Guideline for the Management of Hypertensive Disorders of Pregnancy

2014

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ABBREVIATIONS

ABPM	Ambulatory blood pressure monitoring
AFV	Amniotic fluid volume
ALT	Alanine transaminase
AOR	Adjusted odds ratio
APPT	Activated partial thromboplastin time
AST	Aspartate transaminase
BW	Birth weight
CI	Confidence Interval
ECG	Electrocardiogram
FBC	Full blood count
FGR	Fetal growth restriction
HELLP	Haemolysis, elevated liver enzymes and low platelet syndrome
Hr	Hour(s)
INR	International normalised ratio
ISSHP	International Society for the Study of Hypertension in Pregnancy
IU	International units
IV	Intravenous
K1	Korotkoff sound 1
K2	Korotkoff sound 2
Kg	kilogram
LDA	Low dose aspirin
LDH	Lactate dehydrogenase
LFT	Liver function tests
mcg	microgram
mg	milligram
min	minute
mL	millilitre
NICU	Neonatal intensive care
NPV	Negative predictive value
PCR	Protein/creatinine ratio
PlGF	Placental growth factor

RDS

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Table 2: Ongoing investigation of women with hypertension in pregnancy

	Modality	**Frequency**
Chronic hypertension	Assess for proteinuria*	Each visit
	Preeclampsia bloods**	If sudden increase in BP or new proteinuria
Gestational hypertension	Assess for proteinuria	1-2x/week
	Preeclampsia bloods	Weekly
Preeclampsia	Assess for proteinuria	At time of diagnosis: if non-proteinuric repeat daily*
	Preeclampsia bloods	Twice weekly or more frequent if unstable

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5. Management of preeclampsia and gestational hypertension

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Table 3. Timing of delivery and gestation of presentation of preeclampsia

Gestation at onset	**Previable <23[6] weeks**	**24-31[6] weeks**	**32-36[6]**	**37+0 onwards**
Delivery plan	Consult with Tertiary institution: likely to need termination of pregnancy or extreme preterm delivery. High risk patient	Consult and transfer to Tertiary institution: likely to need preterm delivery. Aim to prolong pregnancy where possible	Aim to prolong pregnancy where possible, deliver in institution with appropriate Paediatric care	Plan delivery on best day in best way

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The management of women with preeclampsia below 32-34 weeks gestation should be restricted to those centres with appropriate experience and expertise and appropriate neonatal intensive care hceknkvkgu0"Engct"õgpfrqkpvuö"hqt"fgnkxgt{"ujqwnf"dg"fghkpgf"hqt each patient (Table 4), such that the decision to terminate the pregnancy is based on agreed criteria. In many cases, the timing of delivery will be based upon a number of factors, maternal and/or fetal rather than a single absolute indication for delivery.

Table 4. Indications for delivery in women with preeclampsia or gestational hypertension

steroid prophylaxis may be beneficial in this group.

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Table 5. Guidelines for selecting antihypertensive drug treatment in pregnancy

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Persistent or refractory severe hypertension may require repeated doses of these agents or even an intravenous infusion of labetalol 20-160 mg/hr or hydralazine 10-20 mg/hr, titrated to the blood

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Table 7. Protocol for fetal surveillance in women with hypertension in pregnancy

Hypertension	Modality	Frequency
Chronic hypertension	Early dating ultrasound U/S for fetal growth/AFV/Doppler	First trimester 3rd trimester: repeat as indicated
Gestational hypertension	U/S for fetal growth/AFV/Doppler	At time of diagnosis and 3-4 weekly
Preeclampsia	U/S for fetal growth/AFV/Doppler Cardiotocography	At time of diagnosis and 2-3 weekly Twice weekly or more frequently if indicated
Preeclampsia with FGR	Cardiotocography U/S for fetal /AFV/Doppler U/S for fetal growth	Twice weekly or more frequently if indicated On admission and weekly or more frequently if abnormalities in Doppler flow or amniotic fluid volume are detected. 2 weekly

AFV= assessment of amniotic fluid volume.

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patient advocacy organizations include"vjg"Australian Action on Pre-eclampsia (AAPEC) and New
Zealand Action on Pre-eclampsia (NZ APEC) groups.

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All agents mentioned earlier (including the ACE inhibitors enalapril, captopril and quinapril) are compatible with breast feeding. Clonidine has been found to accumulate significantly in neonatal serum, although the significance is undetermined (182) .

After six weeks:

Caesarean birth

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Table 9. Risk factors associated with preeclampsia (216-218)

Risk Factor	Unadjusted Relative Risk [95% CI]
Nulliparity	2.9 [1.3-6.6]
Multiple pregnancy	2.9 [1.3-6.6]
Previous history of preeclampsia	7.2 [5.9-8.8]
Family history of preeclampsia	2.9 [1.7-4.9]
Overweight BMI 25-29.9*	1.7 [1.2-2.4]
Obese BMI >30*	2.7 [1.7-4.4]
Cig"×"62	2.0 [1.3-2.9]
Systolic BP>130mmHg before 20 weeks	2.4 [1.8-3.2]
Diastolic BP >80mmHg before 20 weeks	1.4 [1.0-1.9]
Antiphospholipid syndrome	9.7 [4.3-21.8]
Pre-existing diabetes	3.6 [2.5-5]
Other risk factors	Underlying renal disease Chronic autoimmune disease Interpregnancy interval >10 years

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Table 12: Risk of developing subsequent disease after preeclampsia. (265, 266, 269)

Medical Condition	Relative Risk [95% CI]
Chronic Hypertension	3.70 [2.70-5.05]
Ischaemic Heart Disease	2.16 [1.86-2.52]
Cerebrovascular Disease	1.81 [1.45-2.27]
Peripheral Vascular Disease	1.87 [0.94-3.73]
Deep Vein Thrombosis	1.79 [1.37-2.33]
End Stage Renal Disease	4.3 [3.3-5.6]
Type II Diabetes	1.86 [1.22-2.84]
Elevated TSH	1.7 [1.1-1.7]
All Cancer	0.96 [0.73-1.27]

Cognitive functioning also appears to be affected after severe preeclampsia and eclampsia. Three to eight months after severe preeclampsia, women have measurably impaired memory which is unrelated to scores of depression, anxiety or attention (270). Women who have had eclampsia self report more cognitive failures and impaired vision several years after pregnancy compared to those women who had preeclampsia or normal pregnancies (271, 272).

Children born to a pregnancy complicated by preeclampsia have increased cardiovascular risk factors from an early age. A systematic review of 18 studies looking at cardiovascular risk factors in the offspring of pregnancies affected by preeclampsia found an increase in systolic blood pressure of 2.39 mmHg, an increase in diastolic blood pressure of 1.35 mmHg and an increase of 0.62 kg/m2 in BMI (273). There is also weak, inconsistent evidence that hypertensive disorders of pregnancy may be associated with an increase in adverse paediatric neurodevelopmental effects, such as inattention and externalizing behaviours (274, 275). Further research in this area is required.

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