Common Problems in Pregnancy

Common Problems in Pregnancy:

An Evidence-Based Guide

By

Kassam Mahomed

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This book is dedicated to all the medical and midwifery staff
who work constantly to provide care to women under their care;
care that is based on the best available evidence.

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CHAPTER ONE

ABDOMINAL PAIN IN PREGNANCY

Gestation < 20 weeks

Need to exclude

- Miscarriage
- Pregnancy of unknown location
- Constipation
- Round ligament pain
    - pain is often bilateral and over the sides of the uterus
    - it radiates into the groin
    - it is worsened by movements like getting up from a chair/bed
- Urinary tract infection
- Fibroids
- Ovarian cyst accidents such as:
    - corpus luteum cysts
        - these cysts begin to regress after 12 weeks and are often managed expectantly
    - haemorrhage/rupture
        - women present with pain and the diagnosis is confirmed on an ultrasound scan. Pain usually settles over 24-48 hours
    - cyst torsion
        - there is sudden onset of pain which is often unilateral in the lower abdomen with associated nausea. Cysts are usually > 5cm in diameter
        - ultrasound scan is not very useful in its diagnosis
            - offer urgent laparoscopy if torsion is suspected clinically

- Bowel related
    - appendicitis
        - pain may be towards right hypochondrium at later gestation
            - CT scan is useful
            - MRI is diagnostic in almost all cases
            - appendicectomy is performed by laparoscopy in most cases
                - risk of miscarriage is low if appendix has not ruptured but may be up to 30% in first trimester if ruptured
                - preterm labour may occur in about 10% of cases if they present in the second trimester
            - do not delay surgery
    - bowel obstruction
        - this occurs mostly as a result of adhesions
            - X-ray of the abdomen in erect and supine position is usually diagnostic
            - ultrasound scan of the abdomen may also be helpful in making a diagnosis
                - consider conservative management initially
                - perform surgery as a second resort
- Pancreatitis
    - women present with severe epigastric pain radiating into the back. Pain is colicky if there are associated gall stones as well
    - serum amylase and lipase are elevated
    - gall stones are present in > 70% of cases
    - CT scan may delineate areas of necrosis
    - endoscopic retrograde cholangiopancreatography may be useful in making the diagnosis
    - consider early cholecystectomy if gall stones are present
        - offer conservative care initially
        - some recommend early aggressive surgical treatment
        - consider intensive care unit admission

- Acute cholecystitis
    - women present with colicky epigastric or right hypochondrial pain
        - aim for conservative management—especially in the first and third trimesters
        - treat with intravenous fluids, analgesia and antibiotics
            - recommend postpartum laparoscopic cholecystectomy

Recommended Reading

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CHAPTER TWO

ABDOMINAL TRAUMA IN PREGNANCY

Risks include placental abruption, preterm labour, massive feto-maternal haemorrhage, uterine rupture, and fetal loss which may occur even with relatively minor degrees of abdominal trauma.

With major trauma there is the risk of fractures, organ damage, hypovolaemic shock, cardiopulmonary collapse, and cardiac arrest.

Clinical presentation

- Symptoms will depend on gestational age
- Abdominal guarding and rebound tenderness may be less prominent than in non-pregnant women

Management

- First assess if the woman needs any resuscitation
- Administer Rh(D) immunoglobulin to all Rh-negative women who are > 12 weeks pregnant
- If gestational age is 20 weeks or above:
    - exclude placental abruption and preterm labour
    - assess fetal wellbeing
    - request ultrasound scan if there are any concerns
    - in rhesus negative women assess the degree of feto-maternal haemorrhage to guide dose of rhesus immunoglobulin
    - it is not recommended to perform a Kleihauer-Betke test to make or exclude a diagnosis of placental abruption
    - recommend continuous cardiotocography for at least 4 hours
        - cease after 4 hours and allow the woman to go home in cases of minor trauma if:
            - there is no abdominal pain or tenderness
            - there is no vaginal bleeding
            - cardiotocography (CTG) is normal with no uterine activity

  - recommend continued observation for 24 hours if:
    - during the first 4 hours the trace is non reassuring
    - there is evidence of uterine tenderness or contractions
  - admit and observe for 24 hours with intermittent continuous CTG if there is:
    - any vaginal bleeding or rupture of membranes
    - any uterine tenderness or abdominal bruising
    - presence of any uterine contractions
  - recommend steroid loading if she is at risk of preterm birth < 35 weeks
  - on discharge, advise her to return to hospital if:
    - there is any abdominal pain
    - she has any uterine contractions and / or vaginal bleeding
    - she has any concern about fetal movements
- In severe cases of trauma, consider a peri mortem caesarean section. This should be performed within 4 minutes of no response to effective cardiopulmonary resuscitation (CPR)

Recommended Reading

1. Huls CK, Detlefs C. Trauma in pregnancy. *Semin. Perinatol.* 2018; 42(1): 13-20.
2. Greco PS, Day LJ, Pearlman MD et al. Guidance for Evaluation and Management of Blunt Abdominal Trauma in Pregnancy. *Obstet. Gynecol.* 2019 Dec; 134(6): 1343-1357.
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CHAPTER THREE

ADVANCED MATERNAL AGE

Advanced maternal age (AMA) is defined as being 35 years or older on the estimated date of birth.

Risks associated with AMA:

- Aneuploidy
- Miscarriage
- Preterm birth
- Gestational diabetes
- Hypertensive disorders
- Placenta praevia
- Fetal growth restriction
- Stillbirth (SB)

Age	Risk of SB if giving birth for first time	Risk of SB if she has given birth before
under 35 years	3.72/1000	1.29/1000
35-39 years	6.41/1000	1.99/1000
40 and older	8.65/1000	3.29/1000

  - risk of stillbirth increases with advancing gestational age
    - between 39 and 40 weeks, risk of SB is 1/1000 if she is < 35 years, compared to 1.4/1000 between ages 35-39 and 2/1,000 if the woman is 40 or older
    - the above risks are lower if she is healthy and does not have gestational diabetes (GDM) or hypertension. She is still at higher risk when compared to healthy women who are not AMA

- They have a higher rate of induction of labour and caesarean section

Antenatal care

- Recommend first trimester screen
- Offer non-invasive prenatal testing (NIPT)
- Monitor fetal growth and wellbeing

Birth plan

- Recommend induction of labour even though there are no trials with sufficient number to support this
    - in nulliparous women aged over 35
        - offer induction between 40^0-40^6 weeks
    - in nulliparous and multiparous women aged ≥ 40 years
        - offer induction at 39^0-39^6 weeks
- If they decline induction of labour, recommend twice weekly CTG
    - further recommend not to let the pregnancy go past 41^6 weeks

Recommended Reading

1. Reddy UM, Ko CW and Willinger M. Maternal age and the risk of stillbirth throughout pregnancy in the United States. Randomized Controlled Trial. *Am. J. Obstet. Gynecol.* 2006 Sep; 195(3): 764-70
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CHAPTER FOUR

AMNIOTIC FLUID EMBOLISM

The woman will develop sudden peri partum cardiopulmonary shock. Amniotic fluid embolism (AFE) is associated with high maternal and perinatal mortality.

Risk factors include:
Older age, precipitate labour, caesarean or instrumental vaginal birth, placental abnormalities (praevia, abruption, accreta) and preeclampsia/ eclampsia

Clinical features
- AFE develops during labour or soon after birth
    - there is sudden onset of cardiorespiratory arrest
    - there is hypotension with evidence of respiratory compromise (dyspnoea, cyanosis, or peripheral oxygen saturation < 90%)
    - the woman may develop coagulation abnormality with risk of bleeding
    - she may get convulsions

Exclude
- Anaphylaxis
- Septicaemia
- Pulmonary embolism
- Myocardial infarct
- Aortic dissection
- Tension pneumothorax

Management
- Make a diagnosis of AFE by excluding other causes of cardiopulmonary collapse
- Utilise a multidisciplinary team-based approach
- Initiate cardiopulmonary resuscitation (CPR)

- Control haemorrhage and reverse coagulopathy. Use tranexamic acid and activate massive transfusion protocol as she may need platelets, plasma, fibrinogen, rFactor VII and blood
- Consider delivery if the fetus is alive or if delivery might make maternal resuscitation easier

Recommended Reading

1. McDonnell, N., Knight, M., Peek, M. J. et al. Amniotic fluid embolism: an Australian-New Zealand population-based study. *BMC Pregnancy Childbirth* 15, 352 (2015).
2. Amniotic fluid embolism. Rare Disease Database. National organisation for rare disorders 2019.
3. Fitzpatrick KE, van den Akker T, Bloemenkamp KWM et al. Risk factors, management, and outcomes of amniotic fluid embolism: A multicountry, population-based cohort and nested case-control study. *PLoS Med.* 2019 Nov 12;16(11):e1002962.
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CHAPTER FIVE

ANAEMIA IN PREGNANCY

Definition:
Hb < 110 in first and < 105 g/L in second trimester

- severe if < 70 g/L
- very severe if < 40 g/L

Physiological anaemia seen in the late second and early third trimesters is a dilution effect. Failure of this to occur may indicate inadequate placental function, and an increased risk of pre-eclampsia and stillbirth.

Useful classification

- **Normocytic, normochromic –** MCV, MCH and MCHC are all normal: this is seen with acute blood loss, early iron deficiency anaemia, physiological anaemia (dilutional drop in haemoglobin), haemolysis, and chronic inflammatory disease
- **Microcytic hypochromic –** MCV, MCH and MCHC may be low: this is seen with iron deficiency, thalassaemia and with some haemoglobinopathies
- **Macrocytic, normochromic –** MCV is elevated but MCH and MCHC are normal: this is seen with megaloblastic anaemia as a result of vitamin B12 or folate deficiency, liver disease, and hypothyroidism

Types of anaemias:

1. **Iron deficiency (90%)**

- There will be a fall in MCV first, followed by a fall in mean corpuscular haemoglobin (MCH) and finally a drop in haemoglobin (Hb)
- If Hb or MCV are low
    - request a review of blood film, haemoglobin electrophoresis and serum ferritin levels
        - low serum ferritin (< 15 μg/L) is the most useful indicator of iron deficiency

- in women at high risk of anaemia (such as previous anaemia, multiple pregnancy, short interpregnancy interval and JWs), check serum ferritin early in the pregnancy

Management

- **Oral iron -** initially recommend Ferrogradumate C, Fefol or FGF
  - if Hb > 100 g/L and serum ferritin < 15 mcg/L, recommend one tablet daily and if there are side-effects this may be reduced to one tablet 2-3 times a week. Advise women to take iron tablets before meals
  - if Hg > 70 g/L, recommend one tablet twice daily and check Hb in 4 weeks
    - if Hb rises to > 15g/l advise to continue taking oral iron
    - if not consider iron infusion
  - if Hb < 70 g/L in early pregnancy or < 90 g/L in late pregnancy
    - consider iron infusion
- **Iron infusion –** consider iron infusion for anaemia in the third trimester or after birth especially in non-compliant women
  - intravenous Ferinject (iron CARBOXY maltose) – 1000 mg per dose over 30 min
    - some women may get skin pigmentation and delayed minor side effects (muscle cramps, arthralgias, fever, chills, headaches, and dizziness)
- **Blood transfusion –** reserve blood for women with severe anaemia at ≥ 36 weeks

2. Megaloblastic – Vitamin B_{12} and Folate deficiency

- Usually folate deficiency
  - except in strict vegans, true vitamin B_{12} deficiency is unlikely despite the increased requirements of pregnancy
  - suspect it if:
    - low haemoglobin is associated with high mean corpuscular volume (MCV) of > 100 fL
    - large hyper-segmented neutrophils are seen on the film
    - there is falling platelet count (< 100000 / L)
  - monitoring serum vitamin B_{12} and folate levels may help (there is marked post prandial and day to day variation in levels)

  - measuring red cell folate is a more reliable indicator of folate deficiency
- Other possible causes of megaloblastic anaemia are:
  - coeliac disease, Crohn's, or gastric banding
  - familial (family history of B12 deficiency)

Management
- In strict vegans, recommend prophylactically the intramuscular injection of 1,000 micrograms (mcg) of vitamin B_{12} every 3 months and a 5mg tablet of folic acid once a day
- Recommend 5mg folic acid once a day to women who are on antiepileptic treatment (Valproate and Phenytoin), Sulfasalazine, Azathioprine or to those who have a bowel malabsorption condition
- In all other women recommend intramuscular injection of 1,000mcg of vitamin B_{12} on alternate days for 2 weeks for vitamin B_{12} deficiency and 5mg of folic acid daily for folate deficiency

3. Haemoglobinopathies

Alpha thalassaemia (autosomal recessive) – seen more in South East Asia, India, and Africa
- They may have one defective gene (alpha $thal^+$ trait), both defective genes from one parent (alpha $thal^0$ trait) or one defective gene from each parent (homozygous alpha $thal^+$ trait)
- They may have three defective genes, 2 from one parent and one from the other
  - there is risk of mild to moderate fetal anaemia
- They may have all four defective genes (homozygous alpha thalassaemia)
  - there is risk of fetal anaemia with heart failure and hydrops

Beta thalassaemia (autosomal recessive) – seen more in women from Mediterranean and Middle East countries, South East Asia, and China.
- If only one beta gene is defective (H trait or H minor), they may develop mild microcytic anaemia in pregnancy
  - if both beta genes are defective (H major), there is risk of fetal anaemia with heart failure and hydrops

Laboratory diagnosis
- There will be very low MCV (55-65fl) with a disproportionately high red cell count ($> 5.5 \times 10^{12}$ / L)
- Haemoglobin electrophoresis will confirm Hb A_2 level of > 3.5%

- If there is coexistent iron deficiency, HbA_2 level may not be elevated until iron deficiency is corrected
- If both parents are carriers, recommend chorionic villus sampling to confirm fetal status
- Involve a genetic counsellor and a physician in management

Sickle cell anaemia (autosomal recessive) – seen mostly in women from East and West Africa

Homozygous (SS)

- These women will often have haemoglobin levels of 60-80g/L
- They may get frequent pain crises from thrombotic tissue infarcts
    - crises are usually precipitated by dehydration, exertion, infection or pain
- They are at increased risk of preeclampsia, placental abruption, fetal growth restriction (FGR), preterm labour and venous thromboembolism (VTE)
- Manage these women in consultation with a haematologist and an obstetric physician
    - recommend low dose Aspirin (150mg at night) from about 7 weeks gestation and 5mg folic acid daily
    - recommend prophylactic antibiotics throughout pregnancy
    - monitor haemoglobin levels 4 times weekly
    - recommend iron only if there is evidence of iron deficiency
    - blood transfusion may be required if Hb < 60g/l
- Plan delivery at around 38-40 weeks gestation
- This condition is associated with high perinatal and maternal mortality

Heterozygous (AS)

- These women are usually asymptomatic
- They have an increased risk of having a urinary tract infection (UTI)

Recommended Reading

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3. Feleke BE, Feleke TE. The Effect of Pregnancy in the Hemoglobin Concentration of Pregnant Women: A Longitudinal Study. *J. Pregnancy*. 2020 Jun 3; 2020: 2789536.
4. Lewkowitz AK, Gupta A, Simon L. et al. Intravenous compared with oral iron for the treatment of iron-deficiency anemia in pregnancy: a systematic review and meta-analysis. *J. Perinatol*. 2019 Apr; 39(4): 519-532.
5. Cantor AG, Bougatsos C, Dana T et al. Routine iron supplementation and screening for iron deficiency anemia in pregnancy: a systematic review for the U.S. Preventive Services Task Force. *Ann. Intern. Med.* 2015 Apr 21; 162(8): 566-76.

CHAPTER SIX

ANTENATAL CARE FOR NORMAL RISK WOMEN

- Provide information that is easily understandable and accessible and is consistent to all pregnant women
- Recommend folic acid supplement – 500mcg daily – to women intending to become pregnant or as soon as pregnancy is diagnosed up to 12 weeks of gestation to reduce the risk of neural tube defect
    - compulsory food fortification – 3 slices of bread (100g) contain an average of only 120 micrograms of folic acid

First hospital antenatal visit – Midwife/GP

- Ideally before 10-12 weeks
- Identify any risk factors, medical and social, and refer appropriately
- For women with high BMI, offer intensive healthy eating and physical activity advice as it may reduce excessive weight gain in pregnancy
- Iron supplementation – do not recommend routine iron supplementation to all pregnant women
- Vitamin D supplementation – recommend 10 micrograms of vitamin D per day to:
    - women who have limited exposure to sunlight
    - women who do not eat oily fish, eggs, meat, vitamin D-fortified margarine or vitamin D-fortified breakfast cereal
    - women with BMI > 30kg/m^2
- Recommend Aspirin 150mg at night and calcium 600mg twice daily if there is risk factor for pre-eclampsia
- Regarding smoking:
    - be proactive
    - discuss risks of smoking in pregnancy
    - discuss this at each antenatal visit
    - discuss benefits of quitting and offer any written resources
    - offer QUIT LINE referral

- Advise that alcohol should be avoided completely
    - if they continue to drink alcohol advise not to have more than one unit per day
- Recreational drugs – provide advice on cessation
- Exercise in pregnancy – advise that walks are good but to avoid contact sports
- Identify women who may need additional care:
    - if they are at risk of domestic violence
    - if they are at higher risk of post-natal depression (use Edinburgh Post-Natal Depression Score [EPDS])
- Antenatal classes – these improve women's experience of birth and parenting and women also generally view antenatal classes positively

Gestational age

- Confirm and agree on the expected date of confinement early in pregnancy
- Ultrasound is a more accurate predictor of gestational age than the use of the date of the last menstrual period (LMP)
    - use crown-rump length (CRL) up to 84mm or head circumference if CRL is > 84mm

Examination:

- Measure height and weight and calculate and record the BMI
- Blood pressure – do not rely on a single high reading – recheck after 5-10 minutes
    - hypertension is generally defined as two raised readings 6 hours apart
- Systemic examination – focus especially on the cardiovascular system

First trimester screen

- Combined first trimester screen between 11^0-13^6 weeks for Down's syndrome includes:
    - measurement of nuchal translucency and levels of beta-human chorionic gonadotrophin and pregnancy associated plasma protein-A (PAPP-A)
        - a low PAPP-A is a level of < 0.4 MoM
            - a low PAPP-A by itself is associated with mid trimester miscarriage, pre-eclampsia, fetal growth restriction, preterm birth and intrauterine fetal death

- Offer second trimester serum screening (triple or quadruple test) between 15 and 20 weeks if missed above
- Offer a non-invasive prenatal test (NIPT) – this test is now available and screens for many chromosomal defects
- Newer markers that may become more routine include placental growth factor (PIGF) and soluble fms-like tyrosine kinase 1 (sFlt-1) levels, amongst many others being investigated
- Screen for gestational diabetes (GDM): recommend an early oral glucose tolerance test (GTT) for women with the following risk factors for gestational diabetes:
    - body mass index above 30kg/m²
    - advanced maternal age (age > 35)
    - previous history of macrosomia (baby weighing 4.5kg or above)
    - previous history of gestational diabetes
    - family history of diabetes (first-degree relative with diabetes)
    - ethnic group from countries with a high prevalence of diabetes:
        - India, Pakistan, Bangladesh, or Middle Eastern countries

Anomaly scan: 18 to 20 weeks

- Usually performed between 18^0-20^6 weeks to detect structural anomalies – this should include measurement of cervical length

20 weeks visit

- Review history to confirm risk status
- Review results of investigations and act appropriately if any are abnormal
- Check BMI – follow local obesity protocol
- Check anomaly scan results:
    - if the placenta was low-lying, recommend a repeat scan at 34 weeks
    - if nuchal fold was ≥ 6mm or if there were ≥ 2 “soft markers” for aneuploidy, refer the woman to a tertiary centre

24 weeks onwards

- Discuss any concerns
- Reemphasise healthy lifestyle issues
- Assess for risk factors for fetal growth restriction at each visit
    - use a local protocol for guidance on growth scans

- Check blood pressure
- Measure fundal height (FH) at each visit and plot it on an FH chart
    - encourage the woman to empty her bladder if she has not done so in the last 30 minutes
    - position the woman in a supine position with a slight lateral tilt
    - identify the top of the fundus by gentle palpation
    - hold tape with the cm marking hidden and measure from the uppermost border of the uterine fundus to the uppermost border of the symphysis pubis, without applying pressure over the fundus
    - turn over tape to read the measurement and record FH to the nearest cm
    - recommend a growth scan if:
        - there is a single abnormal reading more than 3cm below/above the expected value
        - two successive readings are below/above the expected level
        - there is an abnormal trend
- Start discussing fetal movements and enquire about fetal movements at each antenatal visit
    - advise they contact a health worker immediately if they have any concern regarding fetal movements
- Advise all women to go to sleep on their side as one strategy to reduce stillbirths
- If her blood group is Rhesus D-negative, offer partner testing to determine if there is any need for anti-D prophylaxis

28 weeks

- Enquire about fetal movements and give general advice regarding fetal movements
- Enquire about any vaginal bleeding
- Measure blood pressure (BP); if BP at any stage is 140mm or above systolic or 90mm or above diastolic, persisting after 2 readings 5-10 minutes apart – refer to the hypertension chapter for further care
- Measure and plot FH as above
- Check results of 26-28-week tests:
    - haemoglobin and OGTT (fasting blood glucose ≥ 5.1 or 2 hrs > 8.7 indicates diagnosis of GDM)
        - recommend iron supplementation if haemoglobin (Hb) is low

- Offer anti-D immunoglobulin to non-sensitized Rhesus-negative women
- Offer advice on sleeping positions

32 weeks
- Discuss fetal movements (FMs), sleep position and smoking if necessary
- Measure BP
- Measure and plot FH

34 weeks
- Discuss FMs, sleep position and smoking if necessary
- Discuss any concerns
- Measure BP
- Measure and plot FH
- Recommend second dose of anti-D immunoglobulin to Rhesus-negative women
- Recommend immunisation against whooping cough
- Confirm presentation

36 weeks
- As above
- If fetus is presenting as a breech, discuss external cephalic version (ECV)
- Check Hb
- Check on any need for a Group B Streptococcus (GBS) screen based on past pregnancies or current pregnancy
- Discuss again expectations of labour and options for pain during labour
- Discuss breast feeding

38 weeks
- Measure blood pressure
- Measure and plot FH
- Confirm fetus is presenting as cephalic

40+ weeks
- Measure blood pressure
- Measure and plot FH
- Offer membrane sweep
- Review any need for assessment of fetal wellbeing (very high BMI)
- Book for induction of labour (IOL) at 41^{6} weeks

From 42 weeks

- If a woman continues to decline IOL for postdates, recommend alternate day CTG and at least one scan for umbilical artery doppler and amniotic fluid assessment

Recommended Reading

1. Antenatal care: Antenatal care for uncomplicated pregnancies. Clinical guideline Published: January 2017 nice.org.uk/guidance/cg62. UK.
2. Australian Health Ministers' Advisory Council 2012, Clinical Practice Guidelines: Antenatal Care – Module 1. Australian Government Department of Health and Ageing, Canberra. http://www.health.gov.au/antenatal.
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