



Pre-eclampsia Day Assessment Unit Guideline

for midwives

(Recommendations 9 and 10)



PRE-ECLAMPSIA DAY ASSESSMENT UNIT GUIDELINE: SUMMARY CHART

Step 1 diagnosis	Definition	Action by DAU midwife: Step 2	Action by DAU midwife: Step 3
New hypertension without proteinuria; no clinical suspicion of fetal compromise; no symptoms	Diastolic BP \geq 110mmHg or Systolic BP \geq 170mmHg	ADMIT	
	Diastolic BP 100 - 109mmHg or Systolic BP 160-169 mmHg	Arrange medical review to consider admission	
	Diastolic BP 90-99mmHg	Blood tests relating to pre-eclampsia. Serum urate not required *	<u>Abnormal blood and/or Doppler results*</u> Arrange medical review
		If onset \leq 36 completed weeks: Umbilical artery Doppler	<u>Normal blood and/or Doppler results</u> Allocate to named consultant. Monitor at least weekly
New hypertension new proteinuria, no clinical suspicion of fetal compromise; no symptoms	Diastolic BP \geq 90mmHg and new proteinuria \geq 2+	ADMIT	
	Diastolic BP 90 - 99mmHg and 1+ proteinuria (use higher of community or DAU dipstick results)	Urinary PCR** or 24 hour urine collection as out-patient (if no maternal symptoms or fetal concern) Blood tests relating to pre-eclampsia*	<u>PCR \geq 30 or significant proteinuria</u> (with hypertension) ADMIT <u>Abnormal blood and/or Doppler results*</u> Arrange medical review
		If onset \leq 36 completed weeks: Umbilical artery Doppler	<u>PCR $<$ 30 or no significant proteinuria and normal blood and Doppler results</u> Allocate to named consultant. Monitor at least weekly
New proteinuria without hypertension; no clinical suspicion of fetal compromise; no symptoms	1+ on dipstick	Urinary PCR or 24 hour urine collection	<u>PCR \geq 30 or significant proteinuria*</u> Arrange medical review <u>PCR $<$ 30 or no significant proteinuria</u> Arrange community assessment within one week.
	2+ or more on dipstick	Blood tests relating to pre-eclampsia* Arrange 24 hour urine collection	<u>Abnormal blood tests and/or Doppler or significant proteinuria*</u> Arrange medical review
		If onset \leq 36 completed weeks: Umbilical artery Doppler	<u>Normal blood/ Doppler results; no significant proteinuria</u> Allocate to named consultant. Monitor at least weekly



*Blood tests and thresholds for medical review: platelet count $< 150 \times 10^9/l$; AST or ALT (mean for gestational age + 2SD); serum creatinine $> 90 \mu\text{mol/l}$; serum urate (mean for gestational age + 2SD); significant proteinuria $\geq 300 \text{mg}/24$ hours

** *PCR*: urinary protein creatinine ratio

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INTRODUCTION

How we developed the guideline

This is a follow-on guideline to the Pre-eclampsia Community Guideline published in 2005 under the auspices of Action on Pre-eclampsia (APEC) using the same guideline development process and group (see p3 of the Pre-eclampsia Community Guideline (www.apec.org.uk)). The recommendations have been developed by a multi-disciplinary working group (see page y for names) and graded according to the levels of evidence on which they were based. The evidence is summarised in the Evidence Documents and Evidence Tables; grading of the recommendations and evidence is given below. A record of the five PRECOG development group meetings at which this section of the PRECOG guideline were discussed are available from the APEC offices; the fourth meeting focused solely on these *DAU* recommendations. Under the process of independent review an abstract of the guideline and evidence was accepted as an oral presentation at the International Society for the Study of Hypertension in Pregnancy (ISSHP) meeting 2006 and a poster presentation at the Royal College of Midwives meeting, 2006. The guideline has been independently reviewed (see page 13 for names) submitted for endorsement by the RCM, RCOG, NCT and submitted for peer-review publication. A final meeting was held on November 2008.

Remit

These recommendations are for a midwifery assessment in a Day Assessment Unit or similar hospital-based facility, for pregnant women of 20 weeks gestation or more, with suspected signs and symptoms of the onset of pre-eclampsia. Women may have been referred from the community (see Pre-eclampsia Community Guideline Box 5 for criteria), from ante-natal clinics or by self-referral.

The guideline does not include recommendations on any subsequent midwifery-led or medical monitoring, as this will be determined on an individual basis and is dependent on local circumstances, policies and practice. However, good practice points for any subsequent midwifery-led management are included in the footnotes to the recommendation.

It does not give guidance on the assessment or management of a suspected small for gestational age or growth restricted fetus and excludes these women from the guideline (see RCOG guideline "Investigation and management of the small for gestational age fetus" for evidence-based recommendations (www.rcog.org.uk)).

The management of post-partum hypertension is the subject of a follow on guideline (see www.apec.org.uk).

Facilities

The recommendations apply to a facility that can provide rapid assessment, investigation, referral and in-patient treatment.

The PRECOG group recommend the following minimum standards for the consultant-led hospital-based maternity Day Assessment units.

- A dedicated area
- Midwifery staff specifically trained to work in and manage the Day Assessment Unit
- Easy access, (either within the unit or close-by), to umbilical artery Doppler facilities
- A system where laboratory test results are available within 24 hours of the women attending, and the same day where practically possible, with a mechanism to review the tests and talk to the women concerned, also within 24 hours.
- Access by the Day Unit staff to SPR or above
- A named consultant to be part of the multidisciplinary team involved in the guidelines, protocols and organisational running of the Day Unit

- The management and facilities within the Day Unit should be integrated with a larger package of care for the management of hypertension in pregnancy (incorporating the PRECOG community based guideline and the RCOG pre-eclampsia management guideline).

How women are involved in effective antenatal care; checklist for the DAU

The PRECOG community guideline (p6) explains how parents have a full and equal right to determine and be involved in their antenatal care. Women can only do this if they are given the opportunity to have an understanding of the relevance, to themselves and their babies, of any changes to their antenatal care plan. The initial DAU assessment is a key and timely opportunity to do this. Women should be offered information so they may understand the content and purpose of the DAU assessment and their role in effective antenatal care.

Before a pregnant woman leaves her initial DAU assessment she should have:

- 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.
- A mechanism to report and act on any new symptoms that she may notice herself. Encourage her to self monitor.
- hand held notes or a DAU summary from her assessment
- a follow up appointment
- allocation to a named consultant
- an agreed mechanism by which she 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

Associated guidelines and information

These recommendations are part of a framework for antenatal care in which a pregnant woman with pre-eclampsia receives specialist care at the appropriate time for best outcome for her and her baby.

They can be used in conjunction with:

- Pre-eclampsia Community Guideline recommendations 1-8 (www.apec.org.uk for guideline, evidence document and tables, link to BMJ publications and implementation support) for the community screening and detection of possible pre-eclampsia
- RCOG guideline no 10A “The management of severe pre-eclampsia/eclampsia” (www.rcog.org.uk)

Other relevant guidelines include

- RCOG guideline “Investigation and management of the small for gestational age fetus” provides evidence-based recommendations (www.rcog.org.uk)
- NICE Antenatal Care guideline (routine care for the healthy pregnant woman)(www.nice.org.uk)

Definitions used in the PRECOG documentation

Term	Definition used in the guideline
FETAL COMPROMISE (Clinical suspicion)	Reduced fetal movements, small for gestational age infant (clinically assessed)
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 we do not use the terms pregnancy induced hypertension, gestational hypertension or severe pre-eclampsia because the definition of these terms vary. 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

Acronyms used in the PRECOG guideline documentation

ALT	Alanine aminotransferase
AST	Aspartate aminotransferase
APEC	Action on Pre-eclampsia
BMI	Body Mass Index
BP	Blood pressure
CTG	Cardiotocograph(y)
DAU	maternity Day Assessment Unit
DIC	Disseminated intravascular coagulopathy (other than HELLP)
FGR	Fetal growth restriction
HELLP syndrome	haemolysis, elevated liver enzymes and low platelet count
LGA	Large for gestational age
MAP	Mean arterial pressure
NICE	National Institute for Clinical Excellence
NICU	Neonatal intensive care unit
OR	Odds Ratio
PCR	Urinary protein creatinine ratio
PRECOG	Pre-eclampsia Community Guideline
RR	Relative risk
SGA	Small for gestational age
UTI	Urinary tract infection

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 (GPP): the view of the guideline development group.

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

*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

*The highest level of evidence

THE GUIDELINE

PRECOG RECOMMENDATION 9. Carry out Step 1 assessments as detailed in Box 9 [Grade B/C]

BOX 9: Step 1 midwifery assessments

STEP 1 ASSESSMENTS	NOTE
Blood pressure recordings ¹	Mean blood pressure (diastolic and systolic)
Dipstick test for proteinuria ²	Dipstick proteinuria (none, trace, 1+, 2+, >2+ protein)
Clinical assessment of maternal symptoms relating to pre-eclampsia ³	Headache and/or visual disturbance Epigastric pain, nausea and/or vomiting
Clinical assessment of fetal size and wellbeing relating to pre-eclampsia ⁴	Reduced fetal movements or small for gestational age fetus
Review of current obstetric history	Note most recent community dipstick test result and date; gestational age; booking blood pressure; booking dipstick protein results; PRECOG booking risk factors.

¹ Blood pressure recordings in Day Assessment Unit

- Take three blood pressure recordings at least 10 minutes apart. If the first two readings are both less than 140mmHg systolic and 90mmHg diastolic the third reading can be omitted. From these multiple readings, calculate the average systolic and diastolic reading
- Follow PRECOG recommendation 6 for reducing errors in blood pressure measurement. These are appropriate for the community and hospital setting. Thigh cuffs must be used for women with an arm circumference of 41cm or more (only 27% of Day Assessment Units had thigh cuffs available ref: APEC survey, 2006, p.13)
- Use equipment that is accurate in measuring hypertensive individuals; automated devices that are accurate in pregnancy, can under-read by clinically significant amounts in women with pre-eclampsia. The following types of device are recommended:
 - The most accurate is the standard mercury sphygmomanometry
 - Auscultation can also be used with alternative pressure gauges. Aneroid devices are acceptable but should be calibrated at least every 12 months (note this has been revised from the PRECOG recommendation 6 which states 6 months).
 - An automated device that has been assessed by protocol for accuracy and validated for use in pregnancy, including pre-eclampsia.

² Dipstick test for proteinuria

- Use protein dipsticks to estimate proteinuria
- Factors which affect the dipstick result include reader error and urine concentration. These can affect both the community and the *DAU* reading. See PRECOG recommendation 7 for ways to minimise errors. Note both the *DAU* and most recent community reading.

³ Clinical assessment of maternal symptoms relating to pre-eclampsia

- See PRECOG recommendation 4 and www.apec.org.uk for description of symptoms

⁴ Clinical assessment of fetal size and wellbeing relating to pre-eclampsia

- Assess the fetus for size and wellbeing according to local protocols. This generally includes measurement of symphyseal-fundal height and clinical enquiry about fetal movements.

PRECOC RECOMMENDATION 10: act according to Box 10 using results from step 1 assessments

Women with maternal symptoms relating to pre-eclampsia and/or any clinical suspicion of fetal compromise are not included in Recommendation 10. For evidence-based guidance, see the RCOG guidelines “The investigation and management of the small for Gestational Age Fetus.

BOX 10: Action by *DAU* midwife using diagnosis from Step 1 assessments

Description from Step 1	Definition from Step 1 assessment	Action by <i>DAU</i> midwife: Step 2	Action by <i>DAU</i> midwife: Step 3
New hypertension without proteinuria; no clinical suspicion of fetal compromise, no maternal symptoms	Diastolic BP \geq 110mmHg or Systolic BP \geq 170 mmHg	ADMIT	
	Diastolic BP 100 - 109mmHg or Systolic BP 160-169 mmHg	Arrange medical review to consider admission ⁴	
	Diastolic BP 90-99mmHg	Blood tests relating to pre-eclampsia. Serum urate not required ¹ If onset \leq 36 completed weeks: Umbilical artery Doppler ³	<u>Abnormal blood test and/or Doppler results</u> Arrange medical review ⁴ <u>Normal blood tests and Doppler results</u> Allocate to named consultant. Monitor at least weekly from <i>DAU</i> ⁶ Do not routinely repeat blood tests.
New hypertension, new proteinuria, no clinical suspicion of fetal compromise, no maternal symptoms	Diastolic BP \geq 90mmHg and new proteinuria \geq 2+ on dipstick	ADMIT	
	Diastolic BP 90 - 99mmHg and 1+ proteinuria (use higher of community or <i>DAU</i> dipstick results)	Urinary <i>PCR</i> ² or 24 hour urine collection as out-patient (if no maternal symptoms or clinical suspicion of fetal compromise) Blood tests relating to pre-eclampsia ¹ If onset \leq 36 completed weeks: Umbilical artery Doppler ³	<u><i>PCR</i> \geq 30 or significant proteinuria</u> (with hypertension) ADMIT <u>Abnormal blood and/or Doppler results</u> ^{1,3} Arrange medical review <u><i>PCR</i> $<$ 30 or no significant proteinuria and normal blood and Doppler results</u> Allocate to named consultant ⁵ . Monitor at least weekly from <i>DAU</i> ⁶
	Diastolic BP 100-109mmHg with new proteinuria of 1+	Arrange medical review ⁴ to consider admission	
	Diastolic BP \geq 110mmHg with new proteinuria of 1+	ADMIT	

New proteinuria without hypertension; no clinical suspicion of fetal compromise, no maternal symptoms	1+ on dipstick	Urinary PCR ² or 24 hour urine collection	<u>PCR >30 or significant proteinuria</u> Arrange medical review <u>PCR <30 or no significant proteinuria</u> Follow local protocols to exclude infection. Contact community lead to arrange next pre-eclampsia assessment in the community within one week ⁷
	2+ or more on dipstick	Blood tests relating to pre-eclampsia ¹ Arrange 24 hour urine collection	<u>Abnormal blood tests and/or Doppler or significant proteinuria</u> Arrange medical review ⁴
36 completed weeks or less at onset Umbilical artery Doppler		<u>Normal blood and/or Doppler and no significant proteinuria</u> Allocate to named consultant ⁵ . Monitor at least weekly from DAU ⁶	
No hypertension, no proteinuria, no significant symptoms, no clinical suspicion of fetal compromise	Diastolic < 90mmHg, no proteinuria on dipstick in DAU	Contact community lead to arrange next pre-eclampsia assessment in the community within one week ⁷	

Footnotes (1-7) to Box 10

¹ **Blood tests relating to pre-eclampsia**

- The blood tests relating to pre-eclampsia are platelet count, transaminases (AST or ALT as per local availability), serum urate and serum creatinine [III/IV]. Request a full blood count. Serum urate is not required if there is no proteinuria
- Use pregnancy-specific normal ranges for platelets, transaminases and creatinine, and gestational age dependent ranges for serum urate, as shown below [Grade C]

Liver function tests: gestation specific 95% reference ranges (2.5th centile – 97.5th centile) in normal population (Girling 1997)

	Non pregnancy	1 st trimester	2 nd trimester	3 rd trimester
AST (iu/L)	7-40	10-28	11-29	11-30
ALT (iu/L)	0-40	6-32	6-32	6-32

- Platelet count < 150 x 10⁹/L
- Creatinine ≥ 90 micromol/L

Serum uric acid by gestational age (micromol/l): mean + 2 standard deviations (SD)(Lind et al)

week	Non-preg	4w	8w	12w	16w	24w	32w	36w	38w	Post-partum
mean+2SD	364	328	330	267	285	276	322	344	381	389

(micromol/l)										
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Laboratory test results should be available within no more than 24 hours of the woman attending, and the same day where practically possible, with a mechanism to review the tests and talk to the woman concerned, also within that 24 hours [GPP]

- If any of the blood tests results are outside the normal range, arrange a medical review, then contact the woman concerned to discuss the results and revised antenatal care plan.
- If the blood tests are within the normal range, contact the pregnant woman and arrange/ confirm appointment in DAU to repeat Step 1 assessments in one week (see footnote 6).

² Laboratory tests for proteinuria

- Test to exclude or confirm significant proteinuria in women with 1+ dipstick proteinuria . If trace result in Day Assessment Unit and 1+ in community, use community result.
 - A laboratory urinary protein creatinine (*PCR*) ratio from a random sample of less than 30mg/mmol excludes significant proteinuria. A *PCR*> 30mg/mmol does not reliably confirm or quantify proteinuria. [Grade C]
 - A 24 hour urine collection of $\geq 300\text{mg}/24\text{ hr}$ both confirms and quantifies proteinuria [Grade C]
- For women with new hypertension between 90-99mmHg and 1+ proteinuria in this guideline the decision to admit has been deferred until the results of the *PCR* are known. This is appropriate only when there are no maternal symptoms or clinical suspicion of fetal compromise. Arrange an umbilical artery Doppler (if 36 weeks or less) and blood tests (any gestation) while waiting for the result of the *PCR*

³ Umbilical artery Doppler

- The PRECOG group recommend umbilical artery Dopplers as the best test for predicting an at-risk fetus relating to pre-eclampsia in a women with pre-term new hypertension and no clinical suspicion of fetal compromise [Grade B]. This assessment can be carried out in the unit by a midwife who is an accredited scanner. Use it to scan women of gestational age of 36 completed weeks or less as per Box 10 [GPP]
- Follow local management protocols in response to Doppler results. Abnormal umbilical artery Doppler thresholds include:
 - Umbilical artery PI > 2SD
 - Absent or reverse end diastolic flow
- The assessment of women with clinical suspicion of a SGA fetus is outwith this guideline.

⁴ Medical Review

- Arrange a medical review within the Day Unit by an experienced medical person of at least SPR or consultant level
- Arrange a medical review if a woman has an abnormal blood test result, an abnormal Doppler or in women with new hypertension (100-109mmHg diastolic or 160-169mmHg systolic) without proteinuria. The outcome is a revised individual antenatal care plan.

⁵ Allocate to a named consultant

- All women who reach the threshold for a step-up midwifery assessment are at higher risk of pre-eclampsia and poor outcomes associated with it. With the exception of women who after a Step 1 assessment have no hypertension, no proteinuria, no relevant symptoms and a healthy baby, make sure that all women who

have had midwifery step up assessment have been allocated to a named consultant before they leave the DAU. The named consultant will, either directly or indirectly, determine subsequent management.

⁶ Monitor at least weekly from Day Assessment Unit

- Arrange another Step 1 assessment no longer than 7 days (minimum standard) after the initial assessment and sooner if appropriate. Frequency of assessment should be determined on an individual basis, depending on blood test/ Doppler results, gestational age, history etc. and following an antenatal care plan determined by the named consultant in consultation with the pregnant woman
- For women with new hypertension of 90-99mmHg without proteinuria, with no relevant symptoms, a normal umbilical artery Doppler, and blood tests within the normal range at the first assessment, repeat the Step 1 assessment in one week. If there is no change in signs or symptoms, do not routinely repeat the blood tests. A medical review may be appropriate (according to local protocol) if the hypertension is persistent. Progression, as shown by changing blood parameters, emerging symptomatology, or change in signs, will require medical review and/or admission.
- The criteria for admission and medical review in monitoring assessments are the same as Recommendation 10.

⁷ Contact community lead to schedule next community pre-eclampsia assessment within one week

- Arrange for a woman 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. In the subsequent plan of care there should be an interval of no more than 2 weeks between assessments; these women are no longer within the NICE guideline recommendations for routine antenatal care, and all are at higher risk of developing pre-eclampsia
- Some women will have had transient signs/ symptoms that will recur. Offer a Day Unit assessment using PRECOG recommendations 4 and 5 to detect and act on any signs and symptoms. (See the precog Evidence Document for incidence of transient hypertension.)

BOX 11: CHECKLIST FOR EFFECTIVE ANTENATAL CARE IN THE DAU ASSESSMENT

<p>Before a pregnant woman leaves her initial DAU assessment she should have:</p> <ul style="list-style-type: none"> - 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. - A mechanism to report and act on any new symptoms that she may notice herself. Encourage her to self monitor. - hand held notes or a DAU summary from her assessment - a follow up appointment - allocation to a named consultant - an agreed mechanism by which she will be informed of her test results and discuss any change to her antenatal care plan within 24 hours. <p>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</p>	
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NATIONAL AUDIT AND RESOURCE IMPLICATIONS

A survey of all Day Assessment Units in England, Wales, Scotland and Northern Ireland (Action on Pre-eclampsia, 2006) has provided information on the percentage of DAUs currently conforming to the PRECOG guideline, as shown below and national resource implications for implementation of the guideline. See Evidence Document for more details of the survey.

National Day Assessment Unit survey results summary (Action on Pre-eclampsia, 2006)

PRECOG criterion	Percentage conforming to PRECOG (n=111)	+/- resource and clinical implications
A dedicated area for assessment	97%	
Staff trained for DAU (permanent)	76% have permanent staff	94% shared staff share with antenatal ward, 6% with labour ward
Access to portable Doppler facilities	47%	53%. Purchase and training needs
Diagnostic thresholds for Doppler	24% new hypertension 14% new proteinuria	The majority only use umbilical artery Doppler when there is a suspicion of a SGA (outwith this guideline)
Lab tests available in 24 hours	95%	No resource implications
Validated automated devices for measuring blood pressure	70% have automated devices, but only 50% of these are validated	50% of automated devices have not been validated for use in pregnancy (see CEMACH). Equipment maintenance costs
Aneroid devices for measuring blood pressure calibrated within 12 months	50% have aneroid devices, 44% have been calibrated	56% of aneroid devices have not been calibrated in 12 months
Thigh cuffs available (18x36cm) for measuring blood pressure in women with an arm circumference of 41cm or more	27% have thigh cuffs available	73% do not have thigh cuffs available for larger women (giving false positive readings). Implications include incorrect or delayed diagnosis (see CEMACH 2003-5) and inappropriate treatment for hypertension.
Proteinuria confirmed by 24 hour collection	85%	All DAUs confirm significant proteinuria by 24 hour collection or exclude by PCR ratio.
Significant proteinuria excluded by PCR ratio	34%	
Platelet count threshold $150 \times 10^9/l$ or mean-2SD	49%	33% use a lower threshold for action.
Serum urate threshold mean for gestational age + 2SD	15% (40% use some gestational dependent threshold)	60% do not adjust for gestational age. Serum urate is not necessary in women with new hypertension 90-99mmHg only.
AST/ALT pregnancy ranges (mean + 2SD)	37-41%	Incorrect identification of abnormal results.
Creatinine (mean + 2SD or > 90)	17%	

Which blood tests are requested relating to pre-eclampsia	98% platelet count 90% serum urate 95% AST or ALT 81% creatinine 50% clotting screen	50% conduct a clotting screen (unnecessary unless platelet count < 100x10 ⁹ /l). Serum urate is not necessary in women with new hypertension 90-99mmHg only.
When blood tests relating to pre-eclampsia are requested.	New hypertension (80%) New proteinuria (69%) 5% consider gestational age 14% SGA fetus 41% symptoms only	In certain circumstances (see guideline) blood tests do not need to be repeated.

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