

Self-monitoring of blood pressure in pregnancy

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To be read in conjunction with the following documents: Milton Keynes University Hospital, <i>Hypertensive Disorders of Pregnancy (including Pre-eclampsia and Eclampsia)</i> , 2019, version 3, HaMpton SOP. Milton Keynes University Hospital, <i>Self-monitoring blood pressure PIL (June 2020)</i> version 1			
CQC Fundamental standards: Regulation 9 – person centred care Regulation 10 – dignity and respect Regulation 11 – Need for consent Regulation 12 – Safe care and treatment Regulation 17 – Good governance Regulation 18 – Staffing Regulation 19 – Fit and proper			

Disclaimer

Since every patient's history is different, and even the most exhaustive sources of information cannot cover every possible eventuality, you should be aware that all information is provided in this document on the basis that the healthcare professionals responsible for patient care will retain full and sole responsibility for decisions relating to patient care; the document is intended to supplement, not substitute for, the expertise and judgment of physicians, pharmacists or other healthcare professionals and should not be taken as an indication of suitability of a particular treatment for a particular individual.

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The ultimate responsibility for the use of the guideline, dosage of drugs and correct following of instructions as well as the interpretation of the published material **lies solely with you** as the medical practitioner.

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Guideline Statement

The COVID-19 pandemic has required the NHS to urgently consider blood pressure (BP) self-monitoring in order to reduce face to face consultations for pregnant and postnatal women, whilst maintaining adequate safety for the woman and her baby.

BP self-monitoring in pregnancy can either be used to replace BP measurements on the day of a scheduled clinic (i.e. intermittently) or can be done routinely and more frequently (e.g. daily or weekly) in addition to usual care. This will need to be ascertained by a responsible clinician.

BP self-monitoring is already done by many pregnant women with chronic Hypertension via use of HaMpton app in our unit.

Executive Summary

This guidance covers pregnant women who currently require blood pressure monitoring (at varying frequencies) throughout the antenatal and postnatal period, during the period of COVID-19 pandemic.

For women with chronic hypertension, gestational hypertension or pre-eclampsia, more frequent BP monitoring is required, over and above standard antenatal care.

Other groups of women may also require increased frequency if they have additional risk factors or are developing pregnancy hypertension. The aim of BP self-monitoring is to reduce face-to-face consultations while maintaining a level of safety.

1.0 Roles and Responsibilities:

Medical staff: Ensure that the guideline is followed. Document plan on eCare.

Midwives: ensure identification of such women in order to be offered self- monitoring of blood pressure.

2.0 Implementation and dissemination of document:

Staff will be informed when the guideline has been approved and when the guideline is being implemented.

3.0 Processes and procedures

3.1 Women for whom self-monitoring of blood pressure in pregnancy should be considered

3.1.1 Inclusion criteria

There are three groups of women to whom providers may wish to offer BP self-monitoring, summarised in table 1 below. Inclusion should be prioritised in accordance with clinical need, and in consideration of the availability of blood pressure monitors (BPMs) that are validated for home use in pregnancy (see 3.2).

In view of availability of appropriate monitors and timescales for the COVID-19 response, providers considering BP self-monitoring should prioritise roll-out to Group 1 as a minimum.

The trust can roll out more widely to women in Groups 2 and 3 where the woman has an appropriate monitor, or where the Trust can ensure supply above those procured nationally by NHS England and NHS Improvement.

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Table 1

Group	Description	Illustrative prevalence
1 - Currently hypertensive women (Priority)	Women with chronic hypertension, gestational hypertension or pre-eclampsia.	10%
2 - Normotensive women considered at higher risk of pregnancy hypertension by NICE guideline	<p>Women with one of the following risk factors:</p> <ul style="list-style-type: none"> - hypertensive disease during a previous pregnancy - chronic kidney disease - autoimmune disease (e.g. systemic lupus erythematosus or antiphospholipid syndrome) - type 1 or type 2 diabetes <p>Women with two of the following risk factors:</p> <ul style="list-style-type: none"> - first pregnancy - age 40 years or older - pregnancy interval of more than 10 years - body mass index (BMI) of 35 kg/m² or more - family history of pre-eclampsia - multi-fetal pregnancy 	
3 – Normotensive women	All other normotensive pregnant women as part of standard antenatal care (including those who may need to self-isolate for a period).	

3.1.2 Exclusion criteria

BP self- monitoring should not be offered or continued for women who require admission under local trust guidelines (e.g. severe hypertension, pre-eclampsia with adverse features).

If the women cannot communicate in English, then they are excluded.

3.2 Guidelines for implementation of home blood pressure monitoring

There are four components to implementation:

- i. Pathway for implementation in the hospital (3.2.1)
- ii. Provision of a validated blood pressure monitor (3.2.2)
- iii. Provision of information for a pregnant woman (3.2.3)
- iv. Optional use of a BP monitoring app (for use with a smartphone) or via text messaging (3.2.4)

3.2.1 Pathway for implementation in the hospital

1. Arrange for a woman to attend face to face appointment Antenatal Day Assessment Unit and check eligibility for self-monitoring of blood pressure. Provide antenatal (or postnatal) check as usual. The unit may choose to make alternative arrangements to provide a blood pressure monitor and information (e.g. by arranging remote pick-up). Women may already own their own validated monitor (which can be used).
2. Ensure that women's contact details are up to date on hospital electronic system (home, mobile phone number, email) and update these as necessary.
3. Provide a woman with a semi-automated or automated home blood pressure monitor, validated for use in pregnancy and pre-eclampsia (Appendix 2), and an appropriately sized cuff (check upper arm measurement). Label the blood pressure monitor with name of the hospital and appropriate contact details for the maternity unit. Complete a blood pressure monitor loan form with the woman (Appendix 2)
4. Give written instructions on how to take a blood pressure reading (Appendix 3). Ask the woman to take her blood pressure twice, at least one minute apart and write the second blood pressure down. She can send via HaMpton app if registered.
5. Give written instructions on expected frequency of blood pressure monitoring, making it clear whether this will be done in place of usual care (e.g. on the morning of a scheduled telephone/ virtual clinic appointment) or in addition to usual care (e.g. once a week or three times a week).
6. Give written instructions (rainbow coloured chart) about interpreting blood pressure readings (Appendix 1), and check that she understands who to contact with an abnormal reading. It will be Antenatal Assessment Unit (ADAU) between 08:00-19:30 and Labour ward at all other times.

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7. If a woman requires additional investigations (e.g. growth scan Placental Growth Factor (PIGF-based testing), arrange these as indicated. If a woman is asked to self-monitor urine for proteinuria, arrange this.

8. If you are considering Hampton app, please follow SOP for registering the patient. Check that she is able to log in before leaving the hospital and ask her to demonstrate sending a blood pressure reading.

9. Confirm next appointment with the woman, and whether this will be telephone (or other remote working) or face-to-face. Ask the woman to call her midwife or the maternity unit as she would normally if she has any concerns about herself or her baby or if she thinks that she needs medical attention.

10. Explain arrangements to the woman for 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. Options for returning a blood pressure monitor may include handing it back to hospital staff.

11. Once returned, wipe the blood pressure monitor thoroughly with a cleaning wipe, and check that all components are correct (e.g. cuff, connector, batteries).

12. Consider how to record details of blood pressure monitor loans and associated uptake and outcomes as a service evaluation.

3.2.2 Validated blood pressure monitors in pregnancy

A list of validated blood pressure monitors is maintained on the STRIDEBP website, an international scientific non-profit organization operating in affiliation with the European Society of Hypertension, the International Society of Hypertension and the World Hypertension League.

<https://stridebp.org/bp-monitors>

Blood pressure monitors should be validated for use in pregnancy, in pregnancy hypertension and preeclampsia, or be considered to have full equivalency with a device that is validated (see 'Criteria for equivalent blood pressure measurement function of new devices compared to previously validated ones' on <https://www.stridebp.org/about-us/principles-for-device-listing>.)

Our hospital advises use of Microlife brand. However, any in above website, are validated to use.

3.2.3 Provision of information for a pregnant woman

Appropriate explanation and information should be given. Templates of an appropriate loan form and instructions for pregnant women are provided in Appendix 2.

3.2.4 App-based systems for pregnancy blood pressure monitoring

HaMpton app is used in our unit. Please see its SOP.

Appendix 1. Blood pressure thresholds for self-monitoring

Level	Blood pressure/mm Hg	Action
High	Systolic 150 or more OR Diastolic 100 or more	Your blood pressure is high. Sit quietly for 5 minutes then measure it again and note the reading. If your repeated reading is raised, please contact your Antenatal maternity unit between 08:00-19:30 and labour ward at all other times. If your repeated SYS (systolic) reading is 160 or more, make sure that you make contact with a healthcare professional in this time as outlined above.
Raised	SYS 140-149 OR DIA 90-99	Your blood pressure is raised. Sit quietly for 5 minutes then measure it again and note the reading. If your repeated reading is raised, please contact your maternity unit within 24 hours and continue to monitor your BP daily.
High Normal	SYS 135-139 OR DIA 85-89	Your blood pressure is normal but moving towards the raised threshold. Sit quietly for 5 minutes then measure it again and note the reading. If your repeat reading is still high end of normal, please monitor your blood pressure daily
Normal	SYS 110-134 AND DIA 70-84	Your blood pressure is normal. Continue blood pressure monitoring and your current care.
Low	SYS 109 or less AND DIA 69 or less	If you are not taking blood pressure medication: Your blood pressure is normal. If you are feeling well this blood pressure does not need any further action. If you are taking blood pressure medication: Your blood pressure is low. Repeat once more in 5 minutes. If you repeat reading is still low, contact your maternity unit within 24 hours or within 4 hours if you feel unwell (e.g. dizzy or faint).

Appendix 2. Loan agreement template for hospital

Loan agreement for blood pressure monitor

ADDRESSOGRAPH

Blood pressure monitor number:

Cuff size:

Declaration:

I accept responsibility for the above equipment and understand I have been asked to monitor my blood pressure through pregnancy (and postnatally) 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 Maternity Unit on the below number and that I am not responsible for the cost of replacement or repair.

Name	
Hospital number	
Date of birth	
Signature of agreement to conditions:	
Staff name:	
Staff signature:	
Date:	

Maternity team contact:

Telephone:

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


Appendix 3 - Patient information leaflet



Maternity

How to take your blood pressure at home using an upper arm monitor

Patients and Relatives Information



As a teaching hospital, we conduct education and research to improve healthcare for our patients. During your visit students may be involved in your care, or you may be asked to participate in a clinical trial. Please speak to your doctor or nurse if you have any concerns.

Chief Executive: Joe Harrison
Chairman: Simon Lloyd

Why is it important to check blood pressure during pregnancy?

Some women may develop either high or low blood pressure during pregnancy. A high blood pressure often needs to be monitored more closely during pregnancy. Your blood pressure will be checked at each antenatal appointment. Your Consultant may ask that you check your blood pressure at home and will provide a blood pressure machine for you to do this.

When will you be asked to take your blood pressure?

- On the morning of your clinic appointment if you have normal blood pressure
- Once a week if you are at higher risk of getting high blood pressure
- One to three times a week if you have high blood pressure

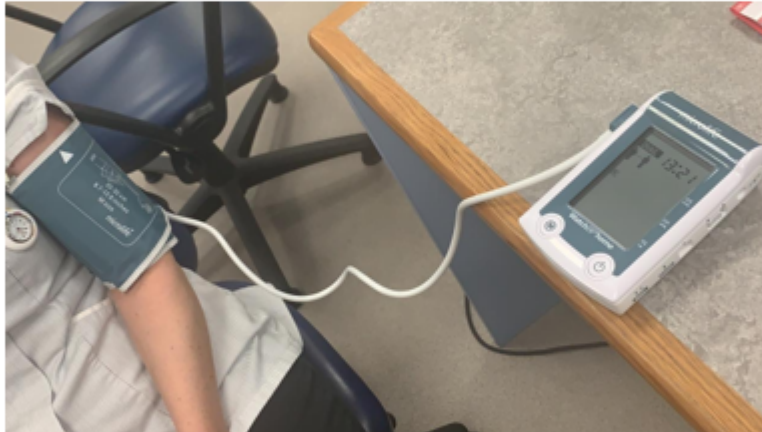
Check with your midwife or doctor how often they would like you to monitor your blood pressure.

How to check your blood pressure

- Always measure your blood pressure using the same arm (normally 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 five minutes before beginning to take blood pressure readings.
- Slip the cuff onto your arm so that the air tube points towards your wrist.
- 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 upward.
- 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.



- Try to relax and not move your arm whilst taking your blood pressure. It is best to not talk whilst taking your blood pressure.

Each time you measure your blood pressure you will get two readings:

- The top number (usually called SYS, short for systolic). This number measures the pressure of blood pushed out of the heart.
- The bottom number of your blood pressure, (usually called DIA, short for diastolic). This number measures the pressure your blood pressure between heartbeats.
- You may also get the pulse displayed, usually called PUL.

Measure your blood pressure twice, at least one minute apart and follow the Blood Pressure Thresholds (please see below).

There is a process of follow up for taking blood pressure if you are using the HaMpton app. However, if you are not using the app, then please record the blood pressure reading in an accessible place to inform your healthcare professional when they call you for remote appointment.

Blood Pressure Thresholds for self-monitoring

Level	Blood pressure/mm Hg	Action
High	SYS 150 or more OR Dia 100 or more	Your blood pressure is high. Sit quietly for 5 minutes then measure it again and note the reading. If your repeated reading is raised, please contact your Antenatal Maternity Unit between 0800-1930hrs or the Labour Ward outside of these times. If your repeated SYS (systolic) reading is 160 or more, make sure that you make contact with a healthcare professional.
Raised	SYS 140-149 OR DIA 90-99	Your blood pressure is raised. Sit quietly for 5 minutes then measure it again and note the reading. If your repeated reading is raised, please contact your Antenatal Maternity Unit within 24 hours and continue to monitor your blood pressure daily.
High / Normal	SYS 135-139 OR DIA 85-89	Your blood pressure is normal, but moving towards the raised threshold. Sit quietly for 5 minutes then measure it again and note the reading. If your repeated reading is still at the high end of normal, please monitor your blood pressure daily.
Normal	SYS 110-134 AND DIA 70-84	Your blood pressure is normal. Continue blood pressure monitoring and your current care.
Low	SYS 109 or less AND DIA 69 or less	If you are not taking blood pressure medication: Your blood pressure is normal. If you are feeling well, this blood pressure does not need any further action. If you feel unwell, please contact the antenatal day unit. If you are taking blood pressure medication: Your blood pressure is low. Repeat the monitoring once more in 5 minutes. If your repeated reading is still low, contact your Antenatal Day Unit within 24 hours, or within four hours if you feel unwell (e.g. dizzy or faint).

We ask for information about you so that you can receive proper care and treatment. This information remains confidential and is stored securely by the Trust in accordance with the provisions of the Data Protection Act 2018/GDPR. Further guidance can be found within our privacy notice found on our Trust website: www.mkuh.nhs.uk

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4.0 Statement of evidence/references

References:

RCOG. Self-monitoring of blood pressure in pregnancy. Version 1: Published Monday 30 March 2020

SOP Title: Hampton patient-held application (app), 2018.

5.0 Governance

5.1 Document review history

Version number	Review date	Reviewed by	Changes made
1.1	06/2020	Erum Khan/ Natalie Lucas	Amendment of appendix 3 to include of self- monitoring BP PIL following approval process
1.0	04/2020	Erum Khan	New document

5.2 Consultation History

Stakeholders Name/Board	Area of Expertise	Date Sent	Date Received	Comments	Endorsed Yes/No
Julie Cooper	HOM	22/04/2020	22/04/2020	Incorporated	Yes
MICHELLE FEYNES	O & G Consultant	22/04/2020	22/04/2020	Read it and no comments made	N/A

5.3 Audit and monitoring

Audit/Monitoring Criteria	Tool	Audit Lead	Frequency of Audit	Responsible Committee/Board
B/P MONITORS allocated according to guideline.	Audit proforma	ADAU Lead midwife and Maternal Medicine Lead	6 months	Women's Health Audit meeting, Women's Health CIG

5.4 Equality Impact Assessment

As part of its development, this Guideline and its impact on equality has been reviewed. The purpose of the assessment is to minimise and if possible, remove any disproportionate impact on the grounds of race, gender, disability, age, sexual orientation, religion or belief, pregnancy and maternity, gender reassignment or marriage and civil partnership. No detriment was identified. Equality Impact assessments will show any future actions required to overcome any identified barriers or discriminatory practice.

Equality Impact Assessment			
Division	Women and Children's Health	Department	Maternity

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Person completing the EqIA	Erum Khan	Contact No.	
Others involved:		Date of assessment:	08/04/2020
Existing policy/service	N/A	New policy/service	Yes
Will patients, carers, the public or staff be affected by the policy/service?			
		Yes	
If staff, how many/which groups will be affected?		<i>Doctors, midwives, laboratory staff, patient</i>	
Protected characteristic			
Age	Any impact?	Comments	
Disability	NO	Positive impact as the policy aims to recognise diversity, promote inclusion and fair treatment for patients and staff	
Gender reassignment	NO		
Marriage and civil partnership	NO		
Pregnancy and maternity	NO		
Race	NO		
Religion or belief	NO		
Sex	NO		
Sexual orientation	NO		
What consultation method(s) have you carried out?			
<i>Via email and the guideline review group meeting</i>			
How are the changes/amendments to the policies/services communicated?			
<i>Via email</i>			
What future actions need to be taken to overcome any barriers or discrimination?			
What?	Who will lead this?	Date of completion	Resources needed
Review date of EqIA			