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Policy Code: BHSCT/SHWH/Mat (01) 2021

Title:	**The management of Hypertensive disorders in pregnancy**				
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Policy Type: (tick as appropriate)	*Directorate Specific ☒	Clinical Trust Wide ☐	Non Clinical Trust Wide ☐		
If policy type is confirmed as ***Directorate Specific** please list the name and date of the local Committee/Group that policy was **approved**					
Directorate Governance Approval	24/02/2021				
Approval process:	Standards and Guidelines Committee Executive Team Meeting		**Approval date:**	13/04/2021 07/06/2021	
Operational Date:	June 2021		**Review Date:**	June 2026	
Version No.	2	**Supercedes**	V1 – May 2012 – May 2015		
Key Words:	Hypertensive, pregnancy				
Links to other policies	None				

1.0 INTRODUCTION / SUMMARY OF POLICY

1.1 History

Hypertensive disorders during pregnancy carry significant risks to maternal and fetal health and remain one of the leading causes of maternal mortality globally. In 2015-17, six women died from the complications related to hypertensive disorders of pregnancy in UK and Ireland (MBRRACE-UK). Due to better awareness and understanding of the management of fluids in severe pre-eclampsia in recent times, none of the deaths was due to pulmonary oedema or renal failure.

1.2 Purpose of the guideline

This guideline is updated version of previous guideline “The management of hypertensive disorders antenatally, intranatally and postnatally” published in 2012. Its aim is to provide up to date recommendations for the diagnosis and management of hypertensive disorders during pregnancy, labour and postpartum.

2.0 SCOPE OF THE POLICY

All obstetric/ midwifery staff who care for women in the antenatal/ intrapartum/ postpartum period.

3.0 ROLES AND RESPONSIBILITIES

All staff should refer to this guideline when treating women with hypertension antenatally, intranatally and postnatally.

4.0 CONSULTATION

This guideline will be circulated amongst all key workers, Excellence and Clinical Governance Committee and Supervisors of Midwives and approved by the D&T Committee.

5.0 POLICY STATEMENT/IMPLEMENTATION

5.1 Definitions

Hypertension: Blood pressure of 140 mmHg systolic or higher or 90 mmHg diastolic or higher.

Severe hypertension: Blood pressure over 160 mmHg systolic or over 110 mmHg diastolic.

Chronic Hypertension: Hypertension present at booking or before 20 weeks gestation or if the woman is already taking antihypertensive medication when referred to maternity services. It can be primary or secondary in aetiology.

Gestational Hypertension: Hypertension that develops after 20 weeks without significant proteinuria.

Eclampsia: A convulsive condition associated with pre-eclampsia.

HELLP syndrome: Haemolysis, elevated liver enzymes and low platelet count.

Pre-eclampsia: New onset of hypertension (over 140 mmHg systolic or over 90 mmHg diastolic) after 20 weeks of pregnancy and the co-existence of 1 or more of the following new onset conditions:

- Proteinuria (urine protein:creatinine ratio of 30 mg/mmol or more or at least 1g/litre [2+] on dipstick testing)
- Maternal organ dysfunction:

Renal	**Creatinine 90 micromole/litre or more**
Liver	Elevated transaminases (ALT or AST over 40 IU/litre) with or without right upper quadrant or epigastric pain.
Neurological	Eclampsia, altered mental status, blindness, stroke, clonus, severe headaches or persistent visual scotomata.
Haematological	Platelet count below 150,000/ microlitre), Disseminated intravascular coagulation or haemolysis

- Uteroplacental dysfunction: Fetal growth restriction, abnormal umbilical artery doppler or stillbirth.

Severe pre-eclampsia: Pre-eclampsia with severe hypertension that does not respond to treatment or is associated with ongoing or recurring severe headaches, visual scotomata, nausea or vomiting, epigastric pain, oliguria and severe hypertension, as well as progressive deterioration in laboratory blood tests such as rising creatinine or liver transaminases or falling platelet count, or failure of fetal growth or abnormal doppler findings.

5.2 Policy Principles:

5.2.1 REDUCING THE RISK

Antiplatelet agent: Advice pregnant women at high risk of pre-eclampsia or with more than 1 moderate risk factors for pre-eclampsia to take 150 mg of Aspirin daily from 12 weeks until birth. 75 mg Aspirin once daily should be considered in cases of severe liver or renal disease.

Risk factors:

High	Moderate
Hypertensive disease in previous pregnancy	Primigravida
Chronic kidney disease	Age 40 or older
Autoimmune disease such as SLE or APLS	Pregnancy interval of more than 10 years
Diabetes (Type 1 and 2)	Booking BMI ≥ 35
Chronic hypertension	Family history of pre-eclampsia
	Multiple pregnancy

Symptoms and signs of pre-eclampsia: Advise women to attend RJMS Maternity Assessment Unit if they experience any symptoms or show signs of pre-eclampsia including:

- severe headache
- problems with vision, such as blurring or flashing before the eyes
- severe pain just below the ribs
- vomiting
- sudden swelling of the face, hands or feet.
- Epigastric tenderness
- Exaggerated reflexes or clonus (3 beats)
- Raised blood pressure with significant proteinuria

5.2.2 ASSESSMENT OF PROTEINURIA IN HYPERTENSIVE DISORDERS OF PREGNANCY

- Interpret proteinuria measurements in the context of a full clinical review of symptoms, signs and other investigations for pre-eclampsia.
- Avoid first morning void to quantify proteinuria.
- If dipstick screening is positive (1+ or more), use protein:creatinine ratio to quantify proteinuria, use 30 mg/mmol as a threshold for significant proteinuria.
- Use an automated reagent-strip reading device for dipstick screening for proteinuria when possible.

5.2.3 ANTENATAL CARE

General principles of management:

- In women with hypertensive disorder during pregnancy, schedule additional antenatal consultations based on the specific condition and the individual needs of the woman and her baby.
- Document a clear management plan in the antenatal notes covering measurement of blood pressure, testing for proteinuria, appropriate blood tests and thresholds for admission to hospital and treatment.
- If a woman meets criteria for self-monitoring of Blood Pressure and proteinuria, follow pathway "*Self-monitoring of blood pressure in pregnancy"* (APPENDIX D). Criteria includes:
  - Currently hypertensive with either chronic hypertension, gestational hypertension or pre-eclampsia.

- Normotensive, but having risk factors mentioned in section 4.2. This group would include women who are prescribed Aspirin.

- Commence on labetalol as first line medication to treat hypertension. Consider nifedipine for women in whom labetalol is not suitable, and methyldopa if both labetalol or nifedipine are not suitable.
- Offer intravenous MgSO4 and course of antenatal corticosteroids if indicated, if early birth is planned in line with NICE guideline on preterm labour and birth.
- Consultant incharge for labour ward should be involved in decision making if:
  - preterm delivery is considered.
  - Inform neonatal unit if delivery imminent and less than 37 weeks.
  - Anaesthetic review if needing urgent delivery ASAP.

Chronic hypertension:

Pre-pregnancy Counselling	Advise against ACE inhibitors, angiotensin II receptor blockers (ARBs) or thiazides as these can cause congenital abnormalities. Stop ACE inhibitors or ARBs if they become pregnant (preferably within 2 working days of notification of pregnancy) and offer alternatives.
Diet and Lifestyle	Advise low dietary sodium intake to help reduce blood pressure. Encourage healthy low fat and sugar diet and regular exercise.
Treatment	Offer treatment if not on medication if: sustained systolic blood pressure of 140 mmHg or higher or sustained diastolic blood pressure of 90 mmHg or higher
PIGF based test*	When available offer placental growth factor (PlGF)-based testing to help rule out pre- eclampsia between 20 weeks and up to 35 weeks of pregnancy, if women with chronic hypertension are suspected of developing pre-eclampsia.
AN appointment	Weekly if B.P poorly controlled. 2-4 weeks if B.P well controlled, either with community MW or hospital depending on severity of blood pressure. Hospital visits should be a minimum of every 4 weeks after 24 weeks gestation. The community midwife should refer to hospital admissions or antenatal if BP poorly controlled or concerns of pre-eclampsia or fetal growth restriction.
Fetal monitoring	Ultrasound for fetal growth, amniotic fluid volume and umbilical artery dopplers at 28, 32 and 36 weeks. CTG if clinically indicated. More frequently if BP difficult to control or fetal concerns.
Admissions	If B.P 160/110 or higher or evidence of end organ damage secondary to hypertension.
Timing of birth	If B.P < 160/110 mmHg with or without medication, consider delivery after 37 weeks, not beyond 39/40 weeks' gestation.

Gestational hypertension:

Degree of hypertension	**Hypertension: Blood pressure of 140/90–159/ 109 mmHg**	**Severe hypertension: Blood pressure of 160/110 mmHg or more**
Hospital admission	Not routinely	Yes (until BP falls below 160/ 110 mmHg)
Antihypertensive pharmacological treatment	Offer pharmacological treatment if BP remains above 140/90 mmHg. Refer section 6.1.3	Offer pharmacological treatment to all women.
Target blood pressure once on antihypertensive treatment	Aim for BP of 135/85 mmHg or less	Aim for BP of 135/85 mmHg or less
Blood pressure measurement	Once or twice a week (depending on BP) until BP is 135/85 mmHg or less	Every 15–30 minutes until BP is less than 160/110 mmHg
Dipstick proteinuria testing	Once or twice a week (with BP measurement)	Daily while admitted
Blood tests	Measure full blood count, liver function and renal function at presentation and then consider weekly	Measure full blood count, liver function and renal function at presentation and then consider weekly
PlGF-based testing*	Carry out PlGF-based testing when available on 1 occasion if there is suspicion of pre-eclampsia.	Carry out PlGF-based testing when available on 1 occasion if there is suspicion of pre-eclampsia.
Fetal assessment	Offer fetal heart auscultation at every antenatal appointment. Carry out ultrasound assessment of the fetus at diagnosis and, if normal, repeat every 2 to 4 weeks, as per clinical indications. Carry out a CTG only if clinically indicated	Offer fetal heart auscultation at every antenatal appointment. Carry out ultrasound assessment of the fetus at diagnosis and, if normal, repeat every 2 weeks, if severe hypertension persists. Carry out a CTG at diagnosis and then only if clinically indicated
Timing of birth	Do not deliver <37 weeks. Consider if > 37weeks but not beyond 39/40 weeks.	If B.P uncontrollable despite of multiple medication consider preterm delivery.

Pre-eclampsia:

Degree of hypertension	**Hypertension: Blood pressure of 140/90–159/ 109 mmHg**	**Severe hypertension: Blood pressure of 160/ 110 mmHg or more**
Admission to hospital	Admit if any clinical concerns for the wellbeing of the woman or baby or if high risk of adverse events suggested by the fullPIERS[1] or PREP-S[2] risk prediction models*. . https://www.evidencio.com/models/show/1155 https://www.evidencio.com/models/show/1038	Admit, but if BP falls below 160/110 mmHg then manage as for hypertension.
Antihypertensive treatment	Offer pharmacological treatment if BP remains above 140/90 mmHg.	Offer pharmacological treatment to all women.
Target blood pressure once on treatment.	Aim for BP of 135/85 mmHg or less.	Aim for BP of 135/85 mmHg or less.
Blood pressure measurement	At least every 48 hours, and more frequently if the woman is admitted to hospital.	Every 15–30 mins until BP <160/110 mmHg, then at least 4 times daily while the woman is an inpatient, depending on clinical circumstances.
Dipstick proteinuria testing	Only repeat if clinically indicated, for example, if new symptoms and signs develop or if there is uncertainty over diagnosis.	Only repeat if clinically indicated, for example, if new symptoms and signs develop or if there is uncertainty over diagnosis.
Blood tests	Measure FBP, liver function and renal function twice a week.	Measure FBP, liver function and renal function 3 times a week.
Fetal assessment	Offer fetal heart auscultation at every antenatal appointment. Carry out ultrasound assessment of the fetus at diagnosis and, if normal, repeat every 2 weeks. Carry out a CTG at diagnosis and then only if clinically indicated.	Offer fetal heart auscultation at every antenatal appointment. Carry out ultrasound assessment of the fetus at diagnosis and, if normal, repeat every 2 weeks. Carry out a CTG at diagnosis and then only if clinically indicated.
Timing of birth	Within 24-48 hours of the diagnosis if after 37 weeks.	Immediately if life threatening maternal/ fetal factors. See below regarding threshold for planned early delivery.

*** When using a risk prediction model, consider that:**
fullPIERS is intended for use at any time during pregnancy
PREP-S is intended for use only up to 34 weeks of pregnancy
fullPIERS and PREP-S models do not predict outcomes for babies

Reference for PlGF

Result	Classification	Interpretation
PlGF <12 pg/ ml	Test positive - highly abnormal	Highly abnormal and suggestive of patients with severe placental dysfunction and at increased risk for preterm delivery
PlGF ≥12 pg/ ml and <100 pg/ml	Test positive – abnormal	Abnormal and suggestive of patients with placental dysfunction and at increased risk for preterm delivery
PlGF ≥100 pg/ ml	Test negative – normal	Normal and suggestive of patients without placental dysfunction and unlikely to progress to delivery within 14 days of the test
Abbreviations: PlGF, placental growth factor; pg/ml, picograms per millilitre.		

***** PLGF testing- Currently not available within the Belfast Trust, but regional discussion re its use in near future in NI

Thresholds for considering planned early birth include:

- Inability to control maternal blood pressure despite using 3 or more classes of antihypertensives in appropriate doses
- Maternal pulse oximetry <90%
- Progressive deterioration in liver function, renal function, haemolysis, or platelet count
- Ongoing neurological features
- Placental abruption
- Absent or reversed end-diastolic flow in the umbilical artery doppler,
- Abnormal cardiotocograph or stillbirth.

5.2.4 INTRAPARTUM CARE

Women with hypertensive disorders during pregnancy should be given advice and treatment in line with NICE guideline 'Intrapartum care: management and delivery of care to women in labour'.

Early Warning Score chart should be used.

Medical review: These women are high risk and require an obstetric review within 30 minutes of arrival on delivery suite and this must be documented in the notes. If the obstetric team are unavailable, it must be clearly documented in the notes why and when a review is expected. The co- ordinator should review the patient to assess the urgency. If medical staff is required urgently, immediate escalation to the Obstetric Consultant on call should take place. Until the review happens the co-ordinator should be kept up to date with any changes.

Blood pressure: During labour, measure blood pressure:

- Hourly in women with hypertension.
- Every 15 minutes in women with severe hypertension until B.P is <160/110.

Antihypertensive drugs: Continue use of antenatal antihypertensive treatment during labour. *See appendix A for regimes and dosages*.

Haematological and biochemical monitoring: Determine the need for haematological and biochemical tests during labour in women using the same criteria as in the antenatal period (even if regional analgesia is being considered).

Fluid balance and volume expansion:

1. Monitor fluid input/output hourly.
2. In severe preeclampsia insert a urinary catheter with urometer.
3. In women with severe pre-eclampsia, limit maintenance fluids to 80 ml/hour unless there are other ongoing fluid losses (for example, haemorrhage).
4. Do not use volume expansion in women with severe pre-eclampsia unless hydralazine is the antenatal antihypertensive.

Care during epidural analgesia: Do not preload women who have severe pre-eclampsia with intravenous fluids before establishing low-dose epidural analgesia or combined spinal epidural analgesia.

Mode of delivery: Choose mode of birth with severe hypertension, pre-eclampsia or eclampsia according to the clinical circumstances and the woman's preference.

Management of the second stage: Do not routinely limit the duration of the second stage of labour in women with stable hypertension or if blood pressure is controlled within target ranges in women with severe hypertension. Recommend operative birth in the second stage of labour for women with severe hypertension whose hypertension has not responded to initial treatment.

Management of the third stage: DO NOT give syntometrine or Ergometrine.

Indications for referral to critical care levels: Offer women with severe hypertension or severe pre-eclampsia referral to the appropriate critical care setting if they suffer from severe preeclampsia, eclampsia or any associated complications of the disease process.

5.2.5 MEDICAL MANAGEMENT OF SEVERE HYPERTENSION, SEVERE PRE-ECLAMPSIA OR ECLAMPSIA IN A CRITICAL CARE SETTING

If a woman in critical care setting who has severe hypertension or severe pre-eclampsia has or previously had an eclamptic fit give intravenous $MgSO_4$. Consider giving intravenous magnesium sulphate to women with severe pre-eclampsia who are in a critical care setting if birth is planned within 24 hours. Consider the need for magnesium sulphate treatment, if 1 or more of the following features of severe pre-eclampsia is present:

- ongoing or recurring severe headaches
- visual scotomata

- nausea or vomiting
- epigastric pain
- oliguria and severe hypertension
- progressive deterioration in laboratory blood tests (such as rising creatinine or liver transaminases, or falling platelet count).

Use the Collaborative Eclampsia Trial regimen for administration of magnesium sulphate:

- A loading dose of 4 g should be given intravenously over 5 to 15 minutes, followed by an infusion of 1 g/hour maintained for 24 hours. If the woman has had an eclamptic fit, the infusion should be continued for 24 hours after the last fit.
- Recurrent fits should be treated with a further dose of 2–4 g given intravenously over 5 to 15 minutes.
- **Do not use diazepam, phenytoin or other anticonvulsants as an alternative to magnesium sulfate in women with eclampsia**.

Antihypertensives: Treat women with severe hypertension who are in critical care during pregnancy or after birth immediately with 1 of the following:

- labetalol (oral or intravenous)
- oral nifedipine
- intravenous hydralazine.

In women with severe hypertension who are in critical care, monitor their response to treatment:

- to ensure that their blood pressure falls
- to identify adverse effects for both the woman and the baby
- to modify treatment according to response.
- Consider using up to 500 ml crystalloid fluid before or at the same time as the first dose of intravenous hydralazine in the antenatal period.

5.2.5 POSTNATAL MANAGEMENT

Discuss postnatal antihypertensive management with the woman before discharge, and show her the letter below about how she should expect to be reviewed after discharge.

The doctor, or midwife, discharging the woman should also explain her risks in future pregnancy, including use of aspirin and the importance of controlling her BP for her future health, due to increased risks of early onset cardiovascular disease – see tables below:

	Chronic Hypertension	Gestational Hypertension	Preeclampsia
Frequency of BP measurement	Daily - First 2 days. Once between day 3-5	4-6 hourly while inpatient. Once between day 3-5. On alternate days until normal if abnormal day 3-5	
BP maintenance range	<140/90		
Antihypertensive treatment (stop Methyldopa within 2 days of birth)	Continue antenatal antihypertensives Offer review of antihypertensive treatment 2 weeks postpartum with G.P or specialist.	Continue antenatal antihypertensives. Reduce dose if BP <140/90. Start antihypertensives if BP >149/99, even if women not on antenatal antihypertensives	
Follow up plan	Medical review at 6 weeks	If on drugs medical review at 2 and 6 weeks. Specialist review if still requiring antihypertensives at 6 weeks	
Antihypertensive drugs to be used	Offer Enalapril with appropriate renal function monitoring. For black African or Caribbean family origin, consider Nifedipine or Amlodipine. If not controlled with single medicine, consider combination of Nifedipine and Enalapril. If above combination not tolerated or is ineffective, consider either adding labetalol or swapping one of the medicines already being used for labetalol.		

5.2.7 LIKELIHOOD OF RECURRENCE OF HYPERTENSIVE DISORDERS OF PREGNANCY

	Type of hypertension in previous or current pregnancy		
Prevalence of hypertensive disorder in a future pregnancy	**Any hypertension in pregnancy**	**Pre-eclampsia**	**Gestational hypertension**
Any hypertension	~21% (1 in 5)	~20% (1 in 5)	~22% (1 in 5)
Pre-eclampsia	~14% (1 in 7)	Up to 16% (1 in 6) If birth was at 28–34 weeks ~33% (1 in 3) If birth was at 34–37 weeks: 23% (1 in 4)	~7% (1 in 14)
Gestational hypertension	~9% (1 in 11)	~6 - 12% (1 in 8)	~11-15% (1 in 7)
Chronic hypertension	Not applicable	~2% (1 in 50)	~3% (1 in 34)

5.2.8 CARDIOVASCULAR RISK IN WOMEN WHO HAVE HAD A HYPERTENSIVE DISORDER OF PREGNANCY

	Type of hypertension in current or previous pregnancy			
Risk of future cardiovascular disease [a,b]	**Any hypertension in pregnancy**	**Pre-eclampsia**	**Gestational hypertension**	**Chronic hypertension**
Major adverse cardiovascular event	Risk increased (up to ~2 times)	Risk increased (~1.5–3 times)	Risk increased (~1.5–3 times)	Risk increased (~1.7 times)
Cardiovascular mortality	Risk increased (up to ~2 times)	Risk increased (~2 times)	(no data)	(no data)
Stroke	Risk increased (up to ~1.5 times)	Risk increased (~2–3 times)	Risk may be increased	Risk increased (~1.8 times)
Hypertension	Risk increased (~2–4 times)	Risk increased (~2–5 times)	Risk increased (~2–4 times)	(not applicable)

[a] Risks described are overall estimates, summarised from risk ratios, odds ratios and hazard ratios.

[b] Increased risk is compared to the background risk in women who did not have hypertensive disorders during pregnancy. Absolute risks are not reported, because these will vary considerably, depending on the follow-up time (range from 1 to 40 years postpartum).

5.2.9 DISSEMINATION

Following ratification by the Standards and Guidelines Committee and Policy Committee this guideline will be published on the Belfast Trust Intranet Site and staff will be informed. Guidelines are regularly accessed by staff.

5.2.10 RESOURCES

None

5.2.11 EXCEPTIONS

None

6.0 MONITORING AND REVIEW

This guideline contains the current evidenced based thinking on the management of hypertensive disorders in pregnancy, however data and statistics are routinely collected and correlated and should the need arise the guideline will be updated.

7.0 EVIDENCE BASE/REFERENCES

- NICE clinical guideline on Hypertension in pregnancy: diagnosis and management. Published: 25 June 2019; www.nice.org.uk/guidance/ng133
- Institute of O&G, RCPI and Clinical strategy and Programmes Division, Health Service Executive guideline no.37 The Management of Hypertension in Pregnancy. Published: May 2016.
- GAIN guideline on MANAGEMENT OF SEVERE PRE-ECLAMPSIA AND ECLAMPSIA Published March 2012.
- BMJ Infographics - VISUAL SUMMARY OF NICE GUIDELINE 2019 MBRRACE report 2015-17.

8.0 APPENDICES

Appendix 1 Postnatal discharge letter to GP / community midwife
Appendix 2 Patient Information Leaflet
Appendix 3 Antihypertensive Drugs Recommended in Pregnancy
Appendix 4 Magnesium sulphate regimen and monitoring (gain 2012)
Appendix 5 Management of imminent eclampsia or eclampsia (gain 2012)
Appendix 6 Home Blood Pressure Monitoring in Pregnancy
Appendix 7 BMI infographics – visual summary of nice guideline 2019
Appendix 8 management of women with out of target blood pressure readings
Appendix 9 Obstetric telephone management
Appendix 10 DOU telephone triage for women self-monitoring blood pressure pathway
Appendix 11 Management of women attending DOU with raised blood Pressure
Appendix 12 Patient information leaflet - Self-monitoring blood pressure
Appendix 13 Patient information leaflet - How to test your urine for protein
Appendix 14 Agreement for blood pressure monitor loan and use
Appendix 15 Blood Pressure Recording Chart
Appendix 16 Personalised blood pressure self-monitoring plan

9.0 NURSING AND MIDWIFERY STUDENTS

Nursing and/or Midwifery students on pre-registration education programmes, approved under relevant 2018/2019 NMC education standards, must be given the opportunity to have experience of and become proficient in **the management of hypertensive disorders in pregnancy**where required by the student's programme. This experience must be under the appropriate supervision of a registered nurse, registered midwife or registered health and social care professional who is adequately experienced in this skill and who will be accountable for determining the required level of direct or indirect supervision and responsible for signing/countersigning documentation.

Direct and indirect supervision

- Direct supervision means that the supervising registered nurse, registered midwife or registered health and social care professional is actually present and works alongside the student when they are undertaking a delegated role or activity.
- Indirect supervision occurs when the registered nurse, registered midwife or registered health and social care professional does not directly observe the student undertaking a delegated role or activity. (NIPEC, 2020)

This policy has been developed in accordance with the above statement.

Wording within this section must not be removed.

10.0 EQUALITY IMPACT ASSESSMENT

The Trust has legal responsibilities in terms of equality (Section 75 of the Northern Ireland Act 1998), disability discrimination and human rights to undertake a screening exercise to ascertain if the policy has potential impact and if it must be subject to a full impact assessment. The process is the responsibility of the Policy Author. The template to be complete by the Policy Author and guidance are available on the Trust Intranet or via this **link**.

All policies (apart from those regionally adopted) must complete the template and submit with a copy of the policy to the Equality & Planning Team via the generic email address equalityscreenings@belfasttrust.hscni.net

The outcome of the equality screening for the policy is:

Major impact ☐
Minor impact ☐
No impact ☒

Wording within this section must not be removed

11.0 DATA PROTECTION IMPACT ASSESSMENT

New activities involving collecting and using personal data can result in privacy risks. In line with requirements of the General Data Protection Regulation and the Data Protection Act 2018 the Trust considers the impact on the privacy of individuals and ways to militate against any risks. A screening exercise must be carried out by the Policy Author to ascertain if the policy must be subject to a full assessment. Guidance is available on the Trust Intranet or via this **link**.

If a full impact assessment is required, the Policy Author must carry out the process. They can contact colleagues in the Information Governance Department for advice on Tel: 028 950 46576

Completed Data Protection Impact Assessment forms must be returned to the Equality & Planning Team via the generic email address equalityscreenings@belfasttrust.hscni.net

The outcome of the Data Protection Impact Assessment screening for the policy is:

Not necessary – no personal data involved ☒
A full data protection impact assessment is required ☐
A full data protection impact assessment is not required ☐

Wording within this section must not be removed.

12.0 RURAL NEEDS IMPACT ASSESSMENT

The Trust has a legal responsibility to have due regard to rural needs when developing, adopting, implementing or revising policies, and when designing and delivering public services. A screening exercise should be carried out by the Policy Author to ascertain if the policy must be subject to a full assessment. Guidance is available on the Trust Intranet or via this link.

If a full assessment is required the Policy Author must complete the shortened rural needs assessment template on the Trust Intranet. Each Directorate has a Rural Needs Champion who can provide support/assistance.

Completed Rural Impact Assessment forms must be returned to the Equality & Planning Team via the generic email address equalityscreenings@belfasttrust.hscni.net

Wording within this section must not be removed.

13.0 REASONABLE ADJUSTMENT ASSESSMENT

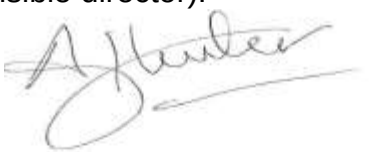
Under the Disability Discrimination Act 1995 (as amended) (DDA), all staff/ service providers have a duty to make Reasonable Adjustments to any barrier a person with a disability faces when accessing or using goods, facilities and services, in order to remove or reduce such barriers. E.g. physical access, communicating with people who have a disability, producing information such as leaflets or letters in accessible alternative formats. E.g. easy read, braille, or audio or being flexible regarding appointments. This is a non-delegable duty.

The policy has been developed in accordance with the Trust's legal duty to consider the need to make reasonable adjustments under the DDA.

Wording within this section must not be removed.

SIGNATORIES

(Policy – Guidance should be signed off by the author of the policy and the identified responsible director).



24/02/2021

_____ **Date:** _____

Policy Author

07/06/2021

_____ **Date:** _____

Director

Appendix 1

POST NATAL DISCHARGE LETTER TO GP / COMMUNITY MIDWIFE

Date ……

Addressograph

Dear Colleague,

Ms/Mrs …… is currently .....days postnatal and has been discharged

from the postnatal ward on ...../...../.....

Diagnosis: gestational hypertension / pre-eclampsia / chronic hypertension (Delete as appropriate)

Antihypertensive regime on discharge …….

(**DO NOT USE METHYLDOPA POSTNATALLY)**

……..

…….

Please monitor Blood Pressure daily / alternate days (delete as appropriate) for ……. Days.

Aim for a Blood Pressure of less than < 140 / 90 and follow management plan below:

B.P	Action required
B.P < 130/80 mmHg	Consider reducing dosage
B.P >149/99 mmHg	Refer G.P (Increase dose or start treatment if not on medication)
B.P > 160/110 mmHg	Refer RJMS assessment unit for same day review

Please arrange GP review if still on medication **2 weeks** post delivery.

G.P to arrange **specialist medical review** if still on antihypertensives or persistent proteinuria at 6 weeks postnatal review.

Women with hypertensive disease in pregnancy are at increased risk of recurrence in future pregnancies and hypertension in later life and therefore justify long term surveillance.

Women should be advised regarding weight loss where appropriate.

Name..... Signature..... Designation ……

Appendix 2

PATIENT INFORMATION LEAFLET

PRE-ECLAMPSIA:

Pre-eclampsia is a condition that affects some pregnant women, usually during the second half of pregnancy (from around 20 weeks) or soon after their baby is delivered. It is a combination of:

- raised blood pressure (hypertension)
- protein in your urine (proteinuria).

What are the symptoms of pre-eclampsia?

Pre-eclampsia is common, affecting between two and eight in 100 women during pregnancy. It is usually mild and normally has very little effect on pregnancy. However, it is important to know if you have the condition because in a small number of cases, it can develop into a more serious illness. Severe pre- eclampsia can be life-threatening for both mother and baby. Around one in 200 women (0.5%) develop severe pre-eclampsia during pregnancy. The symptoms tend to occur later on in pregnancy but can also occur for the first time only after birth.

Symptoms include:

Early signs of pre-eclampsia include having high blood pressure (hypertension) and protein in your urine (proteinuria).

It's unlikely that you'll notice these signs, but they should be picked up during your routine antenatal appointments.

In some cases, further symptoms can develop, including:

- swelling of the feet, ankles, face and hands caused by fluid retention (oedema)
- severe headache that doesn’t go away with painkillers.
- vision problems
- pain just below the ribs
- heartburn that doesn’t go away with antacids
- feeling very unwell

Above mentioned symptoms are serious and you should immediately contact your midwife / GP or local maternity unit.

In severe pre-eclampsia, other organs, such as the liver or kidneys, can sometimes become affected and there can be problems with blood clotting.

Severe pre-eclampsia may progress to convulsions or seizures before or just after the baby's birth. These seizures are called eclamptic fits and are rare, occurring in only one in 4000 pregnancies.
The earlier pre-eclampsia is diagnosed and monitored, the better the outlook for mother and baby.

How does it affect may baby?
Pre-eclampsia affects the development of the placenta (afterbirth), which may prevent your baby growing as it should. There may also be less fluid around your baby in the womb.
If the placenta is severely affected, your baby may become very unwell. In some cases, the baby may even die in the womb. Monitoring aims to pick up those babies who are most at risk.

What is my risk of developing pre-eclampsia?
Pre-eclampsia can occur in any pregnancy but you are at higher risk if:

- your blood pressure was high before you became pregnant.
- your blood pressure was high in a previous pregnancy.
- you have a medical problem such as kidney problems or diabetes or a condition that affects the immune system, such as lupus.

If any of these apply to you, you should be advised to take low-dose aspirin (150 mg) once a day from 12 weeks of pregnancy, to reduce your risk.

The importance of other factors is less clear-cut, but you are more likely to develop pre-eclampsia if more than one of the following applies:

- this is your first pregnancy
- you are aged 40 or over
- your last pregnancy was more than 10 years ago
- you are very overweight – a BMI (body mass index) of 35 or more
- your mother or sister had pre-eclampsia during pregnancy
- you are carrying more than one baby.

If you have more than one of these risk factors, you may also be advised to take low-dose aspirin once a day from 12 weeks of pregnancy.

What causes pre-eclampsia?

Although the exact cause of pre-eclampsia is not known, it's thought to occur when there's a problem with the placenta, the organ that links the baby's blood supply to the mothers.

How is pre-eclampsia monitored?

If you are diagnosed with pre-eclampsia, you should attend hospital for assessment. While you are at the hospital, your blood pressure will be measured regularly and you may be offered medication to help lower it. Your urine will be tested to measure the amount of protein it contains and you will also have blood tests done. Your baby's heart rate will be monitored and you may have ultrasound scans to measure your baby's growth and wellbeing.

What happens next?

You will continue to be monitored closely to check that you can safely carry on with your pregnancy. This may be done on an outpatient basis if you have mild pre-eclampsia. You are likely to be advised to have your baby at about 37 weeks of pregnancy, or earlier if there are concerns about you or your baby. This may mean you will need to have labour induced or, if you are having a caesarean section, to have it earlier than planned.

What happens if I develop severe pre-eclampsia?

If you develop severe pre-eclampsia, you will be cared for by a specialist team. The only way to prevent serious complications is for your baby to be born. Each pregnancy is unique and the exact timing will depend on your own particular situation. This should be discussed with you. There may be enough time to induce your labour. In some cases, the birth will need to be by caesarean section.

Treatment includes medication (either tablets or via a drip) to lower and control your blood pressure. You will also be given medication to prevent eclamptic fits if your baby is expected to be born within the next 24 hours or if you have experienced an eclamptic fit.

You will be closely monitored on the labour ward. In more serious cases, you may need to be admitted to an intensive care or high dependency unit.

What happens after the birth?

Pre-eclampsia usually goes away after birth. However, if you have severe pre-eclampsia, complications may still occur within the first few days and so you will continue to be monitored closely. You may need to continue taking medication to lower your blood pressure.

If your baby has been born early or is smaller than expected, he or she may need to be monitored. There is no reason why you should not breastfeed should you wish to do so.
You may need to stay in hospital for several days. When you go home, you will be advised on how often to get your blood pressure checked and for how long to take your medication.
You should have a follow-up with your GP 6–8 weeks after birth for a final blood pressure and urine check.
If you had severe pre-eclampsia or eclampsia, you should have a postnatal appointment with your obstetrician to discuss the condition and what happened. If you are still on medication to treat your blood pressure
6 weeks after the birth, or there is still protein in your urine on testing, you may be referred to a specialist.

Will I get pre-eclampsia in a future pregnancy?

Overall, one in six women who have had pre-eclampsia will get it again in a future pregnancy. Of women who had severe pre-eclampsia, or eclampsia:
one in two women will get pre-eclampsia in a future pregnancy if their baby needed to be born before 28 weeks of pregnancy
one in four women will get pre-eclampsia in a future pregnancy if their baby needed to be born before 34 weeks of pregnancy
You should be given information about the chance, in your individual situation, of getting pre-eclampsia in a future pregnancy and about any additional care that you may need. It is advisable to contact your midwife as early as possible once you know you are pregnant again.

Useful weblinks:

1- Tommy's: Pre-eclampsia- information and support (https://www.tommys.org/pregnancy-information/pregnancy-complications/pre-eclampsia-information-and-support)
2- Action on Pre-eclampsia- Support and Advice (https://action-on-pre-eclampsia.org.uk/)
3- NHS Quit Smoking Services (https://www.nhs.uk/live-well/quit-smoking/nhs-stop-smoking-services-help-you-quit/)
4- NHS Eat Well (https://www.nhs.uk/live-well/eat-well/)

Appendix 3

ANTIHYPERTENSIVE DRUGS RECOMMENDED IN PREGNANCY

Drug	Dosage Range	Action	Contraindication and Comments
Labetalol	Standard dose: 200-600 mg orally per day in 2-4 divided doses. Maximum dosage: 2,400 mg per day	Beta blocker with mild alpha vasodilator effect	Avoid in women with cardiac conduction abnormalities, systolic heart failure or asthma. SI: bradycardia, bronchospasm, nausea, nausea, headache which usually resolves within 24 hours
Nifedipine (extended release) i.e. Adalat LA	Standard dose: 30-60 mg orally per day. Maximum dosage: 90 mg per day	Calcium channel antagonist	Ensure correct form prescribed; short acting is not recommended due to risk of hypotension Not recommended before 20 weeks' gestation Caution regarding possible interaction with intravenous magnesium sulphate leading to severe hypotension Avoid in women with aortic stenosis SI: Severe headache, flushing, tachycardia, constipation
Methyldopa	Standard dose: 250-1000 mg orally per day in 2-3 divided doses Maximum dosage: 3000 mg per day	Centrally acting	Slow onset over 24 hours SI: dry mouth, blurred vision, depression, and sedation (dose dependant) Associated with hepatitis, haemolytic anaemia Withdrawal effects: rebound hypertension Stop +/- substitute with other agents within 2 days post delivery

Appendix 4

MAGNESIUM SULPHATE REGIMEN & MONITORING (GAIN 2012)

Administer via infusion pump

Loading Dose 4 g IV over 10-15 minutes

Add 8ml of50% MgSO4 to12mlNSaline (Pre-made Syringe)

= 4 g in 20 ml = 20% solution

Maintenance 1 g per hour

Add 5 g MgSO4 to 50 ml N Saline (Pre-made Syringe)

1g MgSO4 =10ml per hour IV

1 g/hour is infused for 24 hours after delivery or after last seizure,

whichever is later, provided that:

- Respiratory rate > 16 breaths/minute
- Urine output > 25 ml/hour, and
- Patellar reflexes are present

A higher maintenance dose may be required initially to prevent recurrent seizures – consultant must make this decision

If seizure continues, or if seizures recur, give a second bolus of magnesium sulphate: 2-4 g depending on weight of patient, over 5-10 minutes (2 g if < 70 kg and 4 g if > 70 kg)

ONE STAT DOSE ONLY

Alternately, increase the rate of magnesium sulphate infusion to 1.5g or 2.0g/hour

Monitor

Hourly urine output

Respiratory rate, oxygen saturation and patellar reflexes – every 10 minutes for first two hours and then every 30 minutes

Check serum magnesium levels every day if infusion is continued for >24 hours.

Request MgSO4 levels if:

Respiratory rate < 16 breaths/minute (**CARE:** lower rate may be appropriate if on opiates)

Urine output < 25 ml/hour for 4 hours

Loss of patellar reflexes

Further seizures occur

Magnesium levels:

Therapeutic 2.0 – 4.0 mmol/l

With increasing magnesium levels, the following may occur:

Feeling of warmth, flushing, double vision
Slurred speech. . . . . 3.8-5.0 mmol/l
Loss of tendon reflexes . . . . . >5.0 mmol/l
Respiratory Depression . . . . . >6.0 mmol/l
Respiratory Arrest . . . . . 6.3-7.1 mmol/l
Cardiac Arrest. . . . . >12.0 mmol/l

Magnesium Toxicity

Urine output <100 ml in 4 hours: If no clinical signs of magnesium toxicity, decrease rate to 0.5 g/hour.
Review overall management with attention to fluid balance and blood loss.

Absent patellar reflexes: Stop MgSO4 infusion until reflexes return.

Respiratory Depressions: Stop MgSO4 infusion.
Give oxygen via facemask and place in recovery position because of impaired level of consciousness Monitor closely.

Respiratory Arrest: Stop MgSO4 infusion Give IV Calcium Gluconate
Intubate and ventilate immediately.

Cardiac Arrest: Commence CPR Stop MgSO4 infusion.
Give IV Calcium Gluconate Intubate and ventilate immediately If antenatal, immediate delivery

Antidote:

10% Calcium Gluconate 10 ml IV over 10 minutes

Appendix 5

MANAGEMENT OF IMMINENT ECLAMPSIA OR ECLAMPSIA (GAIN)

DO NOT LEAVE PATIENT ALONE

Place in semi-prone position

Call for HELP – **Duty** obstetric & anaesthetic registrars; senior midwife.
Inform consultants – obstetrician and anaesthetist on-call

OBSERVATIONS
Pulse Oximeter BP
Respirations Temperature
ECG
Test urine for protein
Hourly urine output
Fluid balance / MEOWS chart
FH – monitor continuously

INVESTIGATIONS
FBP & Platelets
U&E
Urate
Serum Creatinine
LFTs
Coagulation Screen
Group and Hold Serum
MSSU/CSU
PCR

AIRWAY	• Assess; consider left lateral tilt • Protect Airway and maintain patency • Give oxygen
BREATHING	• Assess • Ventilate as required
CIRCULATION	• Evaluate pulse & BP • If absent, start CPR: 30 compressions/2 breaths • Call ARREST TEAM • Secure IV access as soon as safely possible
CONTROL SEIZURES	• Loading dose MgSO4 : 4 g MgSO4 in 20% solution IV over 10-15 minutes Add 8ml of 50% MgSO4 solution to 12 ml N Saline (Pre-made) • Maintenance dose MgSO4: 1g per hour infusion Add 5g MgSO4 to 50 ml N Saline (Pre-made) 1g MgSO4 = 10ml per hour IV • **If seizures continue/recur:** MgSO4 2g ≤ 70kg; 4g ≥ 70kg IV as per loading dose over 5- 10 minutes. • **Monitor:** Hourly urine output Respiratory rate, O2 saturation & patellar reflexes – every 10 minutes for first 2 hours and then every 30 minutes Check serum magnesium levels daily if infusion is continued fo >24 hrs • **Stop infusion:** Check magnesium levels and review management with consultant if: Urine output < 100ml in 4 hours Or if Patellar reflexes are absent Or if Respiratory rate < 16 breaths/minute Or if Oxygen saturation <90% • **Antidote:** 10% Calcium gluconate 10ml IV over 10 minutes
CONTROL HYPERTENSION	• **Treat hypertension if systolic BP ≥ 160 mmHg or diastolic BP** ≥ 110 mmHg or MAP ≥ 125 mmHg Aim to reduce BP to around 130-140/90-100 mmHg • **Beware maternal hypotension and fetal heart rate abnormalities** – monitor FH with continuous CTG • **LABETALOL** Up to 50mg IV stat slowly then erect IV infusion: 200 mg in 200 ml N Saline at 40 mg/hr, doubling dose at 1/2 hourly intervals as required to a maximum of 160 mg/hour • **NIFEDIPINE** 10mg oral stat dose; repeat every 20 mins to a maximum of 40mg • **HYDRAZALINE** 10mg IV slowly. Repeated doses of HYDRALAZINE 5mg IV 20 minutes apart may be given if necessary **Close liaison with anaesthetists: may require plasma expansion**
If not postpartum DELIVER	There is no place for the continuation of pregnancy if eclampsia occurs **"STABILISE" THE MOTHER BEFORE DELIVERY** **DELIVERY IS A TEAM EFFORT involving obstetricians, midwives, anaesthetists and paediatricians** Ergometrine should not be used in severe eclampsia – syntocinon 5 units im / slowly iv may be used Consider prophylaxis against Thromboembolism Maintain vigilance as the majority of eclamptic seizures occur after delivery

Appendix 6

HOME BLOOD PRESSURE MONITORING IN PREGNANCY

Self-Monitoring of Blood Pressure in Pregnancy Pathway

1 Eligibility for pathway

Woman is identified as eligible (pre-existing hypertension, or pregnancy induced hypertension or pre-eclampsia OR shielded woman with increased risk of developing hypertensive disease in pregnancy). Consultant decision regarding suitability for self-monitoring of blood pressure. Medical staff to contact Day Obstetric Unit (DOU) ext. 50552 to arrange commencement of self-monitoring of blood pressure in pregnancy. Timing & location of next face to face antenatal appointment to be confirmed and frequency of monitoring required specified. Medical staff to request blood tests for pre-eclampsia and any additional investigations (e.g. growth scan/PlGF) as indicated. (Note that women may already own their own BP monitor which can be used if confirmed that it is a machine that has been validated for use in pregnancy. They should still attend DOU to register for self-monitoring scheme and receive written care plan, target ranges and details of relevant contact telephone numbers)

If eligibility for the pathway is undertaken by a doctor other than the woman's named consultant – her consultant obstetrician should be informed that she has been enrolled for self-monitoring of blood pressure.

Ensure that the woman's contact details are up to date (home, mobile phone number and email) and update these as necessary.

2 Getting started

- At commencement of self-monitoring appointment DOU midwife to: provide woman with *Patient Information leaflets - Self-monitoring blood pressure and urine testing for protein in pregnancy* (appendix 1 & 2) This includes written instructions on how to take and interpret blood pressure readings (with reference to laminated rainbow coloured chart attached to the blood pressure monitor) and how to test urine for protein. The leaflet also contains details and contact numbers of who to contact if she has any concerns about herself or her baby or if she thinks that she needs medical attention.
- Confirm the woman understands who to contact in the event of an abnormal blood pressure reading or any other concerns about herself or her baby.
- Provide the woman with a home blood pressure monitor with an appropriately sized cuff (check upper arm measurement and compare to monitor range) from the DOU store.
- Complete and ask woman to sign *Agreement for blood pressure monitor loan and use* (appendix 3) detailing that she is content that the equipment and processes have been demonstrated and explained satisfactorily. A record of the details should be kept in local Trust database and copy filed in patient notes.
- If the woman already owns her own BP monitor[1], this may be used if it can be confirmed that the monitor has been validated for use in pregnancy.
- Provide the patient with a supply of urine dip sticks.

[1] If a woman owns her own monitor, she should still be entered onto the complete remote monitoring pathway and provided with clear instructions on her personal plan for taking, recording and monitoring her blood pressure.

- Apply home blood pressure monitoring warning sticker to inside page of green maternity handheld notes & Insert Self-monitoring blood pressure recording chart (appendix 4). Demonstrate how to document her blood pressure and urine protein readings on this record chart.

- Observe the woman taking her blood pressure twice at least one minute apart and write the second blood pressure reading in the Self- Monitoring Blood Pressure recording chart in her hand held maternity records.
- Advise the woman if her blood pressure reading is raised or high, she will also be asked to check her urine for protein before contacting her maternity unit.
- Provide written Personalised Blood Pressure Monitoring Plan (Appendix 5) detailing the expected frequency of blood pressure monitoring e.g. daily, three times per week (Monday/Wednesday/Friday) or weekly and the timing and location of her next face to face antenatal appointment.
- Complete the patient history form in Microsoft team 'Obstetric outpatient blood pressure monitoring'
- If additional investigations were noted as being required during the risk assessment of eligibility, the midwife should check with medical staff if these have been arranged and plans are in place to review the results.
- Refer any concerns regarding desire, compliance or ability to self-monitor at home back to referring consultant.

3 Return of the blood pressure monitor

- Explain the arrangements for the return of the blood pressure monitor, either at the time of coming in for birth, or at a time postnatally if a woman needs postnatal blood pressure monitoring.
- Once blood pressure recording equipment has been returned to maternity unit, DOU staff should coordinate decontamination with medical technology team
- Database on Microsoft team 'Obstetric outpatient blood pressure monitoring' to be updated with date machine has been returned

Appendix 7

BLOOD PRESSURE CHART

1. Check your Blood Pressure (BP) in the morning
2. Remember to rest for 5 minutes before taking your first reading
3. Take your first BP reading
4. Take a second BP reading 1 minute later
5. It will either be LOW, NORMAL, BORDERLINE, RAISED or HIGH
6. Follow the flow chart instructions
7. Record the final BP reading in your maternity hand held record

BP NORMAL or LOW

BP BORDERLINE, RAISED OR HIGH

Sit quietly for 5 minutes. Measure your BP again and compare reading to chart

BP READING	ACTION
HIGH Red SYS 150 or more or DIA 100 or more	Contact your Maternity Unit **IMMEDIATELY** for review today
RAISED Amber SYS 140-149 or DIA 90-99	Contact your Maternity Unit **WITHIN 4 HOURS** for review today
BORDERLINE Yellow SYS 135-139 or DIA 85-89	If **NOT** on daily BP monitoring contact your Maternity Unit **WITHIN 4 HOURS** to update your self-monitoring plan If on daily BP monitoring continue this
NORMAL Green SYS 110-134 and DIA 70-84	Your BP is normal Continue monitoring as before
LOW Blue SYS 109 or less and DIA 69 or less	If you are **NOT** on blood pressure medication and feel well no further action is required. Continue monitoring as before. If you are on medication **OR** feel unwell contact your Maternity Unit **WITHIN 4 HOURS**

Appendix 8

MANAGEMENT OF WOMEN WITH OUT OF TARGET BLOOD PRESSURE READINGS

A woman using self-monitoring home blood pressure monitor calls to report an abnormal reading.

If HIGH reading (Red zone: Systolic 150mmHg **AND/OR** Diastolic 100mmHg) then arrange for her to attend DOU for assessment within 4 hours.

If RAISED reading (Amber zone: Systolic 140-149mmHG **AND/OR** Diastolic 90-99mmHg) then exclude symptoms of severe pre-eclampsia:

- Severe headache
- Problems with vision, such as blurring or flashing before the eyes
- Severe pain just below the ribs
- Vomiting
- Sudden swelling of the face, hands or feet

If RAISED reading (Systolic 140-149mmHg AND/OR Diastolic 90-99mmHg) AND symptoms of severe pre-eclampsia arrange for her to attend DOU within 4 hours.

If RAISED reading (Systolic 140-149mmHg AND/OR Diastolic 90-99mmHg) & NO symptoms of severe pre-eclampsia then enquire if new proteinuria >1+ and if new proteinuria >1+ IS present arrange for her to attend DOU for assessment the same day.

If RAISED reading (Systolic 140-149mmHg AND/OR Diastolic 90-99mmHg) & NO symptoms of severe pre-eclampsia & NO new proteinuria >1+ then complete telephone history form and inform woman to expect telephone call from senior obstetrician for further advice/management. Safety net with advice to contact DOU (or Admissions unit out of hours) if she has not received a call back within 4 hours or if she develops new onset symptoms of severe pre-eclampsia.

If BORDERLINE reading (Yellow zone: Systolic 135-139 AND Diastolic is 85-89) If not on already on daily blood pressure monitoring frequency then complete telephone history form and advise woman to increase frequency of monitoring to daily. Provide safety net advice on symptoms and signs of pre-eclampsia

If LOW reading (Blue zone: Systolic 109 or less **AND** Diastolic is 69 or less)

If woman is not taking blood pressure medication & she is feeling well then reassure her that her blood pressure does not need any further action at this time.

If she is taking blood pressure medication advise her that her blood pressure is low. If she feels unwell (faint/dizzy) then arrange for her to attend for assessment in person. If she feels well arrange telephone review with senior obstetrician (ST3+) within 4 hours.

Appendix 9

OBSTETRIC TELEPHONE MANAGEMENT

Obtain contact number and relevant telephone history form from DOU midwife.

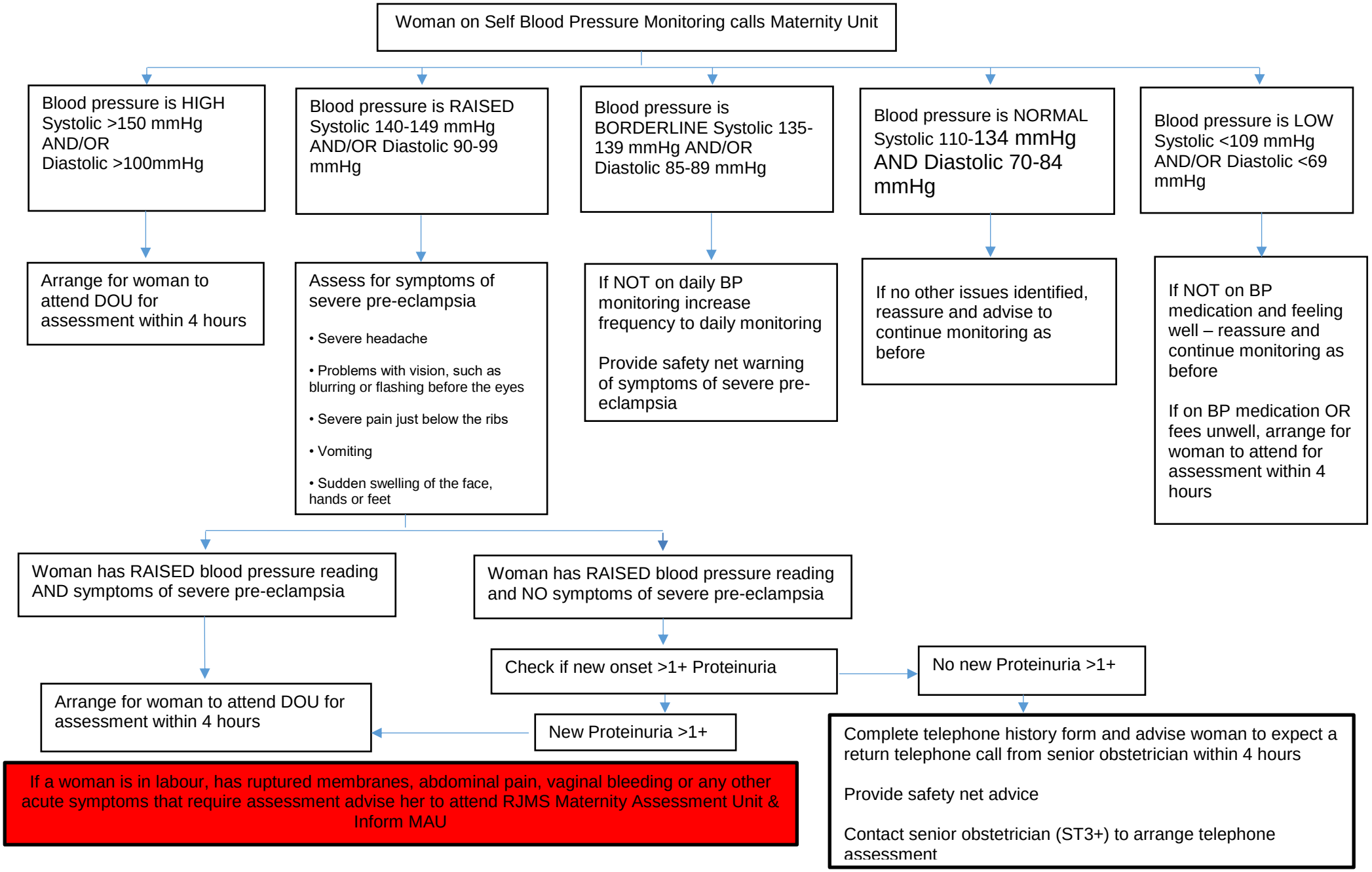
Telephone consultation with woman.

If new medication commenced or additional supply required arrange with woman to collect script/medication.

Ensure woman is aware of ongoing frequency of self-monitoring of blood pressure and details of her follow up antenatal appointment.

Document telephone consultation on ECR (choose ‘Pathways’ tab along top of screen, then ‘progress notes’ from left hand column, choose ‘Add’ and type into ‘Note’ then ‘save’)

Appendix 10 DOU TELEPHONE TRIAGE FOR WOMEN SELF-MONITORING BLOOD PRESSURE PATHWAY



Appendix 11

MANAGEMENT OF WOMEN ATTENDING DOU WITH RAISED BLOOD PRESSURE

On arrival:

Commence Dinamap blood pressure series.

Perform urinalysis & send urine sample for PCR if >1+ proteinuria (if previous PCR >30 do not repeat)

Take bloods for full blood count, liver function and renal function (FBC, U&E, and LFT)

Assess for any concerns over fetal wellbeing. If the woman reports any concerns regarding fetal movement or if there are known concerns regarding growth, liquor volume or dopplers then commence a computerised CTG (Dawes-Redman)

Arrange for senior obstetric review (ST3 or above)

Medical review to be documented in maternity handheld notes

Appendix 12

PATIENT INFORMATION LEAFLET

SELF-MONITORING BLOOD PRESSURE

Your midwife will help you set up the blood pressure monitor and teach you how to use it. Instructions are provided with the monitor.

You will be advised of the frequency and timings of when you are being asked to take your blood pressure using the home blood pressure monitor in your personalised care plan.

- Always measure your blood pressure using the same arm (usually the left arm)
- Wear loose clothing with sleeves that roll up easily and do not feel tight when rolled up (you will need to fit the cuff onto your bare arm) or take your arm out of the clothing.
- Sit on a chair with your back supported and both feet flat on the floor.
- Rest for 5 minutes before beginning to take blood pressure readings.
- Slip the cuff onto your arm so that the air tube points towards your wrist. The red line on the cuff should be over the inside of your elbow.

- Adjust the bottom edge of the cuff so that it is about 2cm above the inside of the elbow joint.
- Tighten the cuff around the arm and secure using the Velcro.
- Rest your arm on a table or across your lap with your hand slightly open and the palm facing upwards.
- Once the machine is set up and you have the cuff in the correct position, and you are ready to start, press the start button on the front of the machine to take a reading.
- Relax, do not move your arm muscles and do not talk or laugh until the measurement is completed.
- Measure your blood pressure twice, at least one minute apart.
- Each time you measure your blood pressure you will get two readings:
  - The top number (usually called SYS, short for systolic),
  - The bottom number (usually called DIA, short for diastolic)
  - You may also get your pulse (heart rate) displayed, usually called PUL
  - Please record your final blood pressure reading in your self-monitoring blood pressure recording chart.

There is a video demonstration of how to check your blood pressure at home at https://youtu.be/vYKknYj2FWw or via Belfast Health and Social Care Trust Website

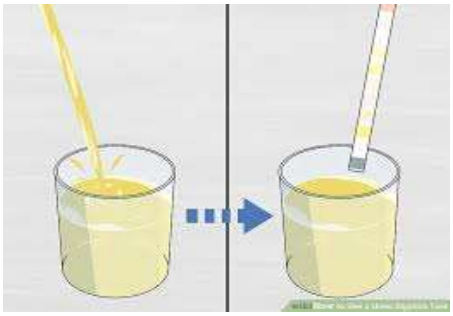
PLEASE NOTE: Blood pressure readings will not be reviewed routinely by your midwife or doctor. You are responsible for taking your own blood pressure as directed in your personalised plan and acting on abnormal blood pressure readings and seeking help as needed. If you do not follow the agreed self-monitoring plan the service may be withdrawn.

Contact the hospital <u>URGENTLY</u> if you have concerns or any of the following symptoms:

- Severe headache
- Problems with vision, such as blurring or flashing before the eyes
- Severe pain just below the ribs
- Vomiting
- Sudden swelling of the face, hands or feet

Appendix 13

PATIENT INFORMATION LEAFLET
HOW TO TEST YOUR URINE FOR PROTEIN



Please check your urine for protein if your blood pressure is **High** or **Raised** on home blood pressure monitoring.

You will still need to take a urine sample to every antenatal clinic appointment with your midwife, GP or obstetrician as usual.

You will need a clean sample container to catch your urine specimen.

Please carry out urine testing within an appropriate room in your home such as the bathroom.

There is a video demonstration of how to check your urine for protein at home at https://youtu.be/cdclfwjztAI or via Belfast Health and Social Care Trust Website

Instructions:

1. Wash and dry your hands
2. Start flow of urine into the toilet
3. Catch **Mid-Stream** sample of your urine into the clean collection container
4. Wash and dry your hands
5. Remove reagent strip from bottle & replace lid (Do not touch the pad on the test end of the strip)
6. Dip the test end of the reagent strip into the urine sample and then remove
7. Wait 60 seconds after removing the strip from the urine and then match the test pad to the colour chart on the bottle. Do not read the test pad after 2 minutes.
8. Wash and dry your hands
9. Record result on Blood Pressure Record chart in maternity hand held notes

Appendix 14

AGREEMENT FOR BLOOD PRESSURE MONITOR LOAN AND USE

Blood Pressure RJMS Monitor Number:

_____

Blood Pressure Monitor Serial Number:

_____

Cuff Size:

_____

Declaration:
I am satisfied that the equipment and processes have been demonstrated and explained to me satisfactorily
I accept responsibility for the above equipment and understand I have been asked to monitor my blood pressure through pregnancy (+/- after the baby is born) I will return the blood pressure monitor as requested. If the blood pressure monitor becomes damaged, lost or stolen, I understand that I must report this information to the RJMS Day Obstetric Unit on the number below.

Name:	
RJMS Maternity Number:	
Date of Birth:	
Patient Signature of agreement to conditions:	
Staff Name:	
Staff Signature:	
Date:	
Returned to Staff Name:	
Staff Signature:	
Returned on Date:	

Maternity Team Contact: **DAY OBSTETRIC UNIT (Monday – Friday: 8am– 5pm)**

Telephone: **(028) 961 56542 / (028) 961 50552**

Please copy and give one copy to the woman and retain one copy

Appendix 15

BLOOD PRESSURE RECORDING CHART

Date	**Gestation** e.g. 18+2	**Blood Pressure** **(2nd reading)** e.g. 123/72	**Urinalysis** e.g. 2+ protein	**Advice** e.g. attend DOU or N/A

Blood Pressure recording chart continuation sheet

Date	**Gestation** e.g. 18+2	**Blood Pressure** **(2nd reading)** e.g. 123/72	**Urinalysis** e.g. 2+ protein	**Advice** e.g. attend DOU or N/A

Appendix 16

PERSONALISED BLOOD PRESSURE SELF-MONITORING PLAN

STICKER

Commencing from ……. Date

Please check your blood pressure …… times per week / Daily / Weekly

- Please check your blood pressure in the **morning**
- Please record the reading on your blood pressure record chart in your handheld maternity notes

If your blood pressure reading is **HIGH** or **RAISED** or **LOW**

- Please contact Day Obstetric Unit (DOU) for advice 8am - 5pm Monday – Friday on telephone number (028) 961 50552
- If DOU is closed please contact Maternity Assessment Unit (MAU) on telephone number (028) 961 50596

When you call please

- Have your handheld maternity notes with you
- Have your blood pressure readings available
- Have your urine dipstick test result

Follow Up Plan:

Your next antenatal clinic appointment is on …….

With …….