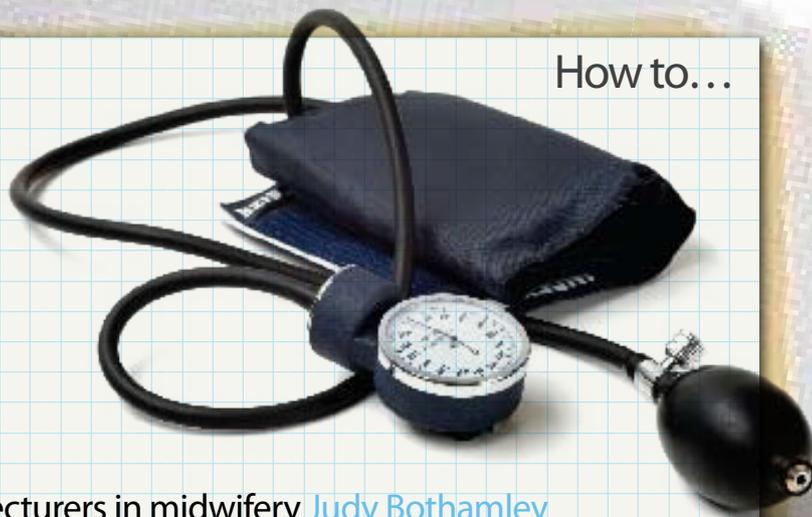


How to... measure blood pressure



Thames Valley University's senior lecturers in midwifery **Judy Bothamley** and **Maureen Boyle** describe the art of taking blood pressure.

Measuring blood pressure is a routine procedure in maternity care.

However midwives should consider the circumstances that affect blood pressure to ensure accuracy.

Blood pressure is the force exerted on the wall of a blood vessel and depends on cardiac output and peripheral vascular resistance. Systolic blood pressure is the peak pressure when blood is pumped into the aorta as the left ventricle contracts (normal range is 100-139mmHg). Diastolic is the minimum pressure when the aortic valve closes (normal range 60-89mmHg).

Indications to record a blood pressure include:

- * Assessment of baseline at booking visit
- * At each antenatal visit to detect pre-eclampsia and other medical conditions
- * During labour
- * During and following surgery
- * When a woman experiences any signs and symptoms of pre-eclampsia such as headache, proteinuria, visual disturbances, epigastric pain.

Technique for manual recording of blood pressure

* The woman should be in a sitting or in a semi-recumbent position with her arm supported at the level of the heart and any tight clothing removed from the arm. The blood pressure will be taken within the context of the woman's care and efforts to make her feel at ease and understand

procedures will allay fears and help attain an accurate blood pressure reading, avoiding 'white coat hypertension' (O'Brien et al, 2001). Remember smoking, eating, talking and exercise will increase blood pressure. Allow time to relax

- * Use a properly functioning validated device that is appropriately calibrated and maintained
- * The inflatable bladder of the cuff should cover 80% of the arm circumference and be positioned over the line of the brachial artery 2-3cm above where the stethoscope will be placed. To avoid artefactual sounds, the tubing should not be in contact with the stethoscope (Beevers et al, 2001a)
- * Feel for the brachial artery and inflate the cuff to 20-30mmHg above where the pulse disappears (estimated systolic pressure). This estimated reading is useful for women where a silent or auscultatory gap occurs between the systolic and diastolic reading
- * Gently place the stethoscope over the brachial artery and start to deflate the cuff at a rate of 2-3 mm/sec. The point at which repetitive, clear tapping sounds first appear for at least two consecutive beats gives the systolic blood pressure. The point at which these sounds disappear (Korotkoff V) as the cuff continues to deflate slowly is the diastolic blood pressure. There has been some controversy about identifying the diastolic reading for pregnant women. Previously, Korotkoff IV – a muffling of sound was used to determine diastolic reading. It is now considered more accurate to use Korotkoff V as described (Shennan, 2005; de Swiet, 2000). In the rare occasion there is no Korotkoff V with pulsating sounds being heard until full deflation of the cuff, Korotkoff IV can be recorded as diastolic reading and indicated as such when documented

* Avoid jerky, repeated or rapid inflation and deflation of cuff (Reinders et al, 2006)

* Document the reading immediately, recording the pressures to the nearest 2mmHg. Rounding off readings to 0 or 5 is a common mistake seen in practice

known as digit preference (Beevers et al, 2001b)

* Consider the results of the blood pressure measurement in context of the woman's overall condition, gestation and any signs and symptoms noted or reported. **M**

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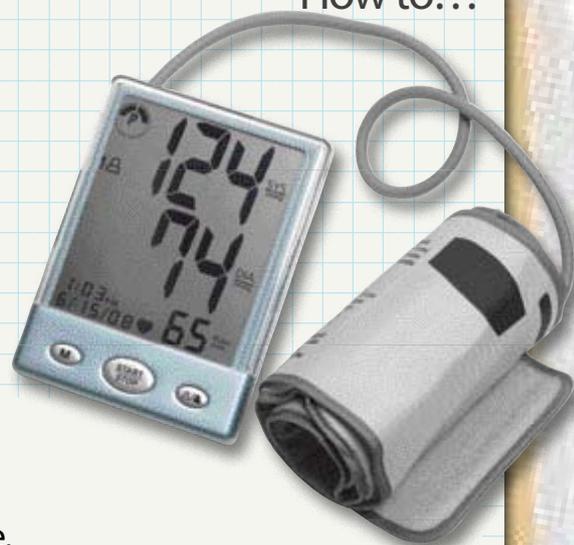
USEFUL RESOURCES

Baston H. (2001) Blood pressure measurement: midwifery basics. *The Practising Midwife* 4(9): 10-4.

British Hypertension Society website – www.bhsoc.org – has an interactive programme to practise accuracy.

Coming next issue:
How to... take blood pressure using an automated machine

How to... use automated blood pressure monitoring



Thames Valley University's senior lecturers in midwifery **Judy Bothamley** and **Maureen Boyle** describe the art of taking automated blood pressure.

Automated (or electronic) blood pressure monitoring is now commonly used by midwives. Many of the 'taking blood pressure' principles (see 'How to... measure blood pressure' in the February/March issue of *Midwives*) apply to taking an accurate automated reading, and include ensuring the woman's arm is at heart level, she is relaxed and the right size cuff is being used.

Automated blood pressure machines need to be cared for and maintained according to the manufacturer's recommendations, and this usually includes regular inspection and calibration. It is also seen as good practice to check automated machines' readings regularly (for example once per shift if looking after a woman requiring high dependency care) against a manual machine. The British Hypertension Society (www.bhsoc.org) provides up-to-date information on validated monitors.

There is controversy surrounding the exclusive use of automated machines. Under-estimating a reading is commonly thought to occur with the risk that many machines may be inaccurate at the higher and lower ranges. However, automated machines may result in a more accurate reading, as it may avoid common errors such as

terminal digit preference or other practitioners' biases. Another advantage to the automated system is that the machine can be set to record blood pressure regularly. When monitoring a woman with, for example pre-eclampsia, the general trend of a rising blood pressure is the relevant finding, whether or not it is under- or over-reading by a few degrees.

Women need to be advised that the cuff pressure is usually held for longer when compared to manual recordings. Damage can be caused to a woman attached to an automated machine for long periods of time (Salleh et al, 2005), and the discomfort of this practice should be considered by the midwife.

Mean arterial pressure

The mean arterial pressure (MAP) is the average pressure that drives blood into the tissues and is the best measurement of perfusion pressure to body organs. Normal readings are considered to be between 70mmHG and 110mmHG. When caring for those at risk, many authorities accept 125mmHg as the upper threshold when urgent treatment must be started (Howell et al, 2007).

Many automated machines give easy access to a MAP reading. Although these can be calculated from any blood pressure recording (two times diastolic plus systolic

divided by three), being able to see a frequent reading may help to underpin efficient and timely referral and treatment. However, use of MAP alone can be deceiving as low diastolic readings can mask an abnormal systolic finding.

Interpretation of blood pressure readings

Traditionally midwives have stressed the importance of the diastolic reading, but the recent Confidential Enquiry into Maternal and Child Health report (Lewis, 2007) emphasises the equal importance of the systolic reading. The most vital part of care, when a machine is set to do regular recordings is a midwife observing these findings, interpreting the results according to the woman's condition and symptoms, and taking appropriate actions. 

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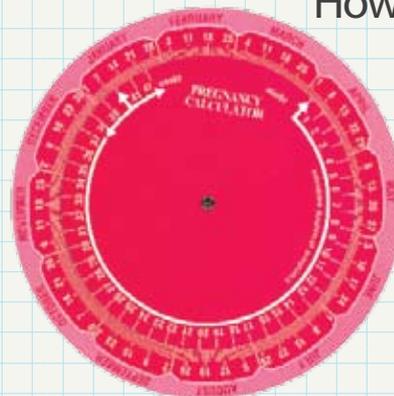
Lewis G. (2007) Saving mothers' lives: reviewing maternal deaths to make motherhood safer 2003 to 2005. Confidential Enquiry into Maternal and Child Health: London.

Salleh S, Batra S, Ahluwalia A. (2005) Radial nerve injury

in association with automated blood pressure recording in labour. *Journal of Obstetrics and Gynaecology* 25(8): 814-5.

Coming
next issue:
How to...
estimate the
date of
delivery

How to... calculate the expected date of delivery



North East Wales NHS Trust's community midwife **Kath Jones MBE** and Bangor University's student midwife **Natalie Jones** explain how to work out due dates accurately.

Accurate history-taking is an integral part of the antenatal booking assessment. One aspect of this is to determine the woman's menstrual history and the date of her last menstrual period (LMP). This is to enable calculation of the expected date of delivery. By predicting accurately the estimated date of delivery (EDD), evaluation of fetal growth and unnecessary early induction of labour can be monitored. The length of pregnancy is calculated at 280 days from the first day of the LMP.

However, there are various factors that will affect the length of pregnancy and the calculation of the EDD:

- * The length of the menstrual cycle
- * Conception within three months of discontinuing the contraceptive pill
- * Conception while taking the contraceptive pill
- * Conception when an intrauterine device is in situ
- * When the last bleed is calculated as a menstrual period when it is an implantation bleed
- * In vitro fertilisation when the date of conception is known.

When taking details of a woman's menstrual history, the following questions should be asked:

- * Age when menstruation started
- * Regularity of menstrual bleeds
- * Frequency of menstrual bleeds
- * Length of menstrual bleeds, especially the last one.

Gestational age and calculation of EDD by LMP is calculated according to Naegele's rule. That is, counting forwards by nine months and adding seven days from the first day of the LMP or by adding a year, counting backwards by three months and adding seven days.

It is important to calculate using the length of the menstrual cycle. The latter calculation is based on a 28-day cycle. For a 33-day cycle, the calculation is to add nine months, then seven days then five days.

National Institute for Health and Clinical Excellence guidelines (2003) recommends that: 'All pregnant women be offered an early ultrasound scan to determine gestational age (in lieu of last menstrual period for all cases) and to detect multiple pregnancies. This will ensure consistency of gestational age assessments, improve the performance of mid-trimester serum screening for Down's syndrome and reduce the need for induction of labour after 41 weeks.'

The use of ultrasound scan combined with accurate date of LMP has been shown to lead to a 70% reduction in the number of pregnancies considered post-term (Gardosi et al, 1997).

The Cochrane Systematic Review (2003) of randomised controlled trials of ultrasound for fetal assessment in early pregnancy identified that

accurate assessment by ultrasound scan and the subsequent readjustment of the EDD reduces the incidence of women requiring induction of labour for presumed post-term pregnancies.

The calculation is achieved by measuring the crown-rump length (CRL) in the first trimester of pregnancy and CRL and biparietal diameter in the second trimester. The measurement of the CRL in the first trimester is seen as the most accurate calculation.

Many women are unreliable when disclosing menstrual history and date of LMP, so the use of both ultrasound scan and LMP is a much more accurate predictor.

It is also important when offering early pregnancy dating scans to gain consent and to inform the woman that it can sometimes diagnose abnormalities. **M**

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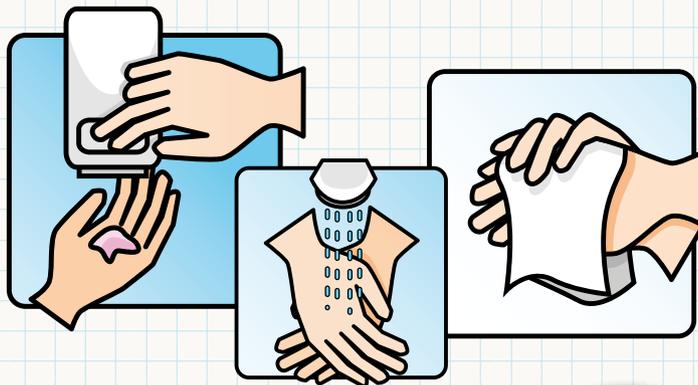
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Coming
next issue:
Handwashing...
social, medical
and surgical
scrub

How to...

How to... wash your hands



Thames Valley University's **Carol Pellowe** describes how to decontaminate your hands properly.

Hand-washing is one lesson we used to think was a life skill taught in childhood which, once it had been learned, lasted for life. Yet, failure to wash hands properly is now considered a major contributor to healthcare-associated infections (Pratt et al, 2007). National evidence-based infection prevention guidelines clearly describe when, how and with what hands should be decontaminated (Pratt et al, 2007; Pellowe et al, 2003).

There are three levels of hand decontamination: social, standard health care and surgical scrub. Social hand-washing should be undertaken to remove visible dirt, before handling food and after using the toilet. Liquid or bar soap is suitable for this.

In healthcare situations, cross-contamination is common and occurs directly via hands, or indirectly via an environmental source such as a commode. Hands carry resident flora (microorganisms present most of the time) and transient flora (microorganisms acquired during healthcare activities) and, in the absence of decontamination are deposited onto a vulnerable patient. If cross-infection occurs as a result, then the clinical consequences can be severe. Cross-contamination via hands has been implicated in hospital outbreaks of meticillin-resistant *Staphylococcus aureus* and vancomycin-resistant enterococci (Pratt et al, 2003).

When to decontaminate hands

The World Health Organization (WHO) as part of the World Alliance on Patient Safety has published the Five moments for hand hygiene (WHO, 2006). These are:

- * Before patient contact
- * Before aseptic technique
- * After body fluid exposure risk
- * After patient contact
- * After contact with patient environment.

What to decontaminate hands with

The choice of decontamination method will depend upon an assessment of what is appropriate for the episode of care and the resources available. For most procedures, hand-washing with either liquid soap and water, or using an alcohol-based hand rub will render hands socially clean. Alcohol hand rub is increasingly being used as the method of choice due to its convenience, but it is not effective against some microorganisms such as *Clostridium difficile*, and if hands are visibly or potentially soiled with dirt or organic material, they must be washed with liquid soap and water. The use of an antiseptic liquid soap will reduce both transient and resident flora and is used for surgical procedures.

Technique in hand decontamination is critical and the WHO have produced posters demonstrating both hand-washing and applying hand rub. In addition, there is the

national e-learning infection prevention programme available to all NHS staff at: www.infectioncontrol.nhs.uk. Before a shift begins, all wrist and ideally hand jewellery should be removed and cuts covered with waterproof dressings. Fingernails should be short, clean and free from nail polish, false nails or extensions.

Promoting hand hygiene

Effective hand hygiene is a key component of infection prevention. The recent cleanyourhands campaign (National Patient Safety Agency, 2007) has heightened awareness for staff, patients and visitors, but only ongoing education and training, followed by regular audit of practice will ensure adherence. **M**

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Coming next issue:
Performing an abdominal examination

How to... perform an abdominal examination



University of Central Lancashire's senior midwifery lecturer **Jacqui**

Gibson gives advice on how to perform an abdominal examination.

Competency in abdominal examination is an essential skill required by all midwives. The combination of the information obtained from each component, provides significant information about the pregnancy. However, it is not an accurate means of assessing fetal growth and development (National Institute for Health and Clinical Excellence (NICE), 2008; Maternal and Child Health Consortium, 2001).

Assessments by the same person during pregnancy can reduce errors related to intra-observer variation.

Prior to examination, explanation of the procedure should be given and consent obtained. The mother should be in a semi-recumbent position with an empty bladder, arms by her side and abdomen should be relaxed. After washing hands and ensuring they are warm, the abdomen should be exposed to the extent that permits a thorough examination. As the uterus can be stimulated during the procedure, care needs to be taken if the uterus is particularly sensitive or when problems such as preterm labour are suspected.

Components

Inspection of the size and shape of the abdomen provides information on possible lie and fetal size. Skin changes, previous scars, or fetal movements are also observed and noted.

Palpation

Fundal palpation provides an indication of lie and presentation – if the fetal pole can be identified, then the lie is longitudinal. Buttocks generally are less defined, softer, bulkier and less ballotable than a head. Next, measurement of the fundal height enables the assessment of growth in relation to gestational age to be made. A non-elastic tape measure should be used to measure the symphysis-fundal height in centimetres, with the centimetres on the underside to reduce bias. The Perinatal Institute (2007) recommends measurements are taken from the top of the fundus to the top of the symphysis pubis. The measurement should only be taken once, with follow-up measurements every two to three weeks. Other literature describes measurement to be conducted from the symphysis pubis to the fundus. Some midwives may use a traditional method using landmarks on the maternal abdomen.

Lateral palpation is performed using two hands and is conducted to determine fetal position and lie. Both sides of the uterus are palpated to identify the fetal spine and limbs. During lateral palpation information regarding fetal size, the tone of the uterus and an estimation of amniotic fluid and fetal movements can be obtained.

Pelvic palpation determines fetal presentation, attitude and

engagement or non-engagement of presenting part. The two-handed method, one on either side of the presentation with the fingers directed inwards and downwards, is more comfortable than the one-handed approach with the fingers facing the woman's head.

Auscultation of the fetal heart for presence, rate, variability and regularity is conducted with a Pinnard's stethoscope or Sonicaid. The location of fetal heart sounds can aid in indicating fetal position. While routine listening to the fetal heart is not recommended by NICE (2008), it may be undertaken at maternal request for reassurance.

NICE (2008) recommends that symphysis-fundal height measurements are plotted from 24 weeks' gestation. The Perinatal Institute (2007) recommends the use of personalised growth charts. The midwife needs to take any necessary actions should deviations from the norm be identified. **M**

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Coming
next issue:
Performing
phlebotomy

How to... perform venepuncture



University of Chester's deputy head of midwifery and reproductive health **Jane Harris** explains how to carry out a blood test.

Venepuncture is the procedure of entering a vein with a needle, usually to obtain a blood sample for diagnostic purposes, but it may also be used to administer intravenous drugs (Johnson and Taylor, 2005).

It is the midwife's responsibility to ensure that the client understands and consents to the procedure (NMC, 2008) and that it is carried out in a safe manner – this includes the correct disposal of equipment (Dougherty and Lister, 2008).

Indications

- * Routine antenatal booking tests
- * Screening tests for fetal abnormality
- * Assessment of full blood count and rhesus antibodies
- * Monitoring for existing conditions
- * Cross-matching prior to transfusion or operative delivery (Johnson and Taylor, 2005).

From a holistic perspective, the midwife should be aware of the woman's demeanour – some have a fear of needles and this needs to be handled sensitively (Ellson, 2008). Always ensure that the client is

comfortable and the arm is supported.

Midwives need an understanding of the arm's anatomy. Blood is taken from a vein and never an artery. The most common sites are the basilica, cephalic or median cubital veins, which are situated in the antecubital fossa (Dougherty and Lister, 2008). It is imperative that the brachial artery and median nerve are avoided (Dougherty and Lister, 2008).

Choosing a vein

Veins should be inspected with a finger and not a thumb, which has a pulse. The best veins feel bouncy and full. A tourniquet is used to improve access and promote venous distension. It should never be left in place for longer than a minute, as it may result in haemoconcentration (Dougherty and Lister, 2008).

Venepuncture is an aseptic procedure, therefore the skin should always be cleansed. Dougherty and Lister (2008) suggest that a 70% chlorhexidine preparation is used and the area is wiped for 30 seconds and allowed to dry. It is advisable

that following hand-washing, gloves are worn to reduce the risk of contamination (Johnson and Taylor, 2005). A closed vacuum system is commonly utilised in practice areas. This prevents leakage of blood and less incidences of needle-stick injuries (Bell and McNicholl, 2007).

The midwife must act upon test results and refer if necessary. The client must always be kept informed and supported (NMC, 2004). 

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VENEPUNCTURE PROCEDURE

- * Gather equipment
- * Gain informed consent and ensure the client's arm is supported
- * Wash hands
- * Apply the tourniquet above the antecubital fossa and identify the chosen vein by palpation
- * Apply hand rub and sterile gloves
- * Cleanse the skin thoroughly (>30 seconds); wait for it to dry
- * Assemble the vacutainer system, unsheathing the needle when ready
- * Using the non-dominant hand, apply slight tension to the skin below the point of entry (this will anchor the vein)
- * Insert the needle at a 30° angle and apply the

vacuumed bottle/s and watch it fill; remove when the flow stops

- * Release the tourniquet, withdraw the needle and then apply pressure using a cotton wool ball to the puncture site for a minute. Keep the arm horizontal to avoid bruising
- * Apply plaster if required
- * Dispose of sharps and equipment correctly
- * Wash hands
- * Ensure that the client is feeling alright
- * Label the specimen bottles and the appropriate forms, send to the laboratory and document (Johnson and Taylor, 2005).

Coming
next issue:
Understanding
the basic blood
values in
pregnancy

How to... interpret basic blood values in pregnancy



Thames Valley University's senior lecturer in midwifery **Maureen Boyle** explains how to analyse blood results during pregnancy.

Blood is taken frequently in pregnancy, both routinely and in response to events for which knowledge of blood values would aid diagnosis and treatment. Midwives should ensure that the woman knows why blood is being taken and has given her consent. It is also important to remember that taking blood and sending specimens to the lab is only of value if the results are obtained and screened promptly, usually by the midwife, and any abnormal values referred for appropriate action.

Most serum components have a normal range of values (often different in pregnancy, and sometimes dependent on gestation), and although prompt action will obviously be taken when a result is clearly outside this range, it is also important to identify a trend within the normal range. For this reason bloods are often taken regularly to establish if there is an abnormal progressive rise or fall, therefore enabling appropriate treatment to start as early as possible.

Full Blood Count

This is probably the most common investigation, and is taken routinely two to three times antenatally, and in the postnatal period if there has been excessive blood loss at delivery.

* Haemoglobin (Hb) due to physiological changes in pregnancy, will normally fall, with the lowest reading expected at about 34 weeks. Normal values are cited by the World Health Organization as 11 to 13 g/dl, but other authorities consider 10 or 10.5 g/dl as an acceptable lower level. The majority of women who have an Hb lower than this will be considered to have pregnancy-induced anaemia and will be treated with oral iron supplements. However, some women will have a more unusual cause for their low Hb and further investigations such as serum ferritin levels and total iron-binding capacity may be helpful in obtaining a diagnosis

* White blood cells normally increase during pregnancy, but an acute rise could be caused by an infection and further investigations would be necessary. Normal pregnancy values are 6 to 16 x 10⁹/l

* Platelets usually stay in the normal range of 150 to 400 x 10⁹/l, although they may fall during pregnancy within these limits. An abnormal drop could be caused by many medical conditions and need further investigations.

Liver function tests

Aspartate transaminase, alanine transaminase, alkaline phosphatase,

total albumin, and total bilirubin are undertaken in response to concern about a woman's condition, most commonly to diagnose/assess hepatitis, pre-eclampsia, acute fatty liver of pregnancy or HELLP syndrome. Measurement of bile salts will be undertaken when obstetric cholestasis is suspected.

Renal function tests

Urea, electrolytes, serum creatinine, serum uric acid (urates), serum glomerular filtration rate and plasma proteins are used to evaluate pre-eclampsia, but may also be carried out as part of investigation into many medical conditions or following haemorrhage.

C-reactive protein

This is produced by the liver and rises when there is a systemic inflammation. For this reason, it is used as an assessment aid when infection is suspected or being treated. Levels over 5 mg/l are usually considered significant, but a higher level is often present in late pregnancy and following delivery. However, a rising rate would indicate increasing inflammatory/infective processes. **M**

Coming
next issue:
Teaching posture,
moving and
handling during
pregnancy

How to... teach posture, handling and lifting in pregnancy



ISTOCK

Leighton Hospital Crewe's parent education midwife **Marion Boulton** imparts some posture tips for pregnant women.

During pregnancy, several things occur that work against maintaining a good posture and many women with healthy backs will begin to develop backache. The changing body shape alters the centre of gravity and the hormone relaxin causes laxity of muscles including the core stabilising muscles. Unless pregnant women are aware of how to adopt good postural techniques for the activities of daily living, back pain can become a problem. The estimated prevalence of backache during pregnancy ranges between 35% and 61%, with the majority developing backache during the fifth to seventh month (National Collaborating Centre for Women's and Children's Health, 2008).

Standing

Poor standing posture during pregnancy is common with the pelvis tilted forward putting a strain on lower back joints and ligaments. Advice to help prevent this would be:

- * Avoid standing for long periods
- * Avoid high heels
- * The abdominal muscles should be pulled in to act as a natural 'corset' and the buttocks tucked under so that the pelvis is tilted backwards
- * Chin tucked in and the ears in a straight line with the shoulders
- * Using terms such as 'walk tall'

and 'stretch between your hips and ribs' can be helpful.

Sitting

Modern furniture does not encourage good posture. Women should be advised to:

- * Sit well back in the chair
- * Make sure that her lower back is well supported. A rolled-up towel or small cushion may be required to facilitate this.

Lying

Finding a comfortable position in bed can be difficult as pregnancy advances. If a side lying position is preferred, the following would be appropriate advice:

- * Place a small pillow under the abdomen
- * The head pillow or an additional one should be positioned to support the top forearm
- * A pillow under the upper thigh will prevent strain on the sacroiliac joint
- * A pillow behind the back can offer additional support and comfort.

When getting up from a supine position:

- * The knees should be bent upwards and kept together
- * Roll the body onto one side
- * Push up to a sitting position with upper hand and lower elbow
- * Drop legs over side of bed/couch stand by straightening legs and

pushing with hands

- * The reverse should be used for lying down.

This not only helps to protect the back, but also the abdominal muscles.

Lifting and handling

Lifting heavy items should be avoided wherever possible. When having to lift:

- * Place one foot slightly in front and then bend at the knees
- * The back should be kept straight and the bottom tucked in
- * Straighten the legs continuing to keep the back straight – lead with the head
- * Hold the object at waist height and close to the body
- * When shopping, a shallow high-level trolley is preferable to avoid using an inappropriate lifting technique.

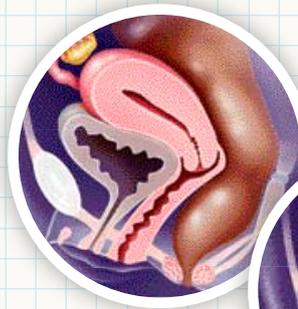
We all learn and absorb information in different ways. To reinforce this important information, it is advisable to give verbal and written information, an opportunity to practise and a practical demonstration, as this then covers all styles of learning. **M**

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Coming
next issue:
Teaching
pelvic floor
exercises

How to... teach pelvic floor muscle exercises



Left: Normal pelvic floor muscle



Right: Weakened pelvic floor muscle

BSIP

University Hospital of North Staffordshire and Staffordshire University's **Sue Tohill** and **Christine Kettle** describe teaching pelvic floor muscle exercises.

The pelvic floor consists of layers of muscles and soft tissue that fill the pelvic outlet and provide support for the bladder, uterus and bowels, which lie in the cavity above. Due to physiological changes during pregnancy and childbirth, the pelvic floor muscles (PFM) can become stretched and damaged, which may lead to urinary problems such as stress incontinence and prolapse of the organs. Despite the benefits of pelvic floor muscle exercises (PFME) in helping to strengthen the muscles and prevent urinary incontinence, many women have no idea of where their pelvic floor muscles are or how to carry out PFME. It is important that women are given information regarding what PFME are, why they should perform them and how to do them correctly.

Teaching women about the pelvic floor

Before teaching PFME, women should be given an explanation of the anatomy, muscle location and function of the pelvic floor (Wallace, 1994).

Locating the PFM

- * Advise women to sit or lie down with knees slightly apart
- * Ask the woman to 'lift and squeeze' at the front as if stopping the flow of urine and around the

back as if stopping the passage of wind, without tightening the abdominal muscles, squeezing legs together, tightening buttocks or holding breath

- * Ask if they can feel the muscles around their vagina and front and back passages tighten and lift
- * This is called a 'pelvic floor contraction'.

Women can check that they are using the correct muscles by:

- * Slowing down the flow of urine – no more than once a week
- * Self examination – insert one to two fingers into their vagina, tighten the PFM's and feel the contraction. Once women are confident in locating the correct muscles, there are two types of PFME that should be carried out daily:

Exercise 1 – Slow contractions

- * 'Lift and squeeze' perform a pelvic contraction and hold for at least two seconds, increasing as the PFM strengthen up to a maximum of ten seconds
- * Release the contraction and rest for an equal number of seconds between holds
- * Repeat the contraction at least three times a day increasing to a maximum of ten.

Women should do at least eight pelvic contractions, three times a day (National Institute for Health and Clinical Excellence, 2006).

Exercise 2 - Fast contractions

- * 'Lift and squeeze' more firmly, hold for one second and release
- * Rest for one second
- * This is called 'quick contraction'
- * Repeat the contraction the same number of times as exercise one
- * This exercise will help the muscles react quickly when coughing, sneezing, exercising and lifting.

Other advice for women

- * Squeeze and hold PFM before coughing, sneezing or lifting
- * Avoid constipation
- * Maintain a sensible body weight
- * Only go to the toilet when the bladder is full
- * Report any problems
- * Perform PFME every day for life.

Remember to ask women if they are carrying out PFME at every antenatal and postnatal appointment and reinforce the importance and benefits of doing them. **M**

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Coming next issue:
Understanding the APGAR score

How to... teach the APGAR score

GETTY IMAGES



New Zealand's Christchurch Women's Hospital consultant neonatologist **Maggie Meeks** describes the APGAR score.

The airways, pulse, grimace, activity and respiration (APGAR) score is a tool used by midwives, neonatal nurses and neonatologists to document the condition of a newborn infant (see Table 1). The assessment is done at one minute, five minutes and ten minutes after birth and, in some instances, at 15 minutes or later. A full description of the condition of the newborn infant should also be documented (Michaelides, 2004) and, if there are two practitioners, the score should be agreed.

Understanding neonatal transition physiology

An understanding of the physiology of the transition to extrauterine life, as well as the physiological response of the fetus and newborn to hypoxia provides a theoretical background on which to base the practical sessions of how to perform the APGAR score (Pinheiro, 2009).

Successful spontaneous transition of the normal-term infant to extrauterine life requires that the infant has a clear airway, is breathing air/oxygen and has a heart rate (the two most important aspects of the APGAR score). This will ensure that oxygen is transferred into the blood stream and distributed to all areas of the body, which will support the heart rate and breathing and lead to an improvement in the colour of the infant, as well as the tone and response to stimulation.

Teaching use of the APGAR score

Once there is a clear understanding of the physiology behind the score, it is useful to allow time to practise with a senior colleague. The following points may be useful as they clarify specific areas:

- * The first score should be taken at one minute and not immediately after birth. This allows time for drying and warming the infant,

as well as for the spontaneous transition to extrauterine life

- * The heart rate should be listened to with a stethoscope for at least ten seconds if difficult to palpate or hear
- * If there are any signs of breathing, including spinal gasps, a heart rate will be present even if it is difficult to hear
- * A centrally cyanosed (blue gums and tongue) infant should score 0 for colour.

And finally....

There is increasing evidence to suggest that a portable pulse oximeter placed on the right wrist of preterm deliveries provides more accurate information on the heart rate and oxygen saturation (Dawson et al, 2009). This may also be useful in the term infant that requires resuscitation. **M**

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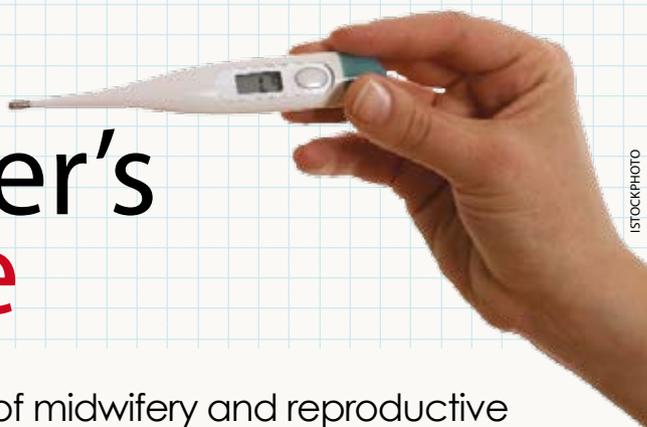
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Table 1: The APGAR's scoring system

Observations	Score 2	Score 1	Score 0
Heart rate	> 100 beats per minute	< 100 beats per minute	Absent
Breathing	Regular	Irregular or weak	Absent
Colour	Pink all over	Centrally pink with blue extremities	Blue all over (or white)
Muscle tone	Active movement	Some flexion	None
Reflex irritability (response to stimulation)	Sneeze/cough/pulls away	Grimace /feeble cry	No response to stimulation

Coming next issue:
How to take a mother's temperature

How to... take a mother's temperature



ISTOCKPHOTO

University of Chester's deputy head of midwifery and reproductive health **Jane Harris** gives an overview of taking maternal temperature.

Maternal temperature is an important observation within midwifery practice as it can indicate hyperthermia, which could be indicative of infection and hypothermia, resulting in uncoordinated muscle activity, fatigue, unconsciousness, cardiac arrhythmias and death (Johnson and Taylor, 2006). Humans are homeothermic, that is their core temperature is maintained around 37°C and usually within a range of 36.1°C and 37.8°C (Stables and Rankin, 2006) – should the balance be altered, then the body can be seriously affected (Johnson and Taylor, 2006). The oxygen requirement of tissues can increase by 7% with each rise of 0.5°C (Hinchcliffe, 1996).

The temperature within the warmest parts of the body, which include brain and the abdominal and chest organs are referred to as the core temperature. The lower temperatures are found in the shell (skin and the skeletal muscle). The maintenance of body temperature depends on the balance between the heat that is produced and the heat that is lost. The hypothalamus is the major heat-regulating centre as it receives input from both peripheral and core thermoreceptors. It acts like a thermostat responding to any heat change 'by initiating heat-promotion or heat-loss mechanisms' (Stables and Rankin, 2006: 311).

In pregnancy, the maternal temperature may increase by 0.5°C

(Blackburn and Lopper, 1992). Progesterone and an increased metabolic rate increase the amount of heat generated by 30% to 35%. This is compensated by increasing the heat-loss mechanism (Johnson and Taylor, 2006).

There are several factors that have an impact on the body's temperature. These include: diurnal variations, menstrual cycle, digestion, basal metabolic rate, hot baths, infection, general anaesthetic drugs, alcohol and exercise (Johnson and Taylor, 2006).

A woman's temperature should be taken:

- * On admission to hospital
- * During labour (four hourly or more frequently, if indicated)
- * Following labour
- * If there are clinical symptoms present
- * Preterm labour
- * Prolonged pre-labour rupture of membranes
- * During blood transfusion (Johnson and Taylor, 2006).

Sites for temperature measurement include:

- * Oral (the most common)
- * Tympanic (in the ear)
- * Axilla (the underarm)
- * Rectum (very rarely used) (Perry and Potter, 2006).

Electronic thermometers are used, which are quick and easy to use, but must be maintained properly. The disposable thermometer has the advantage of being single use, thereby reducing the element of cross-infection.

Taking a temperature

Before any procedure is carried out, the midwife must fully explain what is going to happen and gain full consent. The client must be made comfortable. Hand-washing should be carried out to reduce cross-infection (Stables and Rankin, 2006). During the procedure, clear instructions should be provided. The thermometer probe should be cleansed and a cover used. The probe should be inserted into the appropriate site i.e. mouth (under the tongue), ear (canal must be straightened in order for the drum to be scanned) and axilla (clothing needs to be removed so the thermometer is placed directly against the skin). When the alarm sounds, remove the probe and read. Clean the probe and dispose of the cover appropriately. Report the reading to the client and then accurately record it in the required documents (NMC, 2004). **M**

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How to take
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temperature