The Royal Australian and New Zealand College of Obstetricians and Gynaecologists

Excellence in Women's Health

Diagnosis and treatment of hypertension and pre-eclampsia in pregnancy in New Zealand : A clinical practice guideline 2017 (Preview)

Audrey Long

Background

- NZ Ministry of Health
- 2009 Maternity Quality initiative
- Consistency of service provision
- Hypertensive disorders affect 5-10% pregnancies
- Pre-eclampsia affects 3-8% pregnancies in NZ
- Variation between DHBs

Guideline Development Team

Member	Organisation
Claire McLintock	Royal Australasian College of Physicians
Sheridan Massey (Chair) **Jackie Reetz**	New Zealand College of Midwives
Aidan O'Donnell	Australian and New Zealand College of Anaesthetists
Audrey Long	Royal Australian and New Zealand College of Obstetrics and Gynaecology
Jesse Solomon	Women's Health Action
Margaret Shanks	Royal New Zealand College of General Practitioners
Chris Mallon	Ex officio member
Alesha Smith **Pauline Dawson** **Sheena Moosa**	Inquisit Ltd (Research and clinical team)

Treaty of Waitangi

- Principles of Partnership, Participation, Protection
- Central to improving Maori health
- Considered at all points in the guideline


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Hypertension

- Systolic BP ≥ 140 mmHg

OR

- Diastolic BP ≥90 mmHg

- Measured on two or more consecutive occasions at least 4 hours apart

A rise in BP of 30mmHg systolic or 15mmHg diastolic, is important to note and may be of clinical importance, but it no longer used to diagnose hypertension

Chronic/Pre-existing Hypertension

- Hypertension confirmed pre-conception or prior to 20 weeks
- With or without known cause
- Measured on 2 or more occasions at least 4 hours apart

Gestational Hypertension

- New onset of hypertension after 20 weeks

(in a woman who was normotensive before 20 weeks)

  - BP ≥140/90
  - Without any of abnormalities which define pre-eclampsia
  - Return of BP to normal within 3 months postpartum

Pre-eclampsia

- New onset of hypertension after 20 weeks (in woman who was normotensive before 20 weeks)

OR

- Superimposed on pre-existing hypertension

AND

- co-existence of **one or more** of the following new onset conditions :-

Pre-eclampsia – new onset conditions

- **Proteinuria** - PCR≥ 30mg/mmol or ≥2+ dipstick testing confirmed by PCR
- **Maternal organ dysfunction**
  - Renal insufficiency
  - Liver involvement
  - Neurological complications
  - Haematological complications
- **Uteroplacental dysfunction**
  - Fetal growth restriction, abruption

Proteinuria is not essential for a pre-eclampsia diagnosis

24-hour urine protein is not usually necessary – no more predictive than spot PCR

Elevation in serum uric acid is poor predictor of pre-eclampsia

Severe features of Pre-eclampsia

- Severe hypertension (≥160/ 110)
- Thrombocytopenia
- Impaired liver function
- Progressive renal insufficiency
- Pulmonary oedema
- New onset headaches and visual disturbances
- HELLP syndrome
- Eclampsia

Unstable pre-eclampsia

- Women with pre-eclampsia who have:
  - Worsening blood results
  - Severe hypertension not controlled by antihypertensives

‘Fulminating Pre-eclampsia’

Eclampsia

- New onset seizures in association with pre-eclampsia
- Severe manifestation of pre-eclampsia
- May be the presenting feature
- Self-limiting, no persistent clinical neurological features, not caused by pre-existing neurological conditions

HELLP

- **H**aemolysis, **E**levated **L**iver enzymes, **L**ow **P**latelet count

- Platelet count $<100x10^9/L$
- Elevated transaminases
- Microangiopathic haemolytic anaemia with red cell fragments on blood film

Recommendations and Key priorities for implementation

Recommendations – GRADE approach

- Quality of evidence
  - Study limitations
  - Consistency of effect
  - Imprecision
  - Indirectness
  - Publication bias
- Strength Recommendation
  - Extent of confidence that benefits of recommended intervention outweigh its harms or vice versa

Key priorities for implementation (1)

- Major risk factors for developing pre-eclampsia include:
  - History of pre-eclampsia or HELLP
  - Chronic hypertension
  - Pre-existing diabetes
  - Renal disease
  - Autoimmune diseases
  - Family history
  - Oocyte donation
- Risk factors should be identified at booking, referral made and preventative therapies commenced

Prediction

- Biomarkers
  - Endothelial dysfunction is associated with antigenic regulators and oxidative stress markers
  - PlGF, s-Flt-1, PAPP-A, PP-13, hCG
  - S-Flt-1/PlGF ratio – promise as a predictive test
- Uterine artery flow
  - Trophoblast invasion of spiral arteries, leading to mal-development of uteroplacental perfusion
- Best prediction : combination of PlGF at 15 weeks, with clinical variables – BP, FHx PE, Hx fertility treatment

✔ Area of emerging evidence

Predictive testing - Recomendations

- Models for predicting pre-eclampsia, which combine different biochemical markers and uterine artery Doppler for all women have shown mixed results and are currently not recommended for use
- Although some promise as potential screening tools, the evidence and experience of use in clinical settings is not conclusive enough to include in this guideline

Key priorities for implementation (2)

- Women at high risk are recommended to commence low dose aspirin and calcium BEFORE 16 weeks gestation
  - Reduce risk of developing pre-eclampsia and adverse events such as preterm birth

Prevention

- Aspirin 100mg daily
  - Women can remain on it until birth

Taking at bedtime/evening may reduce blood pressure

- Calcium
  - 1G elemental intake/day
  - 1.25g Calcium carbonate provides 500mg elemental calcium

Key Priorities for implementation (3)

- Women who develop severe hypertension in pregnancy (≥ 160/110) should be treated with antihypertensive
- Consider treatment for women with gestational hypertension ≥ 140/90

Antihypertensives

- First line antihypertensives include:
  - Labetolol
  - Nifedipine
  - Methyldopa
- Target BP
  - sBP 130-150 mmHg and dBP 80-100 mmHg
  - <130/80 no better than <140/90 for progression to severe hypertension or outcomes for baby

Acute Lowering of Hypertension

- Severe hypertension ≥ 160/110
- Nifedipine – 10mg conventional release oral tablet
- Labetolol – initially 20mg IV bolus over 2 minutes
- Hydralazine – initially 5-10mg IV bolus over 3-10 minutes (5mg if fetal compromise)

✔ Consider IV bolus crystalloid fluid 200-300mls with first dose hyrdralazine

Key Priorities for implementation (4)

- Women with pre-eclampsia should be managed as inpatients

Key priorities for implementation (5)

- Magnesium Sulphate is indicated in women with eclampsia
- Should be considered in women with severe pre-eclampsia BUT primary importance is BP control

Magnesium Sulphate

- Prevent eclampsia or treat seizure:
  - Loading dose - 4G over 10 minutes
  - Maintenance dose 1G/hour
  - ECG monitoring and inform anaesthetist
- Recurrence of siezure:
  - 2G IV over 10 minutes
  - Maintenance dose of 1G/hour (or 2G/hour)
  - Check for hyporeflexia and reduced respiratory rate
- Intramuscular dose
  - Suitable for retrieval and transfer
  - Two deep IM injections - 4g $MgSO_4$ 50% solution into each buttock
  - Maintenance dose 5G $MgSO_4$ 50% by deep IM every 4 hours

✓ IV use: dilute to concentration of 20% or less

✓ Ensure Calcium Gluconate available

Key Priorities for implementation (6)

- When considering timing of birth, severity of hypertensive disease, gestation and maternal and fetal wellbeing need to be taken into account

Key Priorities for implementation (7)

- Preferred mode of delivery is **vaginal** unless contraindicated by other maternal or fetal factors

Mode of birth

- <28 weeks IOL likely to be less successful and maternal & fetal disease likely to be more severe
- Neonatal outcomes better even if IOL ends in CS
- Eclampsia is NOT an indication for CS

Use of ergometrine or Syntometrine© is contraindicated in hypertensive cases

Key Priorities for implementation (8)

- Spinal anaesthesia or combined spinal and epidural anaesthesia (CSE) are the preferred techniques for CS

✗ Fluid preloading not required

✓ If GA – rapid sequence induction is preferred

✗ CVP monitoring is not usually required

✗ Pulmonary catheter is not recommended

✓ Peripheral arterial line is not required, but can be useful for monitoring BP

✓ Mg SO4 can continue during CS

✓ Fluid restriction advisable

(80-85mls/hour total fluids in severe pre-eclampsia)

Key priorities for implementation (9)

- Women with hypertension in pregnancy should be monitored for postpartum onset or excacerbation of pre-eclampsia as there is frequently a rise in BP around day 3-5

✔ Be aware of postpartum Eclampsia

✔ Women with pre-eclampsia are at increased risk of VTE

Key priorities for implementation (10)

- Women who have developed gestational hypertension or pre-eclampsia should have regular cardiovascular/renal risk assessment in the long term
- Comprehensive discharge letter to GP should include long term monitoring recomendations

Women's Experience

- Educational tools should be available – health literacy and demographic diversity
- Equity of care – in particular Maori & Pacific women
- Women and Whanau should be actively involved and informed throughout health-decision making process
- Complications associated with HIP can be stressful – need for psychological care & support
- Normal screening for PN depression imperative
- Women should have the opportunity to debrief

Resource Implications

- Recommendations have been made based on best evidence without restriction of cost or resource implications
- Increased monitoring for women at high risk or diagnosed with hypertensive disorders – demands on LMCs
- Long term monitoring – cost to women in additional GP attendance
- Psychological care and support – increased demands on mental health services and DHBs
- Likely that costs offset by reduction in maternal and neonatal adverse events