate using dipstick testing

The performance of a semi-quantitative dipstick is dependent on many variables, including how the dipstick is read (by all comers to a clinic, staff at a routine clinic, trained research observers or a machine) and the urine concentration of the sample. The performance of quantitative methods of measuring protein is also dependent on a number of factors, such as the adequate collection of a 24 hour sample and the method used to measure protein.

- Reduce false positive results by training the reader of the dipstick to use the correct methodology to read the dipstick tests. Manufacturer's recommendations should be followed. [Grade C]
- Automated dipstick readers reduce reader error. [Grade C]
- Do not repeat a test on a second sample as this does not improve the predictive value of result for significant proteinuria. [Grade D]
- Use a 24 hour urine collection to quantify excreted protein. The use of a protein/creatinine ratio instead of a 24 hour urinary protein requires local confirmation of performance, as the method of measuring proteinuria has been shown to modify the results. [Grade C]
- Reduce concentration-related errors by assessing specific gravity or urine creatinine simultaneously with the protein dip result. [Grade C]
- When required, confirm a 1+ result from a dipstick test for proteinuria by measuring protein excretion in a 24 hour urine collection. [Grade C]

PRECOG Recommendation 8: Assessment of fetal compromise in the community

There is limited evidence to recommend a particular method of determining fetal growth and wellbeing in the community, with no evidence to support the superiority of one method over another.

Please refer to the Evidence Document for a summary of the NICE Antenatal Guideline recommendations on assessment of fetal size and wellbeing. The RCOG Guideline recommendations, entitled *RCOG Guideline Investigation and Management of the Small for Gestational Age Fetus* covers the method and predictive value of biometric and biophysical tests for diagnosis and management of the fetus. (RCOG, 2002).

Step-up assessment in hospital Day Assessment facility

Subject of a follow-on guideline.

Post-partum management of hypertension

Out with guideline.

Post-partum onset of pre-eclampsia

Out with guideline.

Comments from validation procedure

“guidance highly commended”: Royal College of Obstetrics and Gynaecology, October 2004

“If the recommendations in this guideline are followed, pregnant women will be alerted to the possibility of developing pre-eclampsia during pregnancy, the symptoms to look out for and the care they may need. The NCT welcomes this development and the opportunity of better team working to ensure that all women are appropriately referred for specialist care when it is needed.”
National Childbirth Trust, October 2004

Clinical illustrations of the use of this guideline

Risk assessment

Case 1

Ms AB is age 28, currently nine weeks pregnant, in her third pregnancy. In her first pregnancy five years ago, before she came to this area, she developed high blood pressure and protein in her urine at about 32 weeks. She delivered a boy weighing 2.2kg by elective caesarean at 36 weeks gestation. Her second pregnancy was uncomplicated; her BP remained normal, and a daughter weighing 3.1 kg was born via normal vaginal delivery at 39 weeks.

Action: Ms AB's last pregnancy was normal, but she does have a predisposing factor; her previous history of pre-eclampsia and pre-term delivery (see Box 1). According to PRECOG Recommendation 2 (Box 2) she should be offered an early consultation with an obstetrician to discuss her previous pre-eclampsia and other relevant history. The obstetrician will be able to help clarify her obstetric risk in the current pregnancy and provide useful input into her individual antenatal care plan. As she has a factor from PRECOG Recommendation 2, she does not qualify for Level 1 or 2 of community monitoring (Box 3).

Case 2

Ms CD is 32 years old in her second pregnancy at 11 weeks gestation. She had a normal pregnancy and delivery three years ago, but she now tells you that her sister in New Zealand had bad pre-eclampsia last year. Her booking blood pressure is 116/80. She is keen on normal antenatal shared care and vaginal delivery.

Action: She should be offered a referral in early pregnancy for specialist input, according to PRECOG recommendation 2 as she has two predisposing factors: her booking diastolic BP and her family history of pre-eclampsia. You should explain pre-eclampsia to Ms CD and offer her an information leaflet about the condition. After spending time discussing it with her partner and mother, she decides that she would like more information from a specialist obstetrician. After you have both obtained the obstetrician's opinion, Ms CD may still have the antenatal care and delivery she originally hoped for.

How community monitoring works

Case 3

Miss EF, age 26, is 24 weeks pregnant in her first pregnancy. Following PRECOG Recommendation 3a (Box 3), she has started the Level 2 frequency of community monitoring as she has one risk factor. That means that from 24 to 32 weeks gestation there should be no more than three weeks between her assessments, and from 32 weeks to delivery, no more than two weeks between her assessments.

Her BP at booking was normal, but now at 24 weeks it is 128/90. She is well and has recently started feeling fetal movements. The fundal height is compatible with her due date. On dipstick testing, she has no proteinuria. She is anxious to get back to the office this afternoon, and not at all keen on any course of action that could lead to more time off work.

Action: She has new hypertension until proved otherwise, but there is nothing so far to suggest fetal compromise. She has no headache, visual disturbance, epigastric pain, or vomiting. According to PRECOG recommendation 5, she should be referred for hospital step-up assessment within 48 hours (see Box 5). An explanation of the potential seriousness of pre-eclampsia helps her to understand the logic behind your advice, and she is happy to be assessed at the hospital the next day. (Had her diastolic blood pressure been 100 or over, you would have explained how quickly pre-eclampsia can progress, and encouraged her to go to hospital for step-up assessment the same day.)

Case 4

Mrs GH is 39 years old and in her third pregnancy, at 28 weeks gestation. She is well but tired (her twins are only two years old and the eldest is four). She is getting a lot of fetal movements at night. Her fundus corresponds to her dates. Her BP is 114/72, but on dipstick testing she has 1+ of protein. She has no pyrexia.

Action: Mrs GH has new proteinuria without hypertension. As it is only 1+, you ask to see her again in one week, in accordance with PRECOG recommendation 5 (Box 5). She asks if she could test her own urine with a dipstick instead of returning to the surgery, but you encourage her to attend in person. You check the specific gravity of the sample in case it is highly concentrated, which may have given a false positive result. She asks if she will be checked for a urinary infection, but as she has no symptoms, and only 1+ proteinuria, you explain that an infection is unlikely.

The following week, she is well. In addition to testing her urine again, you also check her BP again and enquire about any symptoms and about fetal movements (see recommendation 4). She has

no proteinuria or other significant signs or symptoms, and her BP is still normal. She therefore returns to the routine schedule of antenatal care.

Case 5

Ms IJ is 29. She too is 28 weeks pregnant in her third pregnancy. She has been feeling very well indeed until late yesterday when she developed epigastric pain. In fact she is beginning to wonder if it was something she ate, but she has never had pain quite like this.

She has no headache or visual disturbance. Today her BP is 118/86 and she has no proteinuria on testing with a dipstick in the surgery. She reports that the baby is kicking just as much as ever, and she has no other symptoms. She has no liver tenderness on palpation or signs or symptoms of placental abruption.

Action: Ms IJ has developed symptoms without hypertension or proteinuria. At this stage you are not sure how significant her symptoms will turn out to be, but, according to PRECOG Recommendation 5, you refer her the same day for hospital step-up assessment. What happens there is the subject of a follow-on guideline.

Resource implications

This section discusses the likely impact on the NHS of implementing the recommendations of the guideline. The major source of this information is a survey of maternity units, undertaken by APEC in 2002. A resource implication audit tool to assess the local resource implications is available as part of the PRECOG package.

Recommendation 1: identification of factors that predispose a pregnancy to pre-eclampsia.

This is part of the routine booking assessment and therefore has no significant resource implications.

Recommendation 2: offer referral for early investigation for women with predisposing factors.

The majority of women with these factors would be referred as part of current practice. There may be some increase in referrals for some groups, such as those identified in the Good Practice Point. The degree to which this impacts on specialist antenatal clinics at a local level depends on current local protocols and can be assessed using the local audit tool.

Recommendation 3a: offer women one of two levels of midwife- or GP-led community monitoring after 20 weeks for indications of pre-eclampsia according to their level of risk if developing pre-eclampsia.

This recommendation corresponds to the recommendations of the NICE guideline on antenatal care. There should therefore be no additional resource implications, although this will depend on the degree to which the NICE guideline has been implemented, which can be assessed using the local audit tool.

Recommendation 3b: All pregnant women should be aware that after 20 weeks gestation, pre-eclampsia may develop between antenatal assessments, and that it is appropriate for them to self-refer at any time. [Grade B]

Women are required to receive information at booking but this information needs to be reinforced

during subsequent visits. This may involve some resource implications for the NHS if this requires additional time spent on antenatal visits.

Recommendation 4: at any PRECOG assessment the healthcare provider and pregnant women should identify the presence of any of the five significant signs and symptoms of the onset of pre-eclampsia and apply the appropriate threshold for action.

The signs are routinely investigated at each antenatal visit and therefore significant resource implications associated with this recommendation are unlikely.

Recommendation 5: community monitoring – thresholds for action.

This is routine clinical practice, but there may be major resource implications in areas without daycare provision if they were to set these up. The 2002 APEC survey found that 12 of the 72 hospitals with more than 2,000 births annually do not have a daycare unit, although this was largely because of the wide catchment areas. In these areas, women would usually be seen in the inpatient or delivery areas or in a designated area of the antenatal clinic and thus it may not be necessary to set up a designated day care unit.

Recommendation 6: reducing errors in blood pressure measurement

The major resource implication associated with this recommendation is to ensure that all equipment used for measuring blood pressure is calibrated correctly. In areas where such routine checks are not made, there will be some resource implications associated with setting up such a programme.

Recommendation 7: improving reliability of proteinuria using dipstick testing

The NICE guideline recommends the use of dipstick reading at every antenatal visit and therefore this recommendation is unlikely to be associated with significant resource implications. However, there may be resource implications associated with introducing both training in the methodology of reading dipstick tests and in the use of automated dipstick readers.

Recommendation 8: assessment of fetal compromise in the community

Assessment of fetal compromise is a routine component of antenatal care in the community and thus this recommendation is unlikely to be associated with significant resource implications.

Overall, therefore, there are unlikely to be significant resource implications associated with the implementation of the PRECOG community guideline, although the local impact will depend on the degree to which the NICE guideline on antenatal care has been implemented and local circumstances. The likely local resource implications can be assessed using the resource implication audit tool.

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Pre-eclampsia Community Guideline

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Extended pilot (1st July 2004)

Congress presentation

International Society for the Study of Hypertension in Pregnancy 2003 (plenary session)

Royal College of Midwives Annual Conference 2004 (poster presentation)

British Congress of Obstetric and Gynaecology 2004 (oral presentation)

Formal review

Royal College of Obstetrics and Gynaecology

Royal College of Midwives

Royal College of General Practitioners

National Childbirth Trust