HYPERTENSION IN PREGNANCY

Cross References (including NSW Health/ SESLHD policy directives)	NSW Health PD2013_043 *Medication Handling in NSW Public Health Facilities* SGSHHS CLIN WCH *Thromboembolism prophylaxis and treatment* SGSHHS CLIN WCH *Criteria for Maternity Care at St George and Sutherland Hospitals* SGH-TSH WCH CLIN031 *Obstetric Cholestasis* SGH WCH CLIN027 *Risk associated Pregnancy (RAP) Team - Criteria for Allocation SGH*
1. What it is	A policy to guide management of hypertensive disorders in pregnancy and the postnatal period.
2. Risk Rating	Medium
3. Employees it Applies to	Maternity Staff, Obstetric Medicine Physicians

4. Process

CONTENTS:

4.1 MANAGEMENT OF AT-RISK WOMEN

4.1.1 Risk factors for the Development of Preeclampsia (PE)

- Pregnant women considered to be at high risk of preeclampsia are those with:
  - Previous history of PE
  - Pre-existing diabetes (Type 1 or 2)
  - Antiphospholipid syndrome
  - Chronic hypertension
  - Chronic kidney disease

- Other risk factors include:
  - BMI >30
  - Assisted Reproduction Therapy

4.1.2 Aspirin for the Prevention of Preeclampsia

- High risk women (as above) need to start 150mg Aspirin daily, ideally prior to 16 weeks gestation
- Women with a combination of other risk factors: nulliparity, multiple pregnancy, family history of PE, obesity, age ≥40, can be considered for aspirin prophylaxis
- Aspirin may be ceased at 37 weeks but is safe to continue longer
- There is no increase in bleeding complications for women on low dose Aspirin in pregnancy

4.1.3 Model of Antenatal Care

- High risk women should be seen in Risk Associated Pregnancy (RAP) and/or Obstetric Medicine Clinic (OMC) prior to 12 weeks gestation
- Women may continue in the RAP clinic, or return to their original model of care at the discretion of the RAP consultant
- See also SGH WCH CLIN027 *Risk associated Pregnancy (RAP) Team - Criteria for Allocation SGH*

4.2 REFERRAL TO THE OBSTERIC MEDICINE PHYSICIAN (OMP)

4.2.1 Antenatal referral to the Obstetric Medicine Physician

- Women to be referred to the Obstetric Medicine Clinic (OMC) or to private Obstetric Medicine Physician (OMP) rooms during pregnancy:
  - Chronic hypertension without preeclampsia
  - 'High risk' pregnancy or history of early onset preeclampsia
  - White-coat hypertension - before 20 weeks gestation
  - Renal disease or suspicion of an underlying secondary cause for hypertension
  - Antiphospholipid syndrome or other thrombophilia

4.2.2 Acute referral to the Obstetric Medicine Physician

- Women to be referred to OMP acutely
  - All women with preeclampsia
  - Women with gestational hypertension (GH) when there is difficulty controlling BP requiring more than 2 antihypertensive agents
  - Women with acute severe hypertension
  - At the discretion of the RAP Obstetrician

4.2.3 Women who do not require automatic referral

- Most cases of gestational hypertension
- Transient gestational hypertension i.e. women after 20 weeks whose BP is elevated in clinic or office but normal at Day Assessment Unit (DAU). These women need to be seen in the RAP clinic in one week for review and a plan made for further management. They have a 40% chance of developing GH or PE
- Obstetric cholestasis (most cases)
- Ovarian Hyper-stimulation Syndrome (unless concerns about oliguria, fluid management or abnormal renal function - use protocol first)

4.2.4 On call arrangements

- Check the roster in 1South Maternity or the hospital roster to determine who is on call for obstetric medicine
- It is often not the same as the on-call hospital nephrologist

4.3 DIAGNOSIS AND INVESTIGATION OF NEW-ONSET HYPERTENSION IN PREGNANCY

4.3.1 Definitions

- Hypertension in pregnancy is diagnosed as
  - Systolic blood pressure (SBP) ≥ 140 mmHg and/ or
  - Diastolic blood pressure (DBP) ≥ 90 mmHg
- Mild- moderate hypertension: SBP ≥140 to <160 mmHg, and/or DBP ≥90 to <110mmHg
- Severe hypertension: SBP ≥ 160 and/or DBP ≥ 110mmHg
- Essential (or chronic) hypertension: pre-existing hypertension or hypertension diagnosed prior to 20 weeks gestation
- Gestational hypertension is the new onset of hypertension after 20 weeks gestation
- Preeclampsia: the presence of :
  - Hypertension and
  - Proteinuria or
  - Deranged renal or liver function, or
  - Thrombocytopaenia or haemolysis, or
  - Fetal growth restriction
  - Neurological signs and symptoms: Headache and visual scotoma, hyperreflexia and sustained clonus.

4.3.2 Blood Pressure Measurement

- Antenatally, sit the woman in a chair or on the edge of the bed with feet supported on a flat surface
- Record BP on the right arm, using a validated mercury-free sphygmomanometer
- A large cuff must be used when the mid upper arm circumference is ≥ 33cm, or a thigh cuff if arm circumference ≥ 44cm

- The cuff is to be placed directly on skin, so sleeves may need to be rolled up or removed
- The diastolic pressure is that at which the pulse sounds disappear (Korotkov 5)
- Aneroid devices should NOT be used.

4.3.3 Antenatal period

- If newly diagnosed hypertension, repeat the BP in 5 minutes.
- If still elevated and SBP ≥ 160 and / or DBP ≥ 110, transfer to Delivery Suite for urgent assessment.
- If SBP ≥140 and < 160, or DBP≥ 90 and < 110, perform urinalysis (UA)
    - If no proteinuria:
        - If > 20 weeks gestation- arrange appointment at earliest (Antenatal Assessment Unit (AAU) at The Sutherland Hospital, TSH)
        - If < 20 weeks gestation, arrange appointment with Obstetric Medicine Clinic
    - If ≥ +1 proteinuria and/or symptomatic of hypertension, arrange medical review and:
        - send urine for protein: creatinine ratio (PCR), arrange FBC, UEC, LFT, Urate
        - transfer to Delivery Suite for urgent assessment.
    - Manage as per '*Treatment of Hypertension'*

4.3.4 Intra-partum period

- Intrapartum hypertension is diagnosed if SBP≥ 140 or DBP≥ 90 on at least 2 occasions at least 15 min apart.
- If newly diagnosed hypertension in the intra-partum period:
    - Arrange medical review
    - Collect blood for FBC, UEC, LFT and urate
    - Perform UA (if possible) on a CSU and send for PCR if ≥ +1 proteinuria
    - Perform BP every 30 minutes intra-partum, more frequently when BP unstable
    - Manage as per '*Treatment of Hypertension'*
    - Manage post-natally under the RAP team (SGH)

4.3.4 Postnatal Period

- If newly diagnosed hypertension in the postnatal period:
    - Arrange medical review
    - Perform a UA and send for PCR if ≥ +1 proteinuria
    - Manage as per '*Treatment of Hypertension'*

4.4 DAY ASSESSMENT UNIT (DAU)

4.4.1 Referral to the DAU

- DAU is conducted three mornings a week – Monday, Wednesday and Friday
- Women booked at SGH should be referred to DAU if they have:
    - Hypertension diagnosed after 20 weeks without proteinuria or other features of PE, where admission and delivery is not already indicated
    - Obstetric cholestasis not requiring delivery
- Women require a written referral by a medical officer with a provider number

- Contact 1South Maternity to arrange an appointment to the DAU (ext. 33145)
- Women booked at TSH will attend AAU at TSH and be referred to SGH as appropriate (see Criteria for Maternity Care at Sutherland and St George Hospitals CIBR)
- Refer to Policy: *Obstetric Cholestasis* for management of women referred to DAU with this.

4.4.2 Initial investigations of women referred to DAU with hypertension

- BP profile
- Urinalysis, send for spot protein: creatinine ratio (PCR) if ≥ +1 proteinuria
- FBC, UEC, LFT, Urate
- CTG
- Ultrasound for fetal growth/wellbeing (if there has not been a normal growth/wellbeing ultrasound performed within the previous 2 weeks)

4.4.3 Treatment of Hypertension in the DAU

- For mild- moderate hypertension, refer : *Treatment of Mild-Moderate Hypertension*
- If severe hypertension is diagnosed, call a PACE Tier 1, and manage as per: *Management of Severe Hypertension*.

4.4.4 Follow-up

- Women who are normotensive in DAU have had *transient gestational hypertension*. They may be referred back to their original intending model of care, however they have a 40% risk of developing GH or PE.
- Women who are referred back to DAU for a second time should be considered for ongoing monitoring in the DAU
- Women diagnosed with pre-eclampsia will generally require admission
- Women with gestational or essential hypertension will require follow-up in the DAU or RAP and OMC clinics at the discretion of the attending consultants.

4.5 ANTENATAL MANAGEMENT OF WOMEN ADMITTED WITH HYPERTENSION

4.5.1 Admission

- All women (except private patients) with hypertension in pregnancy will be admitted under the RAP obstetrician on call (SGH) or staff specialist (TSH)
- Women with preeclampsia at TSH should be transferred to SGH
- Assess the woman and her family's educational needs regarding hypertension in pregnancy, and give them the brochure to read

4.5.2 Observations and monitoring

a) Maternal Observations

- Perform full maternal observations every 6 hours

- Record BP 3-hourly at 0600, 0900, 1200, 1500, 1800, 2100, 0000hrs
- Between 0000 – 0600hrs, stable antenatal women do not need to be woken for observations.
- Calculate and record average BP for the previous 24hrs each evening
- Perform an automated dipstick urine test daily in the morning using a correctly collected MSU sample
    - Send spot urine for protein and creatinine ratio (PCR) if ≥ 1+ protein revealed on UA.
    - Once PCR ≥ 30, do not send repeated urine samples for PCR unless otherwise directed
    - 24 hour urine collection is NOT required to assess proteinuria unless requested by OMP
- Record fetal movement, fetal heart rate, uterine activity and vaginal loss on every shift

b) Fetal Observations

- Perform a CTG on admission (if ≥26 weeks), then Monday and Thursday, unless otherwise clinically directed
- Arrange an ultrasound scan for fetal growth/wellbeing (unless a normal growth/wellbeing ultrasound has been performed within the previous 2 weeks and there are no new clinical concerns about fetal welfare)

c) Pathology testing

- Collect a FBC, UEC, LFT, Urate on admission
- Repeat blood tests on Monday and Thursday, unless otherwise indicated, until birth
- Record blood results on woman's 'Hypertension in Pregnancy Data Collection Sheet'

4.5.3 Management of Hypertension

- Manage hypertension as per '*Treatment of Hypertension'*

4.5.4 Indications for delivery

- Women with confirmed PE ≥ 37 weeks
- Inability to control BP with maximum antihypertensive therapy
- Progressive deterioration in liver and/or renal function or thrombocytopaenia
- Neurological signs and symptoms
- Concerns about fetal wellbeing
- Women < 32 weeks and/or EFBW <1800g may need to be transferred to a Level 6 hospital if their clinical condition allows

4.6 TREATMENT OF MILD-MODERATE HYPERTENSION

Mild- Moderate Hypertension	SBP ≥ 140 - < 160 and/or DBP ≥ 90 - < 110

4.6.1 Principles:

- Treatment should generally be instituted when hypertension is diagnosed after a DAU visit, at least 3 hours of observation in hospital or an overnight stay as an inpatient
- First line agents are oxprenolol or methyldopa
- Target BP is Systolic BP 110-140 and Diastolic BP 80-85
- Allow at least 24 hours for each dose increment to take effect
- Increase dose no sooner than every 24 hours until target BP reached

4.6.2 Regimen:

- Antihypertensive treatment is at the direction of the OMP, RAP consultant, or O&G consultant afterhours and at TSH
- Oxprenolol 40mg tds is the standard initial agent in absence of contraindications
- Dosage may be increased at 24 hour intervals to a maximum of 120mg TDS
- Hydralazine is the usual second agent to be added, at an initial dose of 25mg tds to a maximum of 50mg tds.
- Substitute methyldopa (250mg TDS increasing to 500mg TDS) for Oxprenolol as above when B-Blockers are contraindicated (usually asthma)
- Consult OMP if hypertension persists despite maximum oxprenolol (120mg tds) and hydralazine (50mg tds)

4.7 MANAGEMENT OF SEVERE HYPERTENSION

Severe Hypertension	SBP ≥ 160 and/or DBP ≥ 110

4.7.1 Principles

- Urgent management is required when severe hypertension is diagnosed
- Repeat the BP after 5 minutes:
  - If SBP<160 and DBP <110, recheck again in 30 minutes
  - If severe hypertension persists follow Section 7.3 (below) immediately
- Initiate Obstetric PACE Tier 1. Notify OMP and RAP consultant, or on call obstetrician after hours, (or private obstetrician for private patients).
- Collect FBC, EUC, LFT, Urate
- Obstetric RMO to discuss with obstetric registrar

- Give normal antihypertensive medications if due, as well as additional management as outlined below
- Commence continuous CTG monitoring (if undelivered) until BP stabilises

4.7.2 Oral management for non-labouring women

Call Obstetric PACE Tier 1
Administer **10mg nifedipine tablet orally** (standing order)
Monitor and record BP every 15 minutes Perform continuous CTG monitoring
If after 45 minutes severe hypertension persists: Call an Obstetric PACE Tier 1
Give second dose of **10mg nifedipine orally**
Monitor BP every 15 minutes until BP stabilises
If after another 45 min (90 min from first dose), severe hypertension persists: Call an Obstetric PACE Tier 2 Cannulate and collect FBC, EUC, LFT, Urate Transfer to Delivery Suite
Commence **IV management** as below (may be commenced prior to transfer if delay in transfer occurs)

4.7.3 Intravenous antihypertensive management

- IV management is first line management for laboring women, or women who do not respond to oral management as outlined above.

Call an Obstetric PACE Tier 2
Administer IV Gelofusine 500mL over 4 hours
Dilute 20mg hydralazine in 20mL of water for injection
Administer **5mg (5mL) Hydralazine** as an IV bolus
Monitor and record BP every 10 minutes Perform continuous CTG monitoring
If after 20 minutes severe hypertension persists:
Administer second dose of **5mg (5mL) Hydralazine** as an IV bolus
If after another 20 minutes, severe hypertension persists:
Administer third dose of **5mg (5mL) Hydralazine** as an IV bolus

4.7.4 Management of persisting severe hypertension

- If severe hypertension persists after 3 boluses of IV hydralazine:

Call an Obstetric PACE Tier 2 Registrar to notify RAP consultant and OMP
Draw 10mL out of a 500mL sodium chloride 0.9% bag, mix the 10mL with 80mg hydralazine powder and then load it back into bag to make 500mL bag
Commence **hydralazine infusion** via infusion pump Commence infusion at **30mL/hr** i.e. 5mg/hr
Increase infusion by 10mL every 30 minutes to a maximum of 90mL/hr (ie. 15mg/hr), aiming for SBP 140 –160mmHg and DBP 90-100mmHg

- The hydralazine infusion should be weaned and overlapped with oral antihypertensives (unless low BP) under the direction of the OMP and/or RAP consultant (O&G consultant at TSH).

4.7.5 Other Important points

- Consider eclampsia prophylaxis with magnesium Sulfate (Refer to *Eclampsia Prophylaxis and management*)
- Initiate OBSTETRIC PACE Tier 2 call if there is deterioration in maternal or fetal condition e.g. hypotension (SBP ≤ 110mmHg and/or DBP ≤ 80mmHg), neurological symptoms, epigastric pain, fetal distress
- Severe hypertension may be an indication for delivery depending on gestation and individual circumstances. Women with severe hypertension should not be transferred to another hospital for delivery until clearly stable as it is not considered safe practice.
- In early onset cases delivery should be expedited at SGH, notify paediatric team, NETS in advance and, if necessary, the baby then transferred.
- In cases of in utero transfer, a hydralazine infusion may be safe to discontinue during the transfer after consultation between the obstetrician and OMP involved
- Women with severe hypertension should be managed in ICU2 after delivery
- For women at TSH refer to *Criteria for Maternity Care at St George and Sutherland Hospitals* CBR.

4.8 ECLAMPSIA PROPHYLAXIS AND MANAGEMENT

4.8.1 Principles

- The use of magnesium sulfate treatment must be discussed with the obstetrician and Obstetric Medicine Physician (OMP) on call
- The administration of magnesium sulfate antenatally is usually an indication for delivery
- Caution is required if maintenance calcium channel blockers are being used concurrently (nifedipine for acute severe hypertension is safe). Discuss with OMP.

4.8.2 Indications for magnesium sulfate treatment:

- After an eclamptic convulsion
- In the presence of:
  - altered mental state
  - hyperreflexia with clonus (≥3 beats)
  - repeated visual scotomata
  - Severe hypertension with proteinuria
- Consider if severe or rapidly progressive pre-eclampsia (PE)

4.8.3 Regimen

Loading dose: use 4g (8mL) magnesium sulfate in 100mL sodium chloride 0.9%
Administer IVI at **300 mL/hr** via infusion device (i.e. over 20 minutes)
Maintenance dose: Remove 20 mL solution from 100 mL sodium chloride 0.9% infusion bag and discard. Add 10g magnesium sulfate (4 amps = 20 mL) to the bag.
Infuse at **10mL/hr** (1g/hr)
Maintain infusion for 24-36 hrs postnatally

- Magnesium sulfate must be administered via an infusion device and through a second cannula
- No other drugs or fluids must be administered via the magnesium sulfate IV line
- Magnesium sulfate infusion must be infused via infusion device at appropriate rate or ceased on transfer to theatre (or inutero transfer to tertiary hospital), or discontinued and the tubing disconnected to prevent accidental overdose

4.8.4 Observations and care during magnesium sulfate infusion:

- Magnesium sulfate infusions should be managed in the Delivery Suite in the antenatal and intrapartum periods with 1:1 midwifery care, and in ICU2 in the postnatal period
- Continuous CTG monitoring if ≥ 26 weeks gestation (if < 26 weeks gestation, perform 30 minutely auscultation)
- Maternal observations:
  - Respiratory rate and pulse oximetry every 30 min.
  - BP 30 minutely
  - Maternal pulse hourly
  - Urine output hourly
  - Reflexes at the completion of the loading dose and then every 2 hours by RMO

4.8.5 Management of magnesium sulfate toxicity

- Measurement of serum magnesium sulfate levels is not necessary unless signs of toxicity
- Signs of magnesium sulfate toxicity:
  - Respiratory rate <10/min or SaO_2 < 92%
  - Muscle Paralysis
  - Urine output <30mL/hr for 3 consecutive hours.
  - Reflexes absent
  - Systolic BP ≤110 mmHg and/or diastolic BP ≤ 80 mmHg
- If toxicity suspected:
  - Cease the infusion, take blood for magnesium sulfate level
  - Call **Obstetric PACE Tier 2**
- Treatment of magnesium sulfate toxicity:
  - Administer calcium gluconate 10%, 10mL in 100 mL sodium chloride 0.9% IVI over 10-20 minutes

4.8.6 Management of Eclampsia

- Initiate **Obstetric and Adult PACE Tier 2**
- Manage fitting (eclampsia):
  - Place woman on her side, clear pharynx by suction', insert airway, give oxygen
  - Administer magnesium sulfate IVI 4g bolus over 10-20 minutes and repeat if fitting has not ceased
  - Call RAP consultant and OMP (O&G Consultant after-hours and at TSH)
  - Commence maintenance dose magnesium sulfate infusion (as above) to prevent further fitting
- Manage hypertension if present
- Collect FBC, UEC, LFT, Urate and coagulation studies
- Prepare for delivery of the baby where appropriate
- Magnesium sulfate infusion should be continued for 24-36 hours post-natally
- Women should be managed in ICU 2 until stable and magnesium sulfate infusion complete

4.9 INTRAPARTUM MANAGEMENT OF WOMEN WITH HYPERTENSION

4.9.1 Maternal observations

- For unstable women, one-on-one midwifery care must be instituted. If the current workforce does not allow this to occur, this matter is to be escalated to the relevant Nurse Manager (in office hours or after hours).
- The anaesthetic team should be informed of high risk or unstable women
- Measure and document BP every 30 minutes or more frequently if clinically indicated when in labour, in addition to routine intrapartum observations.

- Intrapartum hypertension is diagnosed if SBP≥ 140 or DBP≥ 90 on at least 2 occasions at least 15 min apart. If newly diagnosed see section 3.4.
- If SBP ≥ 140 - < 160 and/or DBP ≥ 90 - < 110 during labour call Obstetric PACE Tier 1 manage as per Treatment of Mild-Moderate Hypertension
- If SBP ≥ 160mmHg or DBP ≥ 110 mmHg during labour call Obstetric PACE Tier 2, manage as per: *Management of Severe Hypertension*.
- Record urine output. In severe pre-eclampsia (PE), a urinary catheter should be inserted and urine measured hourly. Contact renal registrar if concerned about urine output (<30mL per hr over 3 hours) or renal function (creatinine ≥90umol/L)
- Cannulate with wide bore (16fg or 18fg) cannula

4.9.2 Fetal Observations

- Continuous electronic fetal monitoring (CEFM) is required if:
  - Preeclampsia
  - New onset of hypertension during labour
  - Gestational or essential hypertension

4.9.3 Pathology

- In women with preeclampsia, collect FBC, UEC, LFT and Urate
- For essential or gestational hypertension, collect the above tests as directed by medical officers.

4.9.4 Medications

- Administer prescribed antihypertensives prior to commencement of labour or induction
- Do not administer further oral antihypertensive medications once labour is established unless specifically instructed
- Do not use non-steroidal anti-inflammatory drugs

4.9.5 Fluid management

- If epidural is to be used, preloading should be with a colloid solution (500mL) over 60 minutes. Inform anaesthetist of platelet count before insertion of epidural block
- Otherwise, total IVI fluids should be 60-80mL/hr (after preload as above)
- If oxytocin required, consider doubling the concentration and halving the rate (i.e. 20iu of oxytocin in 1Litre of sodium chloride 0.9%, commenced and increased at half the protocol rate).
- Use hourly urine bag to measure output.

4.9.6 Post birth management

- Do not use Ergometrine or Syntometrine (5 units Oxytocin and 5mcg Ergometrine Maleate) as first line management in third stage because of hypertensive action
- Obstetrician and OMP to determine most suitable ward immediately postpartum (i.e. postnatal ward, ICU2, HDU or Delivery Suite)

4.10 MANAGEMENT OF WOMEN WITH HYPERTENSION UNDERGOING CAESAREAN SECTION

4.10.1 Pre-operatively:

- Inform anaesthetic team
- Use hourly urine bag when catheterised (usually in theatre)
- Ensure FBC has been attended that day to exclude thrombocytopaenia
- Severe hypertension should be managed prior to transfer (see below) if clinical condition allow
- Otherwise manage as per *Caesarean Section* CIBR

4.10.2 Postoperative Management

- Manage in ICU 2 (HDU at TSH) if hydralazine and/or magnesium sulfate infusion necessary
- Recommence oral antihypertensive therapy as soon as the woman able to tolerate
- Monitor urine output. Arrange medical review if less than 30mL/hr:
- If no signs of fluid overload, administer colloid fluid 200mL stat and assess response. Do NOT give more than 500mL
- If evidence of fluid overload (elevated JVP or basal lung crepitations), notify OMP for further management
- If urine output adequate, maintenance fluids can be Hartmann's or sodium chloride 0.9% 1000mL/8 hours until tolerating oral intake
- Recheck FBC, UEC, LFT and urate if there were abnormalities in these pre-operatively. Otherwise no further blood tests are routinely needed after delivery
- Do not use non-steroidal anti-inflammatory drugs (NSAIDs)

4.11 POSTNATAL MANAGEMENT OF WOMEN WITH HYPERTENSION

4.11.1 Observations

- Perform full maternal observations every 6 hours
- Check blood pressure (BP) 3-hourly (0600, 0900, 1200, 1500, 1800, 2100, 0000hrs)

4.11.2 Pathology

- Only recheck FBC, UEC, LFT and Urate if there were abnormalities in these prior to birth or woman’s condition deteriorates postnatally.
- Otherwise no further blood tests are routinely needed after delivery

4.11.3 Medications

- Administer prescribed antihypertensives
- Do not use non-steroidal anti-inflammatory drugs

- Administer thromboprophylaxis-
    - TED stockings for all women
    - enoxaparin if PE (unless contraindicated), and women with additional risk factors (refer to CBR *Thromboembolism prophylaxis and treatment*)

4.11.4 For women with new onset hypertension diagnosed in labour

- Women who have new onset hypertension in labour, and if the diagnosis of pre-eclampsia / hypertension is unclear, should have:
    - 24 hours of postpartum blood pressure monitoring
    - a repeat spot urine postnatally
    - A review by the RAP team to decide on the diagnosis and the need for further monitoring and/or treatment

4.11.5 Follow-up

- All women should be followed up by their GP or OMP:
    - Within 1 week if BP still elevated or taking antihypertensives at discharge
    - After 3 months in all women to ensure BP & U/A are normal
    - Yearly for life to detect cardiovascular disease or hypertension
- The *Hypertension in Pregnancy Data Collection Sheet* should be completed by the midwife prior to discharge. This information is used by the OMP for:
    - Generating summary and follow-up letters to GPs and Obstetricians
    - The Hypertension in Pregnancy database is used to report quality outcomes

5. Keywords	Hypertension, pregnancy, labour
6. Functional Group	Women's and Children's Health
7. External references	Guidelines for the Management of Hypertensive Disorders of Pregnancy. SOMANZ 2014 (Updated June 2015) 2008. Brown M, Lindheimer M, de Sweit M, Van Assche A, & Moutquin JM. The classification and diagnosis of the hypertensive disorders or pregnancy: Statement from the International Society for the Study of Hypertension in Pregnancy (ISSHP). 2001 Hypertension in Pregnancy, vol 20, no.1, pp IX-XIV. Hypertension in pregnancy: diagnosis and management. Clinical guideline [CG107]. National Institute of Clinical Excellence (UK). August 2010, updatedJanuary 2011 Australian College of Midwives: National Midwifery Guidelines for Consultation and Referral. May 2013
8. Consumer Advisory Group (CAG) approval of patient information brochure (or related material)	*Hypertension in Pregnancy* Patient Brochure

9. Implementation and Evaluation Plan Including education, training, clinical notes audit, knowledge evaluation audit etc	The new CIBR will be notified to staff at various meetings including ward staff meetings, management and education meetings, open forums, through direct email contact with clinicians and through in-service education where appropriate and necessary. Staff are required to sign an audit sheet in their clinical area to acknowledge they have read and understand the new CIBR. The CIBR will be uploaded to the W&CH CIBR page on the intranet.

10. Knowledge Evaluation	Q1: Which pregnant women considered to be at high risk of preeclampsia should receive aspirin?
	A1: Previous history of preeclampsia; pre-existing diabetes (Type 1 or T2; Antiphospholipid syndrome; chronic hypertension; chronic kidney disease
	
	Q2: Indications for magnesium sulfate treatment?
	A2:
	• After an eclamptic convulsion
	• In the presence of:
	  ○ altered mental state
	  ○ hyperreflexia with clonus (≥3 beats)
	  ○ repeated visual scotomata
	  ○ Severe hypertension with proteinuria
	• Consider if severe or rapidly progressive pre-eclampsia (PE)

11. Who is Responsible	Director Women's and Children's Health

Approval for HYPERTENSION IN PREGNANCY	
***Specialty/Department Committee**	Committee title: Women's & Children's Protocols Committee Chairperson name/position Louise Everitt CMC Date: 01.06.17
***Specialty/Department Committee**	Committee title: Women's & Children's Protocols Committee Chairperson name/position Dr Trent Miller O&G Senior Medical Officer Date: 01.06.17
***Nurse/Midwifery Manager SGH**	Name/position Lorena Matthews Midwifery & Nursing W&CH Date: 02.06.17
***Nurse/Midwifery Manager, TSH**	Name/position Rebecca Moore, Midwifery & Nursing Manager W&CH Date: 09.06.17
***Medical Head of Department**	Name /position Dr Trent Miller for Prof Michael Chapman, Medical Director W&CH Date: 01.06.17
***Medical Head of Department, TSH**	Name /position Dr Monique Damasco, A/Medical Director W&CH Date13.06.17
***Drug and Therapeutics Committee (SGH)**	Chairperson's Name: A/Prof Winston Liauw Date: 19.02.18
***Drug and Therapeutics Committee (TSH)**	Chairperson's Name: Dr Justine Harris Date: 24.08.17
Executive Sponsor	Name /position Dr Trent Miller for Prof Michael Chapman, Medical Director W&CH Date: 01.06.17
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Revision and Approval History

Date	Revision number	Author (Position)	Revision due
Jan 03, Feb 04, April 07, Mar 10	4	Christine Catling-Paull (CMC Policy Development)	
Jan 03, May 03, Feb 04, April 07, Feb 10	5	Referral to Obstetric Medicine Physician (OMP) (CMC Policy Development)	
Sept 05	5	Antenatal Management of Woman admitted with Hypertension (CMC Policy Development)	
Jan 03, May 03, Feb 04, April 07, Feb 10	3	Urine testing of woman admitted with hypertension (CMC Policy Development)	
Jan 03, April 07, Mar 10	5	Woman with Pre-eclampsia (PE) having a Caesarean Section (CMC Policy Development)	
Sept 11	5	Management of Severe Hypertension in Pregnancy and Postnatal (CMC Policy Development)	
Mar 2011	5	Intrapartum care of woman with Pre-eclampsia (PE) (CMC Policy Development)	
Sept 11	5	Eclampsia Convulsion Prophylaxis with Magnesium Sulfate (CMC Policy Development)	
Sept 11	5	Management of Eclampsia (CMC Policy Development)	
Jan 03, April 07, Mar 10	3	Postnatal care of the woman with Hypertension (CMC Policy Development)	
Nov 14	1 (combined as above)	Louise Everitt (CMC)	Nov 2017
May 2017	2	Louise Everitt (CMC) Dr Trent Miller	May 2020
Feb 2018	3 (change in Aspirin dose)	Louise Everitt (CMC) Dr Trent Miller	May 2020

General Manager's Ratification	
Name Leisa Rathborne (SGH)	Date: 01.09.17
Name David Pearce (A/GM TSH)	Date: 01.09.17