Causal analysis and treatment protocols for maternal complications

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1. Bleeding in pregnancy

Table 1.1 Causes of bleeding in pregnancy[1–3]

Condition	Direct causes	Indirect causes	Distant causes
Bleeding in early pregnancy (at less than 20 weeks of gestation)	• Threatened abortion • Inevitable abortion • Incomplete abortion • Ectopic pregnancy • Molar pregnancy • Post-medical termination of pregnancy complication • Injury to the genital tract		
Bleeding in pregnancy (after 20 weeks of gestation)	• Placenta praevia • Abruptio placentae • Local cause • Undetermined antepartum haemorrhage	• Multiparity • Chronic hypertension and gestational hypertension increase the chances of abruptio placentae • Elderly woman	

Table 1.2 Personnel, drugs, equipment and other supplies required for the management of bleeding in pregnancy at various levels of care[4]

Level of health care	Personnel required	Drugs/equipment/other supplies
Village/subcentre	• Health worker • Skilled birth attendants • Midwife/nurse • Adequately trained *dais*	Refer without examination
PHC	• Doctor • Nurse • Health worker • Laboratory technician • Pharmacist • Driver	• Disposable needles • IV cannula • IV set • Inj. normal saline • Inj. Ringer lactate • Inj. tetanus toxoid • Inj. anti-D • Plasma expanders: hetastarch, haemaccel, dextran 70 • Cap. ampicillin • Gloves • Speculums • D&C sets • Boilers • Vehicle for transportation
CHC	• Specialist • Doctor	• Disposable needles • IV cannula

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Table 1.2 (*cont.*) Personnel, drugs, equipment and other supplies required for the management of bleeding in pregnancy at various levels of care[4]

Level of health care	Personnel required	Drugs/equipment/other supplies
	• Nurse • Health assistant • Laboratory technician • Pharmacist • Driver	• IV sets • Inj. normal saline • Inj. Ringer lactate • Inj. tetanus toxoid • Inj. anti-D • Plasma expanders: hetastarch, haemaccel, dextran 70 • Inj. ampicillin • Inj.gentamicin • Inj. metronidazole • Gloves • Speculum • D&C sets • Boilers • Vehicle for transportation
District hospital	• Specialist • Doctor • Anaesthetist • Pathologist • Nurse • Health assistant • Laboratory technician • Pharmacist	• Disposable needles • IV cannula • IV sets • Blood transfusion sets • Inj. normal saline • Inj. Ringer lactate • Inj. tetanus toxoid • Inj. anti-D • Plasma expanders: hetastarch, haemaccel, dextran 70 • Inj. ampicillin • Inj. gentamicin • Inj. metronidazole • Gloves • D&C sets • Boilers • Working operation theatres • Vehicle for transportation

PHC: primary health centre; CHC: community health centre; IV: intravenous; Inj.: injection; Cap.: capsule; D&C: dilatation & curettage

Table 1.3 Management of conditions occurring due to bleeding in pregnancy at various levels of care

Condition	Village/subcentre	PHC	CHC	District hospital
A pregnant woman reports to a TBA/MHW/ midwife, nurse with bleeding	Refer immediately to a PHC or the nearest health facility having a doctor	• Doctor or midwife/nurse to attend to the case • History Duration of the pregnancy, amount of bleeding, passage of products of conception, abdominal pain, severity of the pain, h/o any syncopal attack, h/o interference, contraception • Examination —Pallor, temperature, pulse, blood pressure —P/A: for any tenderness, free fluid, size of the uterus —P/S: amount of bleeding, products of conception seen or not —P/V: size of the uterus, any	• Specialist to attend to the case • History Duration of the pregnancy, amount of bleeding, passage of products of conception, abdominal pain, severity of the pain, h/o any syncopal attack, h/o interference, contraception • Examination —Pallor, temperature, pulse, blood pressure —P/A: for any tenderness, free fluid, size of the uterus —P/S: amount of bleeding, products of conception seen or not —P/V: size of the uterus, any	• Specialist to attend to the case • History Duration of the pregnancy, amount of bleeding, passage of products of conception, abdominal pain, severity of the pain, h/o any syncopal attack, h/o interference, contraception • Examination —Pallor, temperature, pulse, blood pressure —P/A: for any tenderness, free fluid, size of the uterus —P/S: amount of bleeding, products of conception seen or not —P/V: size of the uterus, any

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Table 1.3 (*cont.*) Management of conditions occurring due to bleeding in pregnancy at various levels of care

Condition	Village/subcentre	PHC	CHC	District hospital
		adnexal tenderness • Investigations Hb estimation	adnexal tenderness • Investigations Hb estimation, blood grouping and Rh typing, BT, CT, RFT	adnexal tenderness • Investigations Hb estimation, blood grouping and Rh typing, BT, CT, RFT
Shock	ANM to start an IV line and refer immediately to a PHC or the nearest health facility having a doctor	• Establish an IV line and start rapid IV fluids (normal saline or Ringer lactate) • Arrange for transportation and midwife to accompany the patient • Transfer the patient to the nearest district/tertiary referral centre	• Start rapid IV fluids till the pulse improves • Give blood if cross-matching and storage facilities are available and monitor the vital signs. If blood is not available, quickly assess the vital signs and refer to the nearest district/tertiary referral centre • Continue IV fluids • Arrange for a nurse or midwife to accompany the patient to ensure IV fluids during transportation	• Secure two IV lines; start rapid IV fluids till blood is cross-matched • Give blood. Quickly assess the cause of shock and treat • If the diagnosis is uncertain, refer to a medical college or nearest tertiary referral centre • Arrange for a nurse to accompany the patient to ensure IV fluids during transportation
Threatened abortion	Refer immediately to a PHC or the nearest health facility having a doctor	If the bleeding is minimal and the uterine size corresponds to the period of gestation, refer to the district hospital for USG to confirm the viability of the pregnancy	If the bleeding is minimal and the uterine size corresponds to the period of gestation, refer to the district hospital for USG to confirm the viability of the pregnancy	• If the bleeding is minimal and the uterine size corresponds to the period of gestation, confirm viability by USG. Advise rest and give Inj. anti-D 100 μg if the mother is Rh negative • Missed abortion: If the foetus is not viable, repeat the coagulogram weekly for 3 weeks, till the woman aborts spontaneously or evacuate using misoprostol or suction evacuation
Inevitable abortion	Refer immediately to a PHC or the nearest health facility having a doctor	If the doctor has the skill to perform MTP, do so, otherwise refer to the nearest CHC or district hospital	• Pregnancy less than 12 weeks: Wait till spontaneous expulsion begins. Start augmentation with oxytocin and perform manual aspiration followed by check curettage • Pregnancy more than 12 weeks: Start oxytocin augmentation. Once the foetus is expelled, examine the foetus and placenta and check whether it is complete or not. If there are retained products then perform gentle curettage. Keep the patient under observation —Give Inj. TT prophylaxis —If the mother is Rh negative, give anti-D —Antibiotic cover: Cap. ampicillin or Tab. co-trimoxazole as per the availability • Advise to report if bleeding continues or if she develops fever	• Pregnancy less than 12 weeks: Give oxytocin augmentation followed by dilatation and evacuation or suction evacuation • Pregnancy more than 12 weeks: Give oxytocin augmentation till the foetus is expelled. Examine whether the placenta is complete or not. If there are retained products, perform curettage. —Give Inj. TT prophylaxis —Give anti-D to Rh-negative mother —Antibiotic cover: Give Cap. ampicillin or Tab. co-trimoxazole according to the availability

(Cont.)

Table 1.3 (*cont.*) Management of conditions occurring due to bleeding in pregnancy at various levels of care

Condition	Village/subcentre	PHC	CHC	District hospital
Incomplete abortion	Refer to a PHC	• If the bleeding is heavy and there is passage of the products of conception then manage as below —Secure an IV line, refer to the nearest CHC/ district hospital —If the doctor is trained to perform D&C then perform evacuation at the PHC	• If the bleeding is heavy and there is passage of the products of conception then manage as below —Specialist to perform dilatation and evacuation if the pregnancy is less than 12 weeks —If the pregnancy is more than 12 weeks and the foetus has not been expelled, give oxytocin augmentation and wait for spontaneous expulsion. If some products are still retained, perform gentle curettage. Give * Inj. TT * Inj. anti-D to Rh-negative mother * Tab. co-trimoxazole DS 1BD for 5 days * Alternatively, give Cap. ampicillin 500 mg 6-hourly x 5 days —Advise to report back if bleeding persists or the woman develops fever	• If the bleeding is heavy and there is passage of the products of conception then manage as below —If the pregnancy is less than 12 weeks, give oxytocin augmentation followed by dilatation and evacuation or suction evacuation —If the pregnancy is more than 12 weeks, give oxytocin augmentation till the foetus is expelled. Examine whether the placenta is complete or not. —If there are retained products, perform check curettage —Give * Inj. TT prophylaxis * Inj. anti-D to Rh-negative mother * Antibiotic cover: Cap. ampicillin or Tab. co-trimoxazole as per the availability
Complete abortion	Refer to a PHC	• Confirm h/o passage of products of conception • Conduct a P/V examination under aseptic conditions to assess the size of the uterus • Ask to report in case of excessive or countinous bleeding or fever	• Confirm h/o passage of products of conception • Conduct a P/V examination under aseptic conditions to assess the size of the uterus • Ask to report in case of excessive bleeding or fever • Check the blood group and Rh typing; if Rh negative, give Inj. anti-D 100 μg	• Confirm h/o passage of products of conception • Conduct a P/V examination to confirm the size of the uterus • Perform USG to rule out the presence of any retained products • Advise to report in case bleeding continues or fever develops • Give Inj. anti-D to Rh-negative woman
Molar pregnancy	Start an IV line and refer to a PHC or the nearest health facility having a doctor	• H/o passage of grape-like products • Check the vital signs; the per abdominal uterine size may be larger than the duration of pregnancy • Management Start an IV line and refer to a district hospital	• H/o passage of grape-like products • Check the vital sings; the per abdominal uterine size may be larger than the duration of pregnancy • Management Start an IV line and refer to a district hospital	• H/o passage of grape-like products • Check the vital signs; the per abdominal uterine size may be larger than the duration of pregnancy • Review history • Check vital signs; conduct a P/A examination to check the size of the uterus • Investigations —Hb estimation, blood grouping and Rh typing, RFT, BT, CT, chest X-ray —USG to confirm the diagnosis • Management —Specialist to be present

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Table 1.3 (*cont.*) Management of conditions occurring due to bleeding in pregnancy at various levels of care

Condition	Village/subcentre	PHC	CHC	District hospital
				—IV line to be established —Anaesthetist should be available —Blood to be cross-matched —Suction evacuation to be done —Give 10 U oxytocin in 500 mg normal saline at the time of the procedure —Products must be sent for histopathology to a medical college or a tertiary centre • Send the patient to a tertiary centre for follow up • If the patient has any complication, refer to a higher centre
Post MTP/post-abortal complications	Refer to a PHC	• Secure an IV line • Refer to a tertiary hospital	• Secure an IV line • Refer to a tertiary hospital	• Review history • Examine the patient • If gut injury is suspected or the patient is in shock, manage as shock and refer without delay to a tertiary centre • Refer with a referral slip
Ectopic pregnancy	• H/o abdominal pain, spotting, fainting • Refer to a PHC	• H/o pain, fainting attack, spotting • Examination —Pallor, pulse, blood pressure —P/A: Look for tenderness, free fluid —P/V: Tenderness on cervical movement, the uterus is normal in size, presence of adnexal mass, any tenderness • Management —Refer to a higher centre —If shock is present, treat as shock and refer to a district hospital	• H/o pain, fainting attack, spotting • Examination —Pallor, pulse, blood pressure —P/A: Look for tenderness, free fluid —P/V: Tenderness on cervical movement, the uterus is normal in size, presence of adnexal mass, any tenderness • Management —Refer to a higher centre —If shock is present, treat as shock and refer to a district hospital	• H/o pain, fainting attack, spotting • Examination —Pallor, pulse, blood pressure —P/A: Look for tenderness, free fluid —P/V: Tenderness on cervical movement, the uterus is normal in size, presence of adnexal mass, any tenderness • Management —Establish an IV line —Treat shock if present —Confirm diagnosis by USG —Culdocentesis can be done to confirm haemoperitoneum —Carry out blood transfusion if shock is present or Hb <7 g% —Perform laparotomy; if the family is complete, perform bilateral salpingectomy else perform conservative surgery —Observe the vital signs and urine output • If there is an unruptured ectopic pregnancy and the patient's vital signs are stable, medical management can be considered if the family is not complete; for this refer to a higher centre
Woman with bleeding P/V and pregnancy more than 20 weeks	• MHW/midwife/TBA to attend • Do not attempt any	• Attending doctor or trained midwife should review history quickly	• Quick history by the doctor • Check the vital signs	• History-taking by a specialist • Duration of the pregnancy • Previous BP records

(Cont.)

Table 1.3 (*cont.*) Management of conditions occurring due to bleeding in pregnancy at various levels of care

Condition	Village/subcentre	PHC	CHC	District hospital
	<u>examination</u> • Transfer to a PHC immediately • Arrange for transportation	• Check the vital signs • <u>Do not do a P/V examination</u> • Start an IV line with Inj. normal saline • Arrange for transportation • Refer to a district/medical college hospital whichever is nearer, without delay • Nurse/midwife to accompany if the bleeding is heavy or if the patient is in shock	—Pallor, pulse, BP, fundal height, feel of the uterus, any tenderness, foetal heart rate —Start an IV line • Arrange for transportation • Refer to a district/medical college hospital whichever is nearer, without delay • Transfer the patient with a nurse or someone who can look after an IV line and resuscitate the patient	• Duration and amount of bleeding • Any previous episode of bleeding • Painless, unprovoked bleeding as in placenta praevia or pain followed by bleeding and continuous or intermittent pain • Perception of foetal movements • Any previous surgery • <u>Examination</u> —Look for pallor; check the pulse and BP —Check the fundal height, feel of the uterus, any tenderness, foetal heart rate • <u>Investigations</u> —Hb estimation —Blood grouping and Rh typing —BT, CT, clot retraction time —USG
Patient in shock		• Start an IV line and give rapid IV fluids—plasma expanders are to be given • Refer to a district hospital • Send a trained midwife or health worker with the patient	• Start an IV line and give rapid IV fluids—plasma expanders are to be given • If blood is available, do cross-matching and start giving blood • Catheterize the bladder • Refer to a district hospital • Send a trained midwife or health worker with the patient	• Start 2 IV lines • Start IV crystalloids • Cross-match blood and start transfusion • Catheterize the bladder • Do USG for diagnosis of abruptio placentae or placenta praevia
Placenta praevia (in shock)				• Prepare for a caesarean section immediately • Keep adequate blood ready • Take written consent • Arrange adequate oxytocin, Inj. carboprost, Tab. misoprostol for rectal use, Inj. methergin • Perform a caesarean section as a life-saving surgery for the mother • <u>Post-operative</u> —Watch for PPH —Monitor the vital signs every hour —Monitor the urine output for 24 hours —Replace blood adequately by repeat Hb evaluation
Bleeding is stopped and the pregnancy is less than 32 weeks (placenta praevia)				• Admit the patient —Give steroids for foetal lung maturity (Inj. betamethasone two doses of 12 mg 24 hours apart) and observe for 48 hours • If there is no further bleeding, advise complete rest • If the patient is stable for 48

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Table 1.3 (*cont.*) Management of conditions occurring due to bleeding in pregnancy at various levels of care

Condition	Village/subcentre	PHC	CHC	District hospital
				hours then —If type 1/type 2 anterior placenta praevia is present and the patient has easy access to a hospital * Discharge and manage at home * Get written consent to report immediately in case of bleeding and ask the patient to take strict bed rest —In case of type 2 posterior/ type 3 or 4 placenta praevia * Continue observation of the patient in hospital
Pregnancy is between 32 and 36 weeks				• Light bleeding, maternal and foetal condition normal, not in labour —Conservative management • Minimal exertion after three days if stable —Deliver at 36 weeks or more if the bleeding is heavy and/or the maternal–foetal condition is not stable or the woman is in labour or in case of intra-uterine death, deliver immediately • If USG reveals type 2 posterior/ 3 or 4 placenta praevia —If patient has bleeding —Give blood if needed and perform an LSCS • If USG reveals type 1 or 2 anterior placenta praevia —If patient has bleeding —Give blood if needed; keep the operation theatre ready for a caesarean section if indicated; conduct a P/V examination in the theatre —Induce labour (if indicated)/ LSCS —Active management of the third stage of labour —Monitor for PPH
Pregnancy beyond 36 weeks				• Delivery indicated whenever diagnosis of placenta praevia is made • LSCS to be performed in type 2 posterior and central placenta praevia, and types 3 and 4 placenta praevia
Drugs available/ equipment		• IV sets • Inj. normal saline	• IV sets • Inj. normal saline	• IV sets • Inj. normal saline

(Cont.)

Table 1.3 (*cont.*) Management of conditions occurring due to bleeding in pregnancy at various levels of care

Condition	Village/subcentre	PHC	CHC	District hospital
		• IV cannula • Plasma expanders: Inj. haemaccel, hetastarch or dextran 70	• IV cannula • Plasma expanders: Inj. haemaccel, hetastarch or dextran 70	• IV cannula • Blood transfusion set • Plasma expanders: Inj. haemaccel, hetastarch or dextran 70 • Inj. oxytocin, carboprost, methergin, antibiotics, Tab. misoprostol • Working operation theatre
• Abruptio placentae, shock/signs of shock If the bleeding is light to moderate, pregnancy is less than 34 weeks, condition of the mother is stable and there is no foetal distress	Manage as shock and refer to the nearest health centre having facilities for a caesarean section	Manage as shock and refer to the nearest health centre having facilities for a caesarean section	Perform a caesarean section operation/ARM, if required or refer to a district hospital	• Manage shock and deliver the patient early • Check the vital signs, establish an IV line, arrange fresh blood and assess the clotting status • If there is any clotting problem, transfuse fresh blood • Give Inj. betamethasone two doses of 12 mg 12 hours apart for foetal lung maturity
At >34 weeks of pregnancy				• Perform ARM • Augment labour • If the cervix is not ripe or there is foetal distress, perform LSCS • If there is heavy bleeding and the foetus is alive, perform an LSCS • If the foetus is dead, induce labour and give blood transfusion • Monitor for complications (DIC, renal failure) —Repeat CT/CRT after 4-hours —Give fresh blood transfusion —Monitor the progress 4-hourly —Conduct assisted delivery by vacuum extraction to hasten delivery —If the progress is unsatisfactory after 4 hours, refer to a higher centre —If there is decreased urine output or coagulopathy, refer with a nurse or midwife to a medical college hospital —Monitor for complications (DIC, renal failure) —After delivery, monitor for urinary output and PPH

PHC: primary health centre; CHC: community health centre; TBA: traditional birth attendant; MHW: multipurpose health worker; h/o: history of; P/A: per abdomen; P/S: per speculum; P/V; per vaginam; BT: bleeding time; CT: clotting time; RFT: renal function tests; ANM: auxiliary nurse–midwife; IV: intravenous; USG: ultrasonography; Inj.: injection; MTP: medical termination of pregnancy; TT: tetanus toxoid; Tab.: tablet; Cap.: capsule; Hb: haemoglobin; BP: blood pressure; PPH: postpartum haemorrhage; DIC: disseminated intravascular coagulation; CRT: clot retraction time; LSCS: lower segment caesarean section; ARM: artificial rupture of membranes

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2. Postpartum haemorrhage (PPH)

Table 2.1 Causes of postpartum haemorrhage

Direct causes	Indirect causes	Distant causes
Traumatic • Injuries to the genital tract *Atonic* • Retained products of conception • Prolonged labour • Multiparity (multiple pregnancies) • Polyhydramnios • Abruptio placentae • Underlying coagulopathy • Big baby • Induction of labour	• Underlying anaemia • Delivery at home • Non-availability of oxytocics, methergin • Underestimation of blood loss by the birth attendant • Delay in transportation • Absence of blood bank facilities	• Ignorance • Delay in seeking treatment • Distance from the hospital

Table 2.2 Management of postpartum haemorrhage (PPH) at various levels of health care

Village level/subcentre	PHC	CHC	District hospital
Preventive measures • All deliveries should be institutional and home deliveries should be discouraged by explaining the advantages of institutional deliveries • All deliveries should be conducted by a trained midwife/ skilled birth attendant • The ANM/HW (F) should do counselling in the antenatal period and as delivery nears • Free supply of oxytocics, methergin injections and misoprostol tablets to the personnel who perform delivery • High-risk cases should be referred to a CHC or district hospital for delivery • If a high-risk woman goes into labour then the attending HW(F)/ midwife should accompany the patient with drugs to the referral hospital • If the bleeding continues following delivery: —Transport the woman to a PHC	• Only a doctor or trained midwife/ nurse should conduct the delivery • Active management of the third stage of labour should be practised by the doctor or trained midwife/ nurse conducting the delivery • If the bleeding continues following delivery —Check the pulse, BP, pallor, retraction of the uterus —Shift the patient to the delivery table —Empty the bladder —Establish an IV line and give oxytocin infusion 20 U in 500 ml normal saline —Give Inj. methergin 0.2 mg IM or through the IV line —If Tab. misoprostol is available 800 μg can be given per rectum —Quickly explore the cervix for any tears. If a tear is present, suture it • If the bleeding continues: —Call for help for transportation —Insert an indwelling catheter	• If the bleeding continues following delivery: —Look for pallor, check the pulse, BP, temperature —Conduct a P/A examination to check whether the uterus is retracted —Shift the patient to the delivery table —Empty the bladder using a catheter —Start IV Inj. normal saline with oxytocin 20 U continuous drip —Give Inj. methergin 0.2 mg IM or through the IV line —Explore the vagina and cervix for tears. If a tear is found, suture it —If the uterus is atonic, give Inj. carboprost or Tab. misoprostol 800 μg per rectum —Continue oxytocin drip • If the bleeding continues, i.e. PPH —Check the clotting status —If blood is available, start transfusion —Put an indwelling urinary	• If the bleeding continues following delivery, i.e. patient is referred as a case of PPH —Specialist to be present —Check pallor, pulse, BP, fundal height of the uterus —Catheterize the patient —Start 2 IV lines —Give 20 U oxytocin IV —Give blood for cross-matching —Check the clotting status • Patient requires exploration under general anaesthesia —Do a P/V examination and remove any retained bits of placenta, clots —Do a P/S examination and suture any tears that are seen —Look for any vaginal tears • In case of uncontrolled haemorrhage —Give blood transfusion —Continue oxytocin drip —Give Inj. carboprost IM —Give Tab. misoprostol 800 μg per rectum

(Cont.)

Table 2.2 (*cont.*) Management of postpartum haemorrhage (PPH) at various levels of health care

Village level/subcentre	PHC	CHC	District hospital
without delay —During this period the trained personnel (midwife/nurse/birth attendant) can (i) conduct vaginal examination and explore for retained products of conception (ii) continue uterine massage (iii) perform bimanual compression • Drugs and supplies —Gloves —Disposable syringes with needles —Inj. methergin —Tab. misoprostol —Inj. oxytocin	—Continue uterine massage —Continue IV oxytocin drip; give plasma expanders if the bleeding is heavy —Transfer the patient —Perform bimanual compression —Accompany the patient to the district hospital (midwife/nurse) • If the bleeding stops: —Do Hb estimation —If the patient requires blood transfusion transfer to the district hospital —During transportation, a doctor/nurse/midwife should accompany the patient. They should carry IV fluids, oxytocin and methergin injections • Drugs and supplies —Inj. oxytocin —Inj. methergin —Tab. methergin —Tab. misoprostol 200 μg —Inj. normal saline —Foley catheter —Red rubber catheter —IV cannula —IV set —Disposable syringes and needles —Suture material: chromic catgut no. 1-0 —Needle holder —3 sponge holders —2 Sim speculums —Light or headlamp —Delivery table with stirrups	catheter —Transfer the patient to a higher centre • Laboratory investigations —Haemoglobin (Hb) estimation —Blood grouping and cross-matching • If a patient with PPH is pale and the bleeding is not controlled, she —Requires exploration under anaesthesia —Requires blood transfusion • If these facilities are not available, transfer the patient on plasma expanders to a district or a medical college hospital, whichever is nearer • During transportation —Doctor/nurse/midwife to accompany the patient. They should carry IV fluids, oxytocin, methergin injections and plasma expanders —Continue oxytocin drip —Give Inj. carboprost, Tab. misoprostol 800 μg per rectum • Requirements at the CHC —Blood storage and cross-matching facility, and a pathologist to do cross-matching • Drugs and supplies —Inj. carboprost which requires refrigeration —Tab. misoprostol 200 μg —Inj. methergin ampoules, —Inj. oxytocin —Inj. normal saline —Plasma expanders —IV cannula —IV set —Foley catheter —Urobag —Suture material: chromic catgut no. 1-0 —2 Sim speculums —3 sponge holders —Good head lamp or light source for exploration —Delivery table with stirrups	—Perform bimanual compression —Continue uterine massage —If the uterus is well-contracted but there is local oozing from the cervix and vagina, do tight packing and arrange for transportation • If the cervical tear appears to extend to the broad ligament, the patient needs laparotomy and may require hysterectomy • Depending on the attending obstetrician's skill and availability of blood, the patient can either be referred or laparotomy can be performed with full consent as a life-saving procedure • When transferring such as patient, a nurse should accompany her —Continue oxytocin drip, blood transfusion —Continue uterine massage —Refer with a referral slip with details of examinations done and medication given • Requirements at the district hospital —Anaesthetist —Pathologist —Blood bank —Functioning operation theatre • Drugs and supplies —Inj. carboprost which requires refrigeration —Tab. misoprostol 200 μg (advantage: it is cheap and can be stored at room temperature) —Inj. methergin —Inj. oxytocin —Inj. normal saline —Plasma expanders —IV cannula —IV sets —Blood transfusion sets —Foley urinary catheter —Urobag —Disposable syringes and needles

PHC: primary health centre; CHC: community health centre; ANM: auxiliary nurse–midwife; HW(F): health worker (female); BP: blood pressure; Inj.: injection; Tab.: tablet; IV: intravenous; IM: intramuscular

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3. Obstructed labour

Table 3.1 Causes of prolonged/obstructed labour[1,2]

Direct causes	Indirect causes	Distant causes
• Cephalopelvic disproportion • Malposition and malpresentation • Foetal anomalies • Cervical dystocia • Prolonged rupture of membranes • Uterine dysfuntion	• Short statured mother • Bad obstetric history • Multiparity	• Unbooked case • Home delivery • Distance from hospital • Ignorance

Table 3.2 Interventions for the management of prolonged/obstructed labour[2–4]

Medical interventions	Non-medical interventions
• Identify signs of obstructed labour • Correct the cause, e.g. oxytocin drip or artificial rupture of the membranes • Operative/caesarean delivery • Train to use the partograph • Use the partograph	• Refer high-risk cases before the onset of labour • Refer in time • Arrange transportation

Table 3.3 Personnel, drugs and supplies required for the management of prolonged/obstructed labour[4]

Personnel	Drugs and supplies
Village/subcentre • Trained midwives • Trained health workers • Skilled birth attendants • Well-trained *dais*	• Partographs • Gloves • Clean instruments for delivery • Cap. ampicillin
PHC • Doctor • Trained midwives/nurses • Pharmacist • Driver	• Partographs • Gloves • Clean instruments for delivery • IV set, IV cannula, disposable syringes and needles, IV fluids • Inj. ampicillin 500 mg, Inj. metronidazole, Inj. gentamicin
CHC • Specialist • Nurse • Driver	• Partographs • Gloves • Clean instruments for delivery • IV set, IV cannula, disposable syringes and needles, IV fluids • Inj. ampicillin 500 mg, Inj. metronidazole, Inj. gentamicin
District hospital • Specialist • Anaesthetist • Nurse • Pathologist • Pharmacist	• Working operation theatres • Blood bank • Partographs • Gloves • Clean instruments for delivery • IV set, IV cannula, disposable syringes and needles, IV fluids • Inj. ampicillin 500 mg, Inj. metronidazole, Inj. gentamicin

PHC: primary health centre; CHC: community health centre; Cap.: capsule; Inj.: injection; IV: intravenous

Table 3.4 Management of prolonged/obstructed labour at various levels of health care

Management protocol	Village/subcentre	PHC	CHC	District hospital
Prevention	• Increasing the awareness among pregnant women about the advantages of institutional delivery through posters, the media, health workers • Delivery by —trained midwife/nurse/ skilled birth attendant • Train *dais* to use partograph —Basic principle of its use —Referral of high-risk cases	• Record-keeping and auditing of all cases of obstructed labour by the health assistant • Reinforcement of institutional delivery, i.e. well supervised delivery and postpartum period by doctor or nurse where a doctor is available for assistance	• Record-keeping and auditing of all cases of obstructed labour • Reinforcement of institutional delivery	• Record-keeping and auditing of all cases of obstructed labour • Reinforcement of institutional delivery
Women in labour	• Refer all high-risk women • Maintain partograph during labour • Encourage oral hydration • If the latent phase is prolonged, i.e. more than 8 hours —Refer to the PHC —Do not give enema or any injections for augmentation —Per abdomen examination of the foetal head in fifths should be practised —Minimal per vaginal examination should be done using asepsis and wearing gloves —If the per vaginal findings are the same after 4 hours, refer to the CHC —If the woman does not improve after 12 hours of labour she should be referred to the district hospital —If there is foetal distress, refer to the district hospital	• Refer all high-risk women • Maintain partograph during labour • Encourage oral hydration • If the latent phase is prolonged, i.e. more than 8 hours —If there has been no change in cervical findings, the patient must be in false labour —If the cervical findings have changed, then refer to the CHC —Per abdomen examination of the foetal head in fifths should be practised —Minimal per vaginal examination should be done using asepsis and wearing gloves —If the per vaginal findings are the same after 4 hours, refer to the CHC —If the woman does not improve after 12 hours of labour she should be referred to the district hospital —If there is foetal distress, refer to the district hospital	• Maintain partograph • Encourage oral hydration • If the latent phase is prolonged —If there has been no change in the cervical findings, the woman must be in false labour —If the cervical findings have changed, then rupture the membranes and start Inj. ampicillin 500 mg 6-hourly —If the membranes have already ruptured, start oxytocin and reassess contractions after 2 hours —If there is no further change in the cervical findings, refer to the district hospital • If the active phase is prolonged —If there is no change in cervical findings in 4 hours or progress is delayed then rupture the membranes and reassess after 4 hours —Start oxytocin if the membranes have already ruptured —Monitor labour and increase pitocin till contractions improve and reassess after 4 hours —If there is no progress after the above intervention, refer to the district hospital —If there are signs of obstruction, refer immediately • Refer to the district hospital if there is foetal distress and the woman requires a caesarean section • If the cervix is fully dilated	• Maintain partograph • Encourage oral hydration • If the latent phase is prolonged —If there has been no change in the cervical findings, the woman must be in false labour —If the cervical findings have changed, then rupture the membranes and start Inj. ampicillin 500 mg 6-hourly —If the membranes have already ruptured, start oxytocin and reassess contractions after 2 hours —If there is no further change in the cervical findings, critically assess the cause —If there is cephalopelvic disproportion then perform LSCS • If the active phase is prolonged —If there is no change in cervical findings in 4 hours or progress is delayed then rupture the membranes and reassess after 4 hours —Start oxytocin if the membranes have already ruptured —Monitor labour and increase pitocin till contractions improve and reassess after 4 hours —If there is no progress after the above intervention, critically assess the cause —If there is cephalopelvic disproportion perform LSCS • If there are signs of obstruction immediately

(Cont.)

Table 3.4 (*cont.*) Management of prolonged/obstructed labour at various levels of health care

Management protocol	Village/subcentre	PHC	CHC	District hospital
			and there is no descent of the head assess whether there is cephalopelvic disproportion; if yes, refer • If instrumental delivery is required then perform the same. • Give ampicillin 500 mg 6-hourly to any woman with ruptured membranes • Give ampicillin 500 mg + Inj. genatmicin 1.2 mg/kg body weight 8-hourly to any woman with ruptured membranes for more than 12 hours • Refer immediately to the district hospital if there is malpresentation • Arrange for transportation	perform LSCS • If there is foetal distress and the woman requires caesarean section perform LSCS immediately • If the cervix is fully dilated and there is no descent of the head, assess whether there is cephalopelvic disproportion; if yes, immediately perform LSCS • If instrumental delivery is required then perform the same • Give ampicillin 500 mg 6-hourly to any woman with ruptured membranes • Give ampicillin 500 mg + Inj. genatmicin 1.2 mg/kg body weight 8-hourly to any woman with ruptured membranes for more than 12 hours • If the foetus is dead and instrumental delivery is an option then refer to a tertiary hospital • If labour is prolonged and obstructed then refer to a tertiary centre

PHC: primary health centre; CHC: community health centre; Inj.: injection; LSCS: lower segment caesarean section

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4. Puerperal sepsis

Table 4.1 Causes of puerperal sepsis[1]

Direct causes	• Prolonged labour • Prolonged leakage • Chorioamnionitis • Multiple unclean per vaginal examination • Manual removal of the placenta • Retained placental tissue
Indirect causes	• Delivery by an untrained person • Unclean/unsterile instruments • Lack of adequate antibiotic therapy after delivery
Distant causes	• Low socioeconomic status • Distance from the hospital • Delay in seeking treatment • Delay in referral
Associated factor	Underlying anaemia

Table 4.2 Interventions for various grades of puerperal sepsis

Manifestation	Medical interventions	Non-medical interventions
Grade I puerperal sepsis	Antibiotics	• Protein-rich diet • Analysis of the cause/s and auditing
Grade II puerperal sepsis	• Admission • IV antibiotics	• Protein-rich diet • Analysis of the cause/s and auditing
Grade III puerperal sepsis	• Admission • IV antibiotics • Management of complications such as septic shock, ARF, MODS • Timely referral • Surgical intervention, when essential	• Protein-rich diet • Supportive care • Transportation

IV: intravenous; ARF: acute renal failure; MODS: multiorgan dysfunction syndrome

Table 4.3 Personnel, drugs and tests required for the management of puerperal sepsis[1,2]

Grade of puerperal sepsis	Personnel	Tests	Drugs	Inpatient stay
Grade I	• Nurse • Doctor • Laboratory technician • Pharmacist	• Hb estimation • TLC and DLC	• Cap. ampicillin 500 mg or amoxicillin 6-hourly + • Tab. metronidazole 400 mg 8-hourly + • Inj. gentamicin 60 mg 8-hourly (or 1.5 mg/kg 8-hourly)	—
Grade II	• Nurse • Specialist • Laboratory technician	• Hb estimation • TLC and DLC	• Inj. cefotaxime 1 g 8-hourly • Inj. ampicillin 500 mg 6-hourly • Inj. metronidazole 400–500 mg • Inj. gentamicin 60 mg 8-hourly (or 1.5 mg/kg 8-hourly)	3–7 days
Grade III	• Specialist • Nurse • Radiologist • Pathologist • Anaesthetist	• Hb estimation • TLC and DLC • Blood culture • Urine culture • Pus culture • X-ray of the chest • X-ray of the abdomen • USG of the abdomen	Broad-spectrum antibiotics, IV cefotaxime + aminoglycoside + metronidazole till the culture reports are available	Usually prolonged

Hb: haemoglobin; TLC: total leucocyte count; DLC: differential leucocyte count; Cap.: capsule; Tab.: tablet; Inj.: injection; IV: intravenous; USG: ultrasonography

Table 4.4 Protocol for the management of puerperal sepsis at different levels of health care[1,2,4,5]

Management protocol	Village/subcentre	PHC	CHC	District hospital
Preventive measures	• ANM/nurse/midwife to follow up every delivery after 1 week • Woman delivered by a *dai* in an unclean environment must receive Cap. ampicillin 500 mg 6-hourly x 5 days from a health worker • If manual removal of the placenta has been done, give ampicillin + metronidazole 400 mg 8-hourly and Inj. gentamicin 1.2 mg/kg body weight 8-hourly (refer to a PHC) • If the membranes rupture before the second stage or multiple P/V examinations are conducted before delivery, give antibiotics	• Every woman who has delivered should receive antibiotic cover: Cap. ampicillin 500 mg 6-hourly x 5 days • If the delivery is conducted by a *dai*, give the woman Cap. ampicillin 500 mg 6-hourly • If manual removal of the placenta has been done, give Inj. ampicillin 500 mg 6-hourly + Inj. metronidazole 400 mg 6-hourly + Inj. gentamicin 1.2 mg/kg 8-hourly • If the membranes rupture before the second stage or multiple P/V examinations are conducted before delivery, give antibiotics	• Every woman who has delivered should receive antibiotic cover: Cap. ampicillin 500 mg 6-hourly x 5 days • If the delivery is conducted by a *dai*, give the woman Cap. ampicillin 500 mg 6-hourly • If manual removal of the placenta has been done, give Inj. ampicillin 500 mg 6-hourly + Inj. metronidazole 400 mg 6-hourly + Inj. gentamicin 1.2 mg/kg 8-hourly • If the membranes rupture before the second stage or multiple P/V examinations are conducted before delivery, give antibiotics	• Every woman who has delivered should receive antibiotic cover: Cap. ampicillin 500 mg 6-hourly x 5 days • If the delivery is conducted by a *dai*, give the woman Cap. ampicillin 500 mg 6-hourly • If manual removal of the placenta has been done, give Inj. ampicillin 500 mg 6-hourly + Inj. metronidazole 400 mg 6-hourly + Inj. gentamicin 1.2 mg/kg 8-hourly • If the membranes rupture before the second stage or multiple P/V examinations are conducted before delivery, give antibiotics
History	• Any woman with fever, foul-smelling discharge, increased bleeding, diarrhoea/vomiting/constipation, abdominal distension • Refer to a PHC	• Any woman with fever, foul-smelling discharge, increased bleeding, diarrhoea/vomiting/constipation, abdominal distension • Doctor to attend	• Any woman with fever, foul-smelling discharge, increased bleeding, diarrhoea/vomiting/constipation, abdominal distension • Specialist to attend	• Any woman with fever, foul-smelling discharge, increased bleeding, diarrhoea/vomiting/constipation, abdominal distension • Specialist to attend
Examination		• Look for pallor, icterus • Check the pulse and BP • Note the temperature • Examine the respiratory and cardiovascular systems	• Look for pallor, icterus • Check the pulse and BP • Note the temperature • Examine the respiratory and cardiovascular systems	• Look for pallor, icterus • Check the pulse and BP • Note the temperature • Examine the respiratory and cardiovascular systems
Puerperal sepsis Grade I		• P/A examination: Feel of the abdomen, distension, any tenderness, guarding, rigidity, bowel sounds, size of the uterus • P/V examination: Size of the uterus, tenderness, presence of any foreign body, any retained products • Examination of the breasts, episiotomy wound and lower limbs for swelling • Cap. ampicillin 500 mg 6-hourly + Tab. metronidazole 400 mg 8-hourly + Inj. gentamicin 1.2 mg/kg body weight 8-hourly • If there is no improvement in 24–48 hours or worsening, refer	• P/A examination: Feel of the abdomen, distension, any tenderness, guarding, rigidity, bowel sounds, size of the uterus • P/V examination: Size of the uterus, tenderness, presence of any foreign body, any retained products • Examination of the breasts, episiotomy wound and lower limbs for swelling • Cap. ampicillin 500 mg 6-hourly + Tab. metronidazole 400 mg 8-hourly + Inj. gentamicin 1.2 mg/kg body weight 8-hourly • If there is no improvement in 24–48 hours or worsening, admit	• P/A examination: Feel of the abdomen, distension, any tenderness, guarding, rigidity, bowel sounds, size of the uterus • P/V examination: Size of the uterus, tenderness, presence of any foreign body, any retained products • Examination of the breasts, episiotomy wound and lower limbs for swelling • Cap. ampicillin 500 mg 6-hourly + Tab. metronidazole 400 mg 8-hourly + Inj. gentamicin 1.2 mg/kg body weight 8-hourly • If there is no improvement in 24–48 hours or worsening, admit
Puerperal sepsis Grade II			• Monitor the vital signs/temperature • Give IV antibiotics: cefotaxime (1 g 8-hourly) + gentamicin (60 mg 8-hourly) + metronidazole	• Monitor the vital signs/temperature • Give IV antibiotics: cefotaxime (1 g 8-hourly) + gentamicin (60 mg 8-hourly) + metronidazole

(Cont.)

Table 4.4 *(cont.)* Protocol for the management of puerperal sepsis at different levels of health care[1,2,4,5]

Management protocol	Village/subcentre	PHC	CHC	District hospital
			(400–500 mg 8-hourly) • Maintain an input/output chart of the patient	(400–500 mg 8-hourly) • Maintain an input/output chart of the patient
Investigations			• Hb, TLC and DLC, X-ray of the chest, X-ray of the abdomen	• Hb, TLC and DLC, X-ray of the chest, X-ray of the abdomen, USG
Puerperal sepsis Grade III		• Secure an IV line • Start antibiotics • Refer to district hospital	• Secure an IV line • Start antibiotics • Refer to district hospital	• Secure an IV line • Start broad-spectrum IV antibiotics —Inj. cefotaxime 1 g 8-hourly —Inj. gentamicin 1.2 mg/kg —Inj. metronidazole 400 mg 8-hourly • Maintain a record of the vital signs and temperature • If there is no improvement in 24–48 hours, refer to a tertiary centre • If the patient has intraperitoneal pus collection or pelvic abscess, refer to a tertiary centre
Investigations			• Hb, TLC and DLC, X-ray of the chest, X-ray of the abdomen	• Hb, TLC and DLC, X-ray of the chest, X-ray of the abdomen, USG
Septic shock	Refer to a higher centre	• Secure an IV line (doctor and nurse) • Start IV antibiotics (broad-spectrum) • Refer to a tertiary centre	• Secure an IV line (doctor and nurse) • Start IV antibiotics (broad-spectrum) • Catheterize the bladder and refer to a tertiary centre	• Secure an IV line • Start IV antibiotics (broad-spectrum) • Catheterize the bladder • Refer to a tertiary centre
Availability of drugs	• Soap, essential equipment for delivery • Gloves • Cap. amoxicillin 500 mg • Cap. ampicillin 500 mg • Tab. metronidazole 400 mg	• Gloves • Inj. ampicillin 500 mg • Inj. gentamicin 80 mg • Inj. metronidazole 500 mg • IV set • Disposable syringes • Cap. ampicillin 500 mg • Tab. metronidazole 400 mg	• Gloves • Foley catheter • Urobag • Inj. ampicillin 500 mg • Inj. gentamicin 80 mg • Inj. metronidazole 500 mg • IV set • Disposable syringes • Cap. ampicillin 500 mg • Tab. metronidazole 400 mg	• 3 pairs of gloves • Foley catheter • Urobag • Inj. ampicillin 500 mg • Inj. gentamicin 80 mg • Inj. metronidazole 500 mg • IV set • Disposable syringes • Cap. ampicillin 500 mg • Tab. metronidazole 400 mg

PHC: primary health centre; CHC: community health centre; ANM: auxiliary nurse–midwife; Cap.: capsule; Inj.: injection; Tab.: tablet; P/A: per abdomen; P/V: per vaginam; TLC: total leucocyte count; DLC: differential leucocyte count; USG: ultrasonography

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5. Septic abortion

Table 5.1 Causes of septic abortion[1]

Direct causes	Indirect causes	Distant causes
• Foreign bodies inserted in the genital tract • Injury and sepsis of the genital organs • Retained foetal tissue • Perforation of the uterus	• Abortion by untrained persons • Illegal abortion • Unclean/unsterile instruments • Use of abortifacients	• Ignorance • Unmarried girl • Prenatal sex determination • Fear of loss of confidentiality

Table 5.2 Interventions for various grades of septic abortion

Manifestation	Medical interventions	Non-medical interventions
History of intervention or abortion by unskilled person	• Give oral antibiotics • Rule out injury • Confirm complete abortion	• Give follow up advice
Grade I sepsis	• Give antibiotics	• Refer if history of intervention by unskilled person
Grade II sepsis	• Admit • Give IV antibiotics	• Refer if history of intervention by unskilled person
Grade III sepsis	• Admit • Give IV antibiotics	• Provide supportive care • Arrange for transportation

Table 5.3 Personnel, investigations and drugs required to treat septic abortion[1,2]

Grade of septic abortion	Personnel	Tests	Drugs	Inpatient stay
Grade I	• Nurse • Doctor • Laboratory technician	• Haemoglobin estimation • Total and differential leucocyte counts	• Cap. ampicillin 500 mg OR amoxicillin 6-hourly + • Tab. metronidazole 400 mg 8-hourly + • Inj. gentamicin 60 mg 8-hourly (or 1.5 mg/kg 8-hourly)	
Grade II	• Nurse • Specialist • Laboratory technician	• Haemoglobin estimation • Total and differential leucocyte counts	• Inj. cefotaxime 1 g 8-hourly • Inj. ampicillin 500 mg 6-hourly • Inj. metronidazole 400–500 mg • Inj. gentamicin 60 mg 8-hourly (or 1.5 mg/kg 8-hourly)	3–7 days
Grade III	• Specialist • Nurse • Radiologist • Pathologist • Anaesthetist	• Haemoglobin estimation • Total and differential leucocyte counts • Blood biochemistry • Urine examination • Pus for culture and antibiotic sensitivity • X-ray of the chest • X-ray of the abdomen • Ultrasonography of the abdomen	• Broad-spectrum antibiotics cefotaxime + aminoglycoside + metronidazole till culture reports are available	Usually prolonged

Cap: capsule; Tab.: tablet; Inj.: injection

Table 5.4 Management of septic abortion at various levels of health care[1–3]

Management protocol	Village/subcentre	PHC	CHC	District hospital
Preventive measures	• All abortions to be performed by registered, qualified personnel • MTP facilities to be made more readily available • Promotion of these facilities • Confidentiality to be maintained in case the woman is unmarried • Promotion of contraceptive facilities • Awareness of complications associated with abortion • Auditing all cases of septic abortion • Continued vigilance against mid-trimester abortion	• All abortions to be performed by registered, qualified personnel • MTP facilities to be made more readily available • Promotion of these facilities • Confidentiality to be maintained in case the woman is unmarried • Promotion of contraceptive facilities • Awareness of complications associated with abortion • Auditing all cases of septic abortion • Continued vigilance against mid-trimester abortion • Prolonged rupture of the membranes or multiple per vaginal examinations before delivery • Antibiotics	• All abortions to be performed by registered, qualified personnel • MTP facilities to be made more readily available • Promotion of these facilities • Confidentiality to be maintained in case the woman is unmarried • Promotion of contraceptive facilities • Awareness of complications associated with abortion • Auditing all cases of septic abortion • Continued vigilance against mid-trimester abortion • Prolonged rupture of the membranes or multiple per vaginal examinations before delivery • Antibiotics	• All abortions to be performed by registered, qualified personnel • MTP facilities to be made more readily available • Promotion of these facilities • Confidentiality to be maintained in case the woman is unmarried • Promotion of contraceptive facilities • Awareness of complications associated with abortion • Auditing all cases of septic abortion • Continued vigilance against mid-trimester abortion
Septic abortion	• Any woman with a h/o abortion performed by untrained personnel must be examined by a doctor • Refer immediately	• Any woman with a h/o abortion performed by untrained personnel must be examined by a doctor	• Any woman with a h/o abortion performed by untrained personnel must be examined by a specialist	• Any woman with a h/o abortion performed by untrained personnel must be examined by a specialist
Examination		• Look for pallor, icterus • Record the pulse, BP, temperature • Examine the respiratory and cardiovascular systems	• Look for pallor, icterus • Record the pulse, BP, temperature • Examine the respiratory and cardiovascular systems	• Look for pallor, icterus • Record the pulse, BP, temperature • Examine the respiratory and cardiovascular systems
Grade I sepsis	Refer immediately to the nearest health facility having a doctor	• P/A examination: feel of the abdomen, distension, presence of tenderness, guarding, rigidity, bowel sounds • Size of the uterus • P/V examination: size of the uterus, tenderness, any foreign body, any retained products of conception • Examination of the breasts, lower limbs for swelling • Start oral antibiotics: ampicillin 500 mg 6-hourly + metronidazole 400 mg 8-hourly + Inj. gentamicin 80 mg IM BD • If no improvement is seen in 24–48 hours or the patient's condition worsens, refer • If abortion done by untrained personnel refer to the district hospital	• P/A examination: feel of the abdomen, distension, presence of tenderness, guarding, rigidity, bowel sounds • Size of the uterus • P/V examination: size of the uterus, tenderness, any foreign body, any retained products of conception • Examination of the breasts, lower limbs for swelling • Start oral antibiotics: ampicillin 500 mg 6-hourly + metronidazole 400 mg 8-hourly + Inj. gentamicin 80 mg IM BD • If no improvement is seen in 24–48 hours or the patient's condition worsens, refer • If abortion done by untrained personnel refer to the district hospital	• P/A examination: feel of the abdomen, distension, presence of tenderness, guarding, rigidity, bowel sounds • Size of the uterus • P/V examination: size of the uterus, tenderness, any foreign body, any retained products of conception • Examination of the breasts, lower limbs for swelling • Start oral antibiotics: ampicillin 500 mg 6-hourly + metronidazole 400 mg 8-hourly + Inj. gentamicin 80 mg IM BD • If no improvement is seen in 24–48 hours or the patient's condition worsens, refer • If abortion done by untrained personnel refer to the district hospital

(Cont.)

Table 5.4 (*cont.*) Management of septic abortion at various levels of health care[1–3]

Management protocol	Village/subcentre	PHC	CHC	District hospital
Grade II sepsis	Refer immediately to the nearest health facility having a doctor	Refer to CHC	• Admit • Monitor vital signs/temperature • Give IV antibiotics cefotaxime (1g 8-hourly) + gentamicin (60 mg 8-hourly) + metronidazole (400–500 mg 8-hourly) • Maintain an input/output chart of the patient	• Admit • Monitor vital signs/temperature • Give IV antibiotics cefotaxime (1 g 8-hourly) + gentamicin (60 mg 8-hourly) + metronidazole (400–500 mg 8-hourly) • Maintain an input/output chart of the patient
Investigations			• Estimate Hb, TLC and DLC, and do an X-ray of the chest and abdomen	• Estimate Hb, TLC and DLC, and do an X-ray of the chest and abdomen, and ultrasound of the abdomen and pelvis
Grade III sepsis	Refer to district hospital or tertiary centre	Refer to district hospital or tertiary centre	• Secure an IV line • Start broad-spectrum antibiotics —Inj. cefotaxime 1 g 8-hourly —Inj. metronidazole 400 mg 6-hourly —Inj. gentamicin 1.2 mg/kg • Refer to district hospital	• Secure an IV line • Start broad-spectrum antibiotics —Inj. cefotaxime 1 g 8-hourly —Inj. metronidazole 400 mg 6-hourly —Inj. gentamicin 1.2 mg/kg • Maintain vital signs and an input, output record • If no improvement in 24–48 hours, refer • If the patient has inraperitoneal pus collection or a pelvic abscess, refer
Investigations			• Estimate Hb, TLC and DLC, and do an X-ray of the chest and abdomen	• Estimate Hb, TLC and DLC, and do an X-ray of the chest and abdomen
Septic shock	• Refer to a higher centre	• Secure an IV line (doctor and nurse) • Start broad-spectrum IV antibiotics —Inj. cefotaxime 1 g 8-hourly —Inj. metronidazole 400 mg 6-hourly —Inj. gentamicin 1.2 mg/kg • Refer to a tertiary centre	• Secure an IV line • Start broad-spectrum IV antibiotics —Inj. cefotaxime 1 g 8-hourly —Inj. metronidazole 400 mg 6-hourly —Inj. gentamicin 1.2 mg/kg • Catheterize the bladder • Refer to a tertiary centre	• Secure an IV line • Start broad-spectrum IV antibiotics —Inj. cefotaxime 1 g 8-hourly —Inj. metronidazole 400 mg 6-hourly —Inj. gentamicin 1.2 mg/kg • Catheterize the bladder • Refer to a tertiary centre
Availability of drugs	• Cap. amoxicillin 500 mg OR • Cap. ampicillin 500 mg • Tab. metronidazole 400 mg • Gloves	• Inj. ampicillin 500 mg • Inj. gentamicin 80 mg • Inj. metronidazole 500 mg • IV set • Disposable syringes • Cap. ampicillin 500 mg • Tab. metronidazole 400 mg	• Inj. ampicillin 500 mg • Inj. gentamicin 80 mg • Inj. metronidazole 500 mg • IV set • Disposable syringes • Cap. ampicillin 500 mg • Tab. metronidazole 400 mg • Foley catheter • Urobag	• Inj. ampicillin 500 mg • Inj. gentamicin 80 mg • Inj. metronidazole 500 mg • IV set • Disposable syringes • Cap. ampicillin 500 mg • Tab. metronidazole 400 mg • Foley catheter • Urobag

Inj: injection; Tab.: tablet; Cap.: capsule; MTP: medical termination of pregnancy; BP: blood pressure; h/o: history of; P/A: per abdomen; P/V: per vaginam; IV: intravenous; IM: intramuscular; Hb: haemoglobin; TLC: total leucocyte count; DLC: differential leucocyte count; PHC: primary health centre; CHC: community health centre

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3. Safe motherhood needs assessment. Available from URL: who.int/reproductive–health/MNBH/Smna annexa.en.html.

6. Hypertension and eclampsia in pregnancy

Table 6.1 Causes of hypertension and eclampsia in pregnancy[1,2]

Main causes

Direct
- Genetic predisposition
- Immunological causes
- Unknown aetiology

Indirect
- Calcium intake

Distant
- Lack of antenatal care
- Failure to record the blood pressure during antenatal visits can cause worsening of hypertension to pre-eclampsia

Interaction with other causes
- Essential hypertension
- Associated diabetes
- Elderly woman
- Underlying renal disorder
- Systemic lupus erythematosus

Table 6.2 Manifestations and management of hypertension in pregnancy[3,4]

Manifestations	Management
Chronic hypertension	Refer to a tertiary-level health centre
Gestational hypertension	Manage at a CHC or district hospital
Pre-eclampsia	Refer to a tertiary-level health centre
Eclampsia	Immediate care at subcentre/PHC/CHC/ district hospital followed by prompt referral to a tertiary centre

CHC: community health centre; PHC: primary health centre

Table 6.3 Resource requirement for the management of hypertension in pregnancy

Condition	Personnel	Tests	Drugs/other interventions	Inpatient stay
Chronic hypertension	• Midwife • Nurse • Doctor • Specialist	• Renal function tests • Platelet count • Urine examination for proteinuria	• Tab. alphamethyldopa 250 mg 8-hourly to 4 g/day • Tab. nifedipine 5 mg, 15 to 120 mg per day • Tab. nifedipine retard 20–120 mg per day	Refer
Gestational hypertension	• Midwife • Nurse • Doctor • Specialist • Laboratory technician	• Renal function tests • Platelet count • Urine examination for proteinuria	• Magnesium sulphate ampoules containing 1 g in 2 ml as 50% solution (Dosage as scheduled on page 134) • Others: Ensure that the sphygmomanometers with all personnel doing antenatal check-up are in working condition. Check the availability of the following: —Weighing machine —Equipment for urine examination by boiling method or Uristix —Oxygen cylinders —Disposable syringes —Mouth gag/airway —For sedation give Inj. phenergan and Inj. pethidine	2–3 weeks
Pre-eclampsia	• Midwife • Nurse • Doctor • Specialist • Laboratory technician • Driver	• Renal function tests • Platelet count • Urine examination for proteinuria		Refer
Eclampsia	• Midwife • Nurse • Doctor • Specialist • Laboratory technician • Driver	• Renal function test • Platelet count • Urine examination for proteinuria		

Tab.: tablet; Inj.: injection

Table 6.4 Management of hypertension in pregnancy at various levels of health care[3–6]

Management	Subcentre	PHC	CHC	District hospital
BP ≥140/90 mmHg and gestation period <20 weeks	Refer to a medical college	Refer to a medical college	Refer with a referral slip to a medical college or a tertiary centre	Refer with a referral slip to a medical college or a tertiary centre
BP≥140/90 mmHg and gestation period >20 weeks	Refer	Refer	Refer	• Advise —Daily recording of BP at home —Rest at home —Follow up every 3 weeks till 28 weeks then every 2 weeks to monitor the foetal growth clinically —Perform an ultrasonography when required to monitor foetal growth —Advise the woman to stay near the hospital —Advise the woman to report to the hospital if the BP is≥150/100 mmHg • Explain to the patient the symptoms and signs of impending eclampsia and ask to report to the hospital if such symptoms/signs develop —Admit patients who are non-compliant or for whom follow up is difficult —Induce labour at term, i.e. at 38 weeks
If the diastolic BP is >100 mmHg	Refer immediately without delay	• Start antihypertensive drug: Tab. alphamethyldopa 250 mg 8-hourly and refer the patient • Check the urine for proteinuria	• Start antihypertensive drug: Tab. alphamethyldopa 250 mg 8-hourly and refer the patient • Check the urine for proteinuria	• Admit the patient • Start Tab. alphamethyldopa 250 mg 8-hourly • Increase the dosage as per requirement • Give nifedipine in addition, if required • Monitor the BP, urine for proteins, foetal growth by ultrasonography and do RFT • Induce labour at term if the BP is controlled on drugs and the foetal growth is adequate
If the diastolic BP is ≥110 mmHg	Refer immediately without delay	• Check the urine for proteinuria • Start an anti-hypertensive drug: Tab. nifedipine 5 mg stat and then 8-hourly • Confirm that the patient has no signs of impending eclampsia • Refer immediately with a referral slip to district hospital or tertiary centre	• Check the urine for proteinuria • Start an antihypertensive drug: Tab. nifedipine 5 mg stat and then 8-hourly • Confirm that the patient has no signs of impending eclampsia • Refer immediately with a referral slip to district hospital or tertiary centre	• Admit the patient • Check the urine for proteinuria • Start antihypertensive drugs: —Tab. nifedipine retard 10 mg BD or Tab. nifedipine 5 mg 8-hourly —Add Tab. alphamethyldopa if the BP is not controlled —Increase the dosage if required

(Cont.)

Table 6.4 (*cont.*) Management of hypertension in pregnancy at various levels of health care[3–6]

Management	Subcentre	PHC	CHC	District hospital
				—Monitor the foetal growth —Monitor the BP 12-hourly, test the urine for proteinuria, do RFT and check the platelet count • Refer if proteinuria is present and the BP is not controlled with drugs • If there is worsening of hypertension, terminate the pregnancy • If the foetal growth is compromised, terminate the pregnancy
Patient with increased BP with symptoms and signs of impending eclampsia	Refer quickly	• Sedation • Antihypertensive drug: Tab. nifedipine 5 mg stat • Refer	• Specialist to attend in the following cases: —If the BP is increased —Proteinuria is present —Patient shows symptoms/ signs of impending eclampsia • Give a loading dose of magnesium sulphate and refer to a tertiary centre or give sedation and antihypertensives and refer • Before giving magnesium sulphate, confirm that —the knee jerks are present —the urine output is more than 30 ml/hour —the RR is >16/minute then refer to a tertiary centre	• Specialist to attend in the following cases: —If the BP is increased —Proteinuria is present —Patient shows symptoms/ signs of impending eclampsia • Give a loading dose of magnesium sulphate and refer to a tertiary centre or give sedation and antihypertensives and refer • Before giving magnesium sulphate, confirm that —the knee jerks are present —the urine output is more than 30 ml/hour —the RR is >16/minute then refer to a tertiary centre
Woman with eclampsia	• MHW/nurse/midwife to attend • Turn the woman to the left • Keep her on the floor to prevent her from falling • Arrange for transportation and transfer to a PHC • Explain to the family/ relatives that the condition is related to increased BP in pregnancy	• Doctor to attend • History: Confirm the presence of prodromal symptoms, any record of increased BP, h/o passing adequate urine • Rule out any previous h/o epilepsy, fever • Examination —State of consciousness —Oedema —Pulse —BP —Cardiovascular system —RR —Knee jerks • P/A examination: Examination can be delayed till the patient settles • Management: Treat any woman as eclampsia if	• Specialist to attend • History: Confirm the presence of prodromal symptoms, any record of increased BP, h/o passing adequate urine • Rule out any previous h/o epilepsy, fever • Examination —State of consciousness —Oedema —Pulse —BP —Cardiovascular system —RR —Knee jerks • P/A examination: Examination can be delayed till the patient settles • Management: Treat any woman as eclampsia if	• Specialist to attend • History: Confirm the presence of prodromal symptoms, any record of increased BP, h/o passing adequate urine • Rule out any previous h/o epilepsy, fever • Examination —State of consciousness —Oedema —Pulse —BP —Cardiovascular system —RR —Knee jerks • P/A examination: Examination can be delayed till the patient settles • Management: Treat any woman as eclampsia if

(Cont.)

Table 6.4 (*cont.*) Management of hypertension in pregnancy at various levels of health care[3–6]

Management	Subcentre	PHC	CHC	District hospital
		she presents with convulsions and increased BP, and has no past h/o convulsions • Give oxygen • Turn the patient to the left side • Secure the airway if possible • Carry out oral suction to clear the airway • Secure an IV line • Give a loading dose of magnesium sulphate as detailed below • Give an antihypertensive drug: Tab. nifedipine 5 mg (not simultaneously with magnesium sulphate) • Arrange for transportation and refer to a higher centre • Transfer with a nurse • Catheterize the bladder 2 hours after giving magnesium sulphate	she presents with convulsions and increased BP, and has no past h/o convulsions • Give oxygen • Turn the patient to the left side • Secure the airway if possible • Carry out oral suction to clear the airway • Secure an IV line • Give a loading dose of magnesium sulphate as detailed below • Give an antihypertensive drug: Tab. nifedipine 5 mg (not simultaneously with magnesium sulphate) • Arrange for transportation and refer to a higher centre • Transfer with a nurse • Catheterize the bladder 2 hours after giving magnesium sulphate	she presents with convulsions and increased BP, and has no past h/o convulsions • Give oxygen • Turn the patient to the left side • Secure the airway if possible • Carry out oral suction to clear the airway • Secure an IV line • Give a loading dose of magnesium sulphate as detailed below • Give an antihypertensive drug: Tab. nifedipine 5 mg (not simultaneously with magnesium sulphate) • Arrange for transportation and refer to a higher centre without delay • Transfer with a nurse • Catheterize the bladder 2 hours after giving magnesium sulphate

PHC: primary health centre; CHC: community health centre; BP: blood pressure; RFT: renal function tests; BP: blood pressure; MHW: multipurpose health worker; h/o: history of; RR: respiratory rate; P/A: per abdomen; Tab.: tablet; IV: intravenous

Loading dose of magnesium sulphate

- If the respiratory rate is >16/minute, the urine output is ≥30 ml/hour and knee jerks are present, give 4 g of 20% magnesium sulphate intravenous, slowly over 5–7 minutes, i.e. 4 g of 50%, i.e. 8 ml of magnesium sulphate solution diluted in 12 ml of normal saline.

  +

  5 g of 50% magnesium sulphate, i.e. 10 ml in each buttock deep intramuscular (IM) with 1 ml of 2% lignocaine (a total of 10 g IM)
- Mention the dose and time of giving the loading dose on the referral slip when the patient is referred.

Follow-up dose

- Check that
  —the urine output is ≥30 ml/hour
  —the knee jerks are present
  —the respiratory rate is >16/minute.
- Then give 5 g of 50% solution of magnesium sulphate, single dose, deep IM injection.
- Repeat the dose every 4 hours.
- Transfer the patient to a tertiary centre without delay.

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7. Anaemia in pregnancy

Table 7.1 Causes of anaemia in pregnancy

	Direct[1,2]	Indirect[1,2]	Distant[1,2]
Main causes	Iron deficiency anaemia	• Poor intake of iron • Intolerance to iron • Poor iron reserves among women • Multiparity • Lack of birth spacing	• Poor socioeconomic status • Illiteracy • Unawareness and non-compliance • Teenage marriage and pregnancy • Poor supply of iron tablets
Associated causes	• Malabsorption • Worm infestation • Malaria • Other anaemias	—	—

Table 7.2 Interventions for mild, moderate and severe anaemia

Manifestation	Medical interventions	Non-medical interventions
Mild anaemia	• Oral iron therapy: 100 mg elemental iron tablet + folic acid 0.5 mg, twice daily • Deworming: Tab. mebendazole 100 mg, BD x 3 days • Prophylaxis and treatment for malaria	Dietary supplementation of iron and protein
Moderate anaemia	• Oral iron therapy: 100 mg elemental iron tablet + folic acid 0.5 mg, twice daily • Deworming: Tab. mebendazole 100 mg, BD x 3 days • Prophylaxis and treatment for malaria	Dietary supplementation of iron and protein
Severe anaemia	• Oral iron therapy or intramuscular iron injections or blood transfusion	Dietary supplementation of iron and protein
Severe anaemia with circulatory failure	Referral to a tertiary health care centre	

Table 7.3 Personnel, tests and drugs required for management of anaemia in pregnancy

Anaemia in pregnancy	Personnel	Tests	Drugs	Inpatient stay
Routine antenatal check-up for women[3]	• Nurse/midwife/ skilled birth attendant at the village/subcentre • Doctor • Specialist • Laboratory technician • Pharmacist	Hb estimation	Iron tablet containing 100 mg elemental iron + 0.5 mg folic acid × 100 days after the first trimester	—
Mild anaemia[4,5]	• Nurse/midwife • Doctor • Specialist • Laboratory technician • Pharmacist	• Hb estimation • Peripheral blood film • Urine: Routine and microscopy	• Tab. iron containing 100 mg elemental iron + 0.5 mg folic acid, BD, till the anaemia is corrected • Tab. mebendazole 100 mg BD × 3 days • Tab. chloroquine for treatment and prophylaxis of malaria	—
Moderate anaemia[4,5]	• Nurse • Doctor • Specialist • Laboratory technician • Pharmacist	• Hb estimation • Peripheral blood film • Stool examination • Urine: Routine and microscopy	• Iron tablet containing 100 mg elemental iron + 0.5 mg folic acid, BD, till the anaemia is corrected • Tab. mebendazole 100 mg BD × 3 days • Tab. cloroquine for treatment and prophylaxis of malaria • Iron dextran injections for IM use, 6–8 injections per person	1–2 weeks

(Cont.)

Table 7.3 (*cont.*) Personnel, tests and drugs required for management of anaemia in pregnancy

Anaemia in pregnancy	Personnel	Tests	Drugs	Inpatient stay
Severe anaemia[4,5,6]	• Nurse • Doctor • Specialist • Pathologist • Laboratory technician • Pharmacist • Driver	• Hb estimation • Peripheral blood film • TLC and DLC • Stool examination • Urine culture • Iron studies	• Blood transfusion • Iron injections IM • Tab. iron • Tab. mebendazole • Tab. chloroquine • Oxygen cylinders • IV sets, BT sets • Disposable syringes and needles • Inj. frusemide • Inj. methergin • Inj. oxytoxin • Tab. misoprostol • 250 mg methergin • Ventouse • Outlet forceps	1–2 weeks

Hb: haemoglobin; Tab.: tablet; Inj.: injection; IV: intravenous; TLC: total leucocyte count; DLC: differential leucocyte count

Table 7.4 Protocol for management of anaemia in pregnancy

Protocol for management	Village level/subcentre	PHC	CHC	District hospital
Screening				
History	Diet, previous menstrual cycles, previous childbirth, fever, worms in stool, breathlessness	Diet, previous menstrual cycles, previous childbirth, fever, worms in stool, breathlessness	Diet, previous menstrual cycles, previous childbirth, fever, worms in stool, breathlessness	Diet, previous menstrual cycles, previous childbirth, fever, worms in stool, breathlessness
Examination	• Look for pallor • Examine the conjunctiva, nails • Examine the tongue • Look for oedema of the feet • Note the weight • Check the pulse and blood pressure • Examine the abdomen	• Look for pallor • Examine the conjunctiva, nails • Examine the tongue • Look for oedema of the feet • Note the weight • Check the pulse and blood pressure • Examine the abdomen	• Look for pallor • Examine the conjunctiva, nails • Examine the tongue • Look for oedema of the feet • Note the weight • Check the pulse and blood pressure • Examine the abdomen	• Look for pallor • Examine the conjunctiva, nails • Examine the tongue • Look for oedema of the feet • Note the weight • Check the pulse and blood pressure • Examine the abdomen
Investigations	Hb estimation	Hb estimation	• Hb estimation • Peripheral blood film, TLC and DLC • Urine: Routine and microscopy • Stool examination	• Hb estimation • Peripheral blood film, TLC and DLC • Urine: Routine and microscopy • Stool examination • Urine culture
Mild anaemia Hb level: 8–10 g%	• Double dose of iron tablets • Follow up at 4 weeks by giving an appointment • Confirm compliance at 2 weeks by home visit by health worker • Deworming • Malaria prophylaxis in endemic areas • Check the Hb level again after 4 weeks • Inform about the case to the AWW for dietary benefits	• Double dose of iron tablets • Follow up at 4 weeks by giving an appointment • Confirm compliance at 2 weeks by home visit by health worker • Deworming • Malaria prophylaxis in endemic areas • Check the Hb level again after 4 weeks • Inform about the case to the AWW for dietary benefits	• Double dose of iron tablets • Follow up at 4 weeks by giving an appointment • Confirm compliance at 2 weeks by home visit by health worker • Deworming • Malaria prophylaxis in endemic areas • Check the Hb level again after 4 weeks • Inform about the case to the AWW for dietary benefits	• Double dose of iron tablets • Follow up at 4 weeks by giving an appointment • Confirm compliance at 2 weeks by home visit by health worker • Deworming • Malaria prophylaxis in endemic areas • Check the Hb level again after 4 weeks • Inform about the case to the AWW for dietary benefits

(Cont.)

Table 7.4 (*cont.*) Protocol for management of anaemia in pregnancy

Protocol for management	Village level/subcentre	PHC	CHC	District hospital
Moderate anaemia Hb level: 6.5–8 g% (pregnancy less than 8 months)	Refer to a PHC	• Double dose of iron tablets • Deworming • Record the case and inform the health assistant • Confirm compliance at 2 weeks • If compliance is good, continue treatment and check the Hb level again at 4 weeks • If compliance is poor, give iron injections IM • If there is no improvement, refer with a referral slip • If the Hb level is less than 8 g% record this and the registration number in the report register in a different coloured ink (green) • Inform the health assistant who should form a link with an MHW of the village for follow up and auditing	• Double dose of iron tablets • Deworming • Record the case and inform the health assistant • Confirm compliance at 2 weeks • If compliance is good, continue treatment and check the Hb level again at 4 weeks • If compliance is poor, give iron injections IM • If there is no improvement, refer with a referral slip • If the Hb level is less than 8 g% record this and the registration number in the report register in a different coloured ink (green) • Inform the health assistant who should form a link with an MHW of the village for follow up and auditing	• Double dose of iron tablets • Deworming • Record the case and inform the health assistant • Confirm compliance at 2 weeks • If compliance is good, continue treatment and check the Hb level again at 4 weeks • If compliance is poor, give iron injections IM • If there is no improvement, refer with a referral slip to medical college • If the Hb level is less than 8 g% record this and the registration number in the report register in a different coloured ink (green) • Inform the health assistant who should form a link with an MHW of the village for follow up and auditing
Moderate anaemia (pregnancy more than 8 months but less than 9 months)	Refer	Refer to a CHC	• Double the intake of iron tablets • Deworming • Malaria prophylaxis • Follow up at 2 weeks with an appointment • Non-medical health officers/ assistant should give feed-back to the health assistant in charge of the patient's locality for home visits to check compliance and for auditing • If the compliance or tolerance is poor, give iron injections • If there is no improvement, refer	• Double the intake of iron tablets • Deworming • Malaria prophylaxis • Follow up at 2 weeks with an appointment • Non-medical health officers/ assistant should give feed-back to the health assistant in charge of the patient's locality for home visits to check compliance and for auditing • If the compliance or tolerance is poor, give iron injections • If there is no improvement, refer
Moderate anaemia (pregnancy more than 9 months)	Refer	Refer to a district hospital	Refer to a district hospital	• Admit • Give treatment as prescribed above
Patient with moderate anaemia in labour	Refer	Refer	Refer	• Active management of the third stage of labour • Blood should be cross-matched and kept ready
Severe anaemia (pregnancy less than 8 months)	Refer	Refer	Refer	• If the patient is not in failure then admit • Investigate the cause • Give double the dose of iron therapy, change to injectable iron if there is still no improvement • Refer if the patient is in failure

(Cont.)

Table 7.4 (*cont.*) Protocol for management of anaemia in pregnancy

Protocol for management	Village level/subcentre	PHC	CHC	District hospital
Severe anaemia (pregnancy more than 8 months)	Refer	Refer to a district hospital	Refer	• Investigation of anaemia • Blood transfusion (PCV) under diuretic cover • If the patient is in failure, refer to a higher centre
Severe anaemia in failure	Refer	Refer	Refer	Refer
Patient with severe anaemia in labour	Refer	Doctor/nurse/midwife to attend • Establish an IV line • Do a per vaginal examination Patient in early labour • Refer to the nearest state medical hospital/tertiary health centre • Trained midwife/nurse to accompany who can conduct the delivery • Carry adequate oxytocics and methergin Patient in advanced labour • Doctor to be present • Prop up the patient • Give oxygen inhalation • Avoid fluid overload • Keep injections of methergin, oxytocics and misoprostol tablets ready • Preferable: vacuum or outlet forceps delivery by a doctor or trained midwife • Active management of the third stage of labour • Inj. methergin or Tab. misoprostol 800 μg per rectal insertion in case of increased bleeding • Transfer to a district hospital where facility for transfusion is available, with trained personnel	Specialist to attend • Establish an IV line • Do a per vaginal examination Patient in early labour • Refer to the nearest state medical hospital/tertiary health centre • Trained midwife/nurse to accompany who can conduct the delivery • Carry adequate oxytocics and methergin Patient in advanced labour • Specialist to be present • Doctor to be present • Prop up the patient • Give oxygen inhalation • Avoid fluid overload • Keep injections of methergin, oxytocics and misoprostol tablets ready • Preferable: vacuum or outlet forceps delivery by a doctor or trained midwife • Active management of the third stage of labour • Inj. methergin or Tab. misoprostol 800 μg per rectal insertion in case of increased bleeding • Transfer to a district hospital where facility for transfusion is available, with trained personnel	Specialist to attend • Establish an IV line • Do a per vaginal examination Patient in early labour • Refer to the nearest state medical hospital/tertiary health centre • Trained midwife/nurse to accompany who can conduct the delivery • Carry adequate oxytocics and methergin Patient in advanced labour • Specialist to be present • Doctor to be present • Prop up the patient • Give oxygen inhalation • Avoid fluid overload • Keep injections of methergin, oxytocics and misoprostol tablets ready • Preferable: vacuum or outlet forceps delivery by a doctor or trained midwife • Active management of the third stage of labour • Inj. methergin or Tab. misoprostol 800 μg per rectal insertion in case of increased bleeding • Transfer to a district hospital where facility for transfusion is available, with trained personnel • Give packed cell/blood transfusion under diuretic cover

PHC: primary health centre; CHC: community health centre; Hb: haemoglobin; TLC: total leucocyte count; DLC: differential leucocyte count; IV: intravenous; Tab.: tablet; IM: intramuscular; Inj: injection; AWW: *anganwadi* worker; MHW: multipurpose health worker

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8. Premature rupture of membranes

Table 8.1 Causes of preterm rupture of membranes (PROM)[1,2]

Direct causes	• Genital tract infection • Occult amniotic fluid infection • Multiple foetuses • Abruptio placentae • Polyhydramnios • Cervical incompetence
Indirect causes	Smoking, previous history of preterm delivery
Distant casues	

Table 8.2 Manifestations of and interventions for premature rupture of membranes

Manifestations	Medical interventions	Non-medical interventions
• Preterm delivery • Chorioamnionitis • Puerperal sepsis • Neonatal prematurity • Neonatal sepsis	• Corticosteroids to the mother to induce maturity of the foetal lung • Antibiotics to the mother • Care of the pre-mature newborn • Antibiotic therapy to the newborn	• Availability of anibiotics • Availability of a neonatologist • Transportation to a hospital where the above facilities are available • Finances for care of the neonate

Table 8.3 Management protocol for preterm rupture of membranes at various levels of health care

Management protocol	Village/subcentre	PHC	CHC	District hospital
Personnel	Midwife/nurse/MHW	Doctor/midwife	Specialist	Specialist
History	• Watery discharge per vagina, duration of discharge, h/o fever, h/o dirty discharge • Refer to a PHC	• Watery discharge per vagina, duration of discharge, h/o fever, h/o dirty discharge	• Watery discharge per vagina, duration of discharge, h/o fever, h/o dirty discharge	• Watery discharge per vagina, duration of discharge, h/o fever, h/o dirty discharge
Physical examination	• Record the pulse, temperature and BP • Examine the respiratory and cardiovascular systems	• Record the pulse, temperature and BP • Examine the respiratory and cardiovascular systems	• Record the pulse, temperature and BP • Examine the respiratory and cardiovascular systems	• Record the pulse, temperature and BP • Examine the respiratory and cardiovascular systems
P/A examination	• Fundal height • Presentation, contractions • Foetal heart sounds	• Fundal height • Presentation, contractions • Foetal heart sounds	• Fundal height • Presentation, contractions • Foetal heart sounds	• Fundal height • Presentation, contractions • Foetal heart sounds
P/S examination	• Confirm leakage by the presence of liquor • Smell of the discharge • Do not do a vaginal examination	• Confirm leakage by the presence of liquor • Smell the discharge • Do not do a vaginal examination	• Confirm leakage by the presence of liquor • Smell the discharge Do not do a vaginal examination	• Confirm leakage by the presence of liquor • Smell the discharge Do not do a vaginal examination
Laboratory investigations		• TLC and DLC	• TLC and DLC • Fern test	• TLC and DLC • Fern test • Ultrasound examination
Between 24 and 28 weeks	Refer to a district hospital or the nearest CHC having a gynaecologist	Refer to a district hospital or the nearest CHC having a gynaecologist	<u>If willing</u> • Terminate the pregnancy <u>If not willing</u> • Refer to a higher centre • Give betamethasone 12 mg 2 doses 24 hours apart	<u>If willing</u> • Terminate the pregnancy <u>If not willing</u> • Give betamethasone 12 mg 2 doses 24 hours apart • Do a USG to look for the amount of liquor • Terminate the pregnancy —If the mother has fever, tachycardia, foul-smelling liquor

(Cont.)

Table 8.3 (*cont.*) Management protocol for preterm rupture of membranes at various levels of health care

Management protocol	Village/subcentre	PHC	CHC	District hospital
				—If the TLC is raised, suggestive of infection —If on USG there is minimal or absent ammiotic fluid, add aminoglycoside 1.2 mg/kg 8-hourly • Refer to a higher centre if termination is not planned
Between 28 and 34 weeks			• Start antibiotics if the leakage is for <18 hours —Give Tab. erythromycin 250 mg 6-hourly • If the leakage is for >18 hours —Give erythromycin + Tab. metronidazole 400 mg 8-hourly —Give corticosteroids Inj. betamethasone 12 mg 2 doses 24 hours apart <u>If in labour</u> • Refer to a higher centre <u>If not in labour</u> • Start antibiotics • Refer to a higher centre	• Start antibiotics if the leakage is for <18 hours —Give Tab. erythromycin 250 mg 6-hourly • If the leakage is for >18 hours —Give erythromycin + Tab. metronidazole 400 mg 8-hourly —Give corticosteroids Inj. betamethasone 12 mg 2 doses 24 hours apart • <u>If in labour</u> —Give parenteral antibiotics: ampicillin alone if the leakage is not prolonged, and ampicillin + metronidazole and/or gentamicin 1.5 mg/kg 8-hourly • If prolonged leakage or chorioamnionitis is present, a neonatologist must be present at the time of delivery • <u>If not in labour</u> —Keep the patient admitted and ensure bed rest —Keep a record of the temperature and pulse —Start antibiotics and corticosteroids • Do a USG to see the amount of amniotic fluid —if the liquor is adequate, monitor every alternate day for the volume of liquor —Watch for signs of infection • Refer to a higher centre if neonatal facilities are not available and —if the patient needs termination of pregnancy —if the patient is in labour • Termination of pregnancy is needed —If the amount of liquor has reduced —If the mother has fever, tachycardia, uterine tenderness

(Cont.)

Table 8.3 (*cont.*) Management protocol for preterm rupture of membranes at various levels of health care

Management protocol	Village/subcentre	PHC	CHC	District hospital
				—If previous P/V examinations have been done —If the discharge is foul-smelling • Start antibiotics
Between 34 and 37 weeks	Refer to the district hospital	Start antibiotics and refer to the district hospital	Start antibiotics and refer to a higher centre	• If leakage is confirmed —Terminate the pregnancy —A paediatrician should attend the delivery —Continue antibiotics postpartum • If leakage is doubtful/not confirmed on P/S examination, admit the patient. If there is no leakage seen on the pad, a USG shows adequate liquor —Advise bed rest —Advise monitoring of foetal movements daily —Keep a record of the temperature and pulse —Watch for leakage or discharge on the pad —Repeat a USG after 48 hours —Ask the patient to contact if leakage restarts or if foetal movements are decreased • If leakage is confirmed or the liquor has reduced then terminate the pregnancy, otherwise discharge —Follow up the patient
Beyond 37 weeks, i.e. term rupture of membranes	Refer to the nearest health facility having a doctor	• Start antibiotics • If the patient is not in labour, induce labour	• Start antibiotics • If the patient is not in labour, induce labour	• Start antibiotics • Induce labour • Ensure that a paediatrician attends the delivery

PHC: primary health centre; CHC: community health centre; MHW: multipurpose health worker; BP: blood pressure; P/A: per abdomen; P/S: per speculum; TLC: total leucocyte count; DLC: differential leucocyte count; USG: ultrasonography; Tab.: tablet; Inj.: injection; Cap.: capsule

Table 8.4 Requirement of personnel, investigations and drugs at different levels of health care[1,3]

	Personnel	Tests	Drugs/equipment/supplies	Inpatient stay
Subcentre	• MHW • Nurse • Midwife		• Cap. ampicillin 500 mg 6-hourly • Cap. erythromycin 250 mg 6-hourly • Tab. metronidazole 400 mg 6-hourly	2 days
PHC	• Doctor • Midwife • Driver • Pharmacist		• Speculum for vaginal examination • Gloves • Thermometer	
CHC	• Obstetrician • Laboratory technician • Pharmacist • Nurse • Driver	TLC and DLC	• Cap. and Inj. ampicillin 500 mg 6-hourly • Inj. and Tab. metronidazole 400–500 mg 8-hourly • Inj. gentamicin 80 mg • Tab. erythromycin 250 mg 6-hourly • IV set, IV cannula	2–3 days to 2–3 weeks
District hospital	• Obstetrician • Pathologist • Radiologist	• TLC and DLC • USG	• Cap. and Inj. ampicillin 500 mg 6-hourly • Inj. and Tab. metronidazole 400–500 mg 8-hourly • Inj. gentamicin 80 mg • Tab. erythromycin 250 mg 6-hourly • IV set • IV cannula	

PHC: primary health centre; CHC: community health centre; Cap.: capsule; Tab.: tablet; Inj.: injection; TLC: total leucocyte count; DLC: differential leucocyte count; USG: ultrasonography; MHW: multipurpose health worker

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9. Complications of the third stage of labour

Table 9.1 Causes of complications of the third stage of labour[1,2]

Condition	Direct causes	Indirect causes	Distant causes
Uterine inversion	• Strong traction to the umbilical cord attached at the fundus • Adherent placenta	Delivery by unskilled personnel	• Home delivery • Delay in transportation • Specialist available at a distance (all the above add to mortality)
Retained placenta	• Tearing of the cord • Placenta accreta • Chorioamnionitis	Delivery by unskilled personnel	• Home delivery • Delay in transportation • Lack of blood bank facilities • Specialist available at a distance (all the above add to mortality)

Table 9.2 Manifestations and interventions for complications of the third stage of labour[1,2]

Manifestation	Medical interventions	Non-medical interventions
Uterine inversion	• Reposition immediately followed by manual removal of the placenta • Reposition under anaesthesia • Do abdominal correction with laparotomy • Delivery by trained personnel	Arrange for transportation
Retained placenta	• Immediate manual removal of the placenta • Remove the placenta under anaesthesia • Perform laparotomy/hysterectomy	• Delivery by trained personnel • Arrange for transportation • Provide blood bank facilities

Table 9.3 Personnel, investigations and drugs required to manage complications of the third stage of labour[1,2]

Complications of the third stage	Personnel	Tests	Drugs	Inpatient stay
Uterine inversion	• Skilled birth attendants • Trained midwives • Nurse • Doctor • Specialist • Anaesthetist	Haemoglobin estimation	• Inj. ampicillin 500 mg 6-hourly • Inj. metronidazole 400 mg 8-hourly • Inj. gentamicin 1.5 mg/kg body weight 8-hourly • Inj. oxytocin • Inj. methergin • Tab. misoprostol 200 µg • IV fluids	2–3 days
Retained placenta	• Skilled birth attendants • Trained midwives • Nurse • Doctor • Specialist • Anaesthetist	• Haemoglobin estimation • Total and differential leucocyte count	• Inj. ampicillin 500 mg 6-hourly • Inj. metronidazole 400 mg 8-hourly • Inj. gentamicin 1.5 mg/kg body weight 8-hourly • Inj. oxytocin • Inj. methergin • Tab. misoprostol • IV fluids	2–3 days

Table 9.4 Management protocol for uterine inversion at various levels of health care[1–3]

Village/subcentre	PHC	CHC	District hospital
• All deliveries to be conducted by midwives/ nurses/skilled attendants • Refer to a PHC or nearest health facility having a doctor	• Doctor to be present • If uterine inversion occurs then immediate repositioning should be attempted • If repositioning is successful, manual removal of the placenta with support to the fundus should be done • Secure an IV line • Give ampicillin 500 mg 6-hourly + Inj. metronidazole 500 mg 8-hourly + Inj. gentamicin 1.5 mg/kg body weight • Give oxytocics after correction • If the initial attempt at repositioning fails, quickly transfer patient to a higher centre • If an initial attempt has been already made or there has been a delay since delivery —No further attempt should be made and the patient referred immediately after resuscitation	• Specialist to attend • If uterine inversion occurs then immediate repositioning should be attempted • If repositioning is successful, manual removal of the placenta with support to the fundus should be done • Secure an IV line • Give ampicillin 500 mg 6-hourly + Inj. metronidazole 500 mg 8-hourly + Inj. gentamicin 1.5 mg/kg body weight • Give oxytocics after correction • If the initial attempt at repositioning fails, quickly transfer patient to a higher centre • If an initial attempt has been already made or there has been a delay since delivery —No further attempt should be made and the patient referred immediately after resuscitation	• Specialist to attend • If uterine inversion occurs then immediate repositioning should be attempted • If repositioning is successful, manual removal of the placenta with support to the fundus should be done • Secure an IV line • Give ampicillin 500 mg 6-hourly + Inj. metronidazole 500 mg 8-hourly + Inj. gentamicin 1.5 mg/kg body weight • Give oxytocics after correction • If the initial attempt at repositioning fails, the patient needs correction under anaesthesia • Blood to be cross-matched and transfused as required • IV fluids should be given rapidly • Broad-spectrum antibiotic cover should be given • Under anaesthesia —Reposition the uterus —Then do manual removal of the placenta —Give oxytocics

Inj.: injection; Tab.: tablet; Cap.: capsule; IV: intravenous; PHC: primary health centre; CHC: community health centre

Table 9.5 Management of retained placenta

Subcentre	PHC	CHC	District level
• Delivery by midwife/nurse/ skilled birth attendant • Refer to a PHC or nearest health facility having a doctor • Transfer the patient to a PHC if the attempt fails • Give oral antibiotics	• Doctor/nurse to attend • If the placenta is retained, using asepsis and high gloves immediately remove the placenta manually • Secure an IV line • After removal, check that the placenta is complete • Give antibiotics —Inj. ampicillin 500 mg 6-hourly —Inj. gentamicin 1.5 mg/kg body weight 8-hourly —Tab. metronidazole 400 mg 8-hourly • Give oxytocics • If removal is not possible —Secure an IV line —Give oxytocin if there is bleeding —If there is no bleeding then give IV fluids rapidly —Give antibiotics ampicillin 500 mg 6-hourly + Inj. metronidazole 400 mg 8-hourly + Inj. gentamicin 1.5 mg/kg body weight —Transfer without delay with nurse/ midwife • If the patient needs blood transfusion after manual removal, transfer her to a district hospital	• Specialist to attend • If the placenta is retained, using asepsis and high gloves immediately remove the placenta manually • Secure an IV line • After removal, check that the placenta is complete • Give antibiotics —Inj. ampicillin 500 mg 6-hourly —Inj. gentamicin 1.5 mg/kg body weight 8-hourly —Tab. metronidazole 400 mg 8-hourly • Give oxytocics • If removal is not possible —Secure an IV line —Give oxytocin if there is bleeding —If there is no bleeding then give IV fluids rapidly —Give antibiotics ampicillin 500 mg 6-hourly + Inj. metronidazole 400 mg 8-hourly + Inj. gentamicin 1.5 mg/kg body weight —Transfer without delay with nurse/ midwife • If the patient needs blood transfusion after manual removal, transfer her to a district hospital • If the patient has a history of previous caesarean section, transfer her to a medical college	• Specialist to attend • If the placenta is retained, using asepsis and high gloves immediately remove the placenta manually • Secure an IV line • After removal, check that the placenta is complete • Give antibiotics —Inj. ampicillin 500 mg 6-hourly —Inj. gentamicin 1.5 mg/kg body weight 8-hourly —Tab. metronidazole 400 mg 8-hourly • Give oxytocics • If removal is not possible —Patient requires manual removal under anaesthesia —Cross-match blood —Catheterize the bladder —Start IV antibiotics ampicillin/ gentamicin/metronidazole • To perform manual removal of the placenta under anaesthesia —Give oxytocin, Inj. metronidazole —Continue uterine massage —Replace blood loss • Refer —If there is a history of previous caesarean section —If placenta accreta is suspected —If an attempt at manual removal has failed • A nurse should accompany the patient

Inj.: injection; Tab.: tablet; Cap.: capsule; IV: intravenous; PHC: primary health centre; CHC: community health centre

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10. Menstrual disorders

Table 10.1 Causes of abnormal menstrual cycle[1,2]

Direct causes
- Anovulation
- Fibroid uterus
- Hormonal disturbances
- Malignancy

Indirect causes
- Chronic diseases
- Leukaemias
- Thrombocytopenias
- Bleeding disorders
- Underlying anaemias

Table 10.2 Manifestations and treatment for abnormal uterine bleeding[1,2]

Manifestations	Treatment
Amenorrhoea (primary or secondary)	• Investigation • Refer to a higher centre
Dysfunctional uterine bleeding	• Investigation • Endometrial evaluation as per age group/history • Hormonal/surgical management • Refer if required
Fibroid uterus	• Investigation • Hormonal/surgical management • Refer to a higher centre
Postmenopausal bleeding	• Refer to a higher centre

Table 10.3 Management of menstrual disorders at various levels of care

	Village/subcentre	PHC	CHC	District hospital
Primary amenorrhoea[3]	Any girl beyond the age of 16 years who has not attained menarche OR Any girl who has not attained menarche and has cyclical abdominal pain • Refer to a PHC	Any girl beyond the age of 16 years who has not attained menarche OR Any girl who has not attained menarche and has cyclical abdominal pain • Doctor to examine and refer to a district hospital	Any girl beyond the age of 16 years who has not attained menarche OR Any girl who has not attained menarche and has cyclical abdominal pain • Specialist to examine the girl and refer to the district hospital if the diagnosis is cryptomenorrhoea, manage or refer to a medical college	Any girl beyond the age of 16 years who has not attained menarche OR Any girl who has not attained menarche and has cyclical abdominal pain • Specialist to examine the girl —If the diagnosis is imperforate hymen, surgical management is needed —Refer other cases to a medical college/tertiary centre
Secondary amenorrhoea	Refer to a PHC	• Doctor to review history • Examination —P/A —P/S —P/V • Refer to a medical college	• Specialist to review history • Examination —P/A —P/S —P/V • Refer to medical college if required	• Specialist to review history • Examination —P/A —P/S —P/V —USG of pelvic organs • Investigation —Hormonal profile (refer) —Give progesterone withdrawal/treat as per clinical presentation
Dysfunctional uterine bleeding	Woman with abnormal or excessive bleeding • Refer to a PHC	• Doctor to attend • History: Age, amount and duration of bleeding, whether there is passage of clots, whether bleeding is preceded by amenorrhoea, length of the menstrual cycle, any post-coital bleeding,	• Specialist to treat • History: Age, amount and duration of bleeding, whether there is passage of clots, whether bleeding is preceded by amenorrhoea, length of the menstrual cycle, any post-coital bleeding,	• Specialist to treat • History: Age, amount and duration of bleeding, whether there is passage of clots, whether bleeding is preceded by amenorrhoea, length of the menstrual cycle, any post-coital bleeding,

(Cont.)

Table 10.3 (*cont.*) Management of menstrual disorders at various levels of care

	Village/subcentre	PHC	CHC	District hospital
		underlying medical disorder • Examination —General —P/A —P/S: condition of the cervix —P/V: size of the uterus, presence of any adnexal mass • Management —Refer to a district hospital	underlying medical disorder • Examination —General —P/A —P/S: condition of the cervix —P/V: size of the uterus, presence of any adnexal mass • Management —Refer to a district hospital —Depends on the age group • Pubertal group —Investigations: Haemogram, coagulogram, RFT —Refer to a district hospital • 30–40 years age group —Investigations: same as above to rule out secondary causes —If required, conduct endometrial evaluation with histopathology —Refer to a district/tertiary hospital • 40 years and above —Refer to a district/tertiary hospital	underlying medical disorder • Examination —General —P/A —P/S: condition of the cervix —P/V: size of the uterus, presence of any adnexal mass • Management —Depends on the age group • Pubertal group —USG of pelvic organs —Investigations: Haemogram, coagulogram, RFT, hormonal profile —Ascertain the cause and treat accordingly —Oral contraceptive pills can be a treatment option in case of anovulation • 30–40 years age group —USG of pelvic organs —Investigations: same as above to rule out secondary causes —If required, conduct endometrial evaluation with histopathology —Treatment: Oral contraceptive pills/hormonal treatment as per clinical evaluation • 40 years and above —USG of pelvic organs —Investigation: Endometrial evaluation with histopathology —Hormonal or surgical management as per clinical evaluation
Fibroid uterus	Woman with abnormal or excessive bleeding • Refer to a PHC	If examination is suggestive of fibroid uterus, refer to a district hospital	If examination is suggestive of fibroid uterus, refer to a district hospital	• If examination is suggestive of fibroid uterus, confirm by USG • Management —Myomectomy to be done if fibroid is the cause of infertility or is symptomatic in a young patient —Depends on the surgical skill of the gynaecologist, size of the fibroid and availability of blood; refer otherwise —In case of sympotomatic fibroid in perimenopausal women, either do

(Cont.)

Table 10.3 (*cont.*) Management of menstrual disorders at various levels of care

Village/subcentre	PHC	CHC	District hospital
			hysterectomy as per clinical presentation OR Refer to a higher centre
Post-menopausal bleeding/malignancies (endometrial/cervical)			Refer to a higher centre

PHC: primary health centre; CHC: community health centre; P/A: per abdomen; P/S: per speculum; P/V: per vaginam; RFT: renal function tests; USG: ultrasonography

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11. Vaginal discharge

Table 11.1 Causes of vaginal discharge[1–3]

	Direct causes	Indirect causes	Distant causes
Main causes	• Cervicitis —Gonorrhoea —Chlamydial infection • Vaginitis —Bacterial vaginosis —Trichomoniasis —Candidiasis • Physiological • Malignancy	• Multiple sexual partners • Untreated male partner • Incomplete treatment	
Associated factors	Sexually transmitted diseases		

Table 11.2 Personnel, drugs and equipment required for the management of vaginal discharge

Level of health care	Personnel	Drugs and equipment	Inpatient stay
Subcentre	• Health workers		
Primary health centre (PHC)	• Doctor • Pharmacist	• Gloves • Sim or Cusco speculum • Tab. clotrimazole 150 mg • Tab. metronidazole 400 mg • Tab. ciprofloxacin 500 mg • Cap. doxycycline 100 mg • Tab. azithromycin	
Community health centre (CHC)	• Specialist • Pharmacist • Laboratory technician	Same as PHC	
District hospital	• Specialist • Pathologist	• IV antibiotics • IV sets • IV cannula • Disposable syringes	2–3 days

Tab.: tablet; Cap.: capsule; IV: intravenous

Table 11.3 Treatment of various causes of vaginal discharge[1,2]

Causes	Treatment	Advice
Candidiasis	Tab. clotrimazole 200 mg vaginally for 3 days OR Tab. miconazole same dose OR Tab. fluconazole 150 mg single dose	Treatment of sexual partner
Trichomoniasis	Tab. metronidazole 400 mg BD × 7 days	Treatment of sexual partner
Bacterial vaginosis	Tab. metronidazole 400 mg BD × 7 days	Treatment of sexual partner
Gonorrhoea and chlamydial infection	Tab. ciprofloxacin 500 mg single dose and Cap. doxycycline 100 mg BD × 7 days • Pregnant woman Azithromycin 2 g single dose OR Inj. ceftriaxone 250 mg IM single dose OR Tab. erythromycin stearate 500 mg 4 times for 7 days	• Treatment of sexual partner • Education and counselling • Condoms for protection and prevention of STD
Suspected cervical malignancy	Refer to a tertiary centre	Refer to a tertiary centre

Tab.: tablet; Cap.: capsule; IM: intramuscular; STD: sexually transmitted disease

Table 11.4 Management of vaginal discharge at various levels of health care

Village/subcentre	PHC	CHC	District hospital
Woman complains of vaginal discharge • Refer to a PHC	Woman complains of vaginal discharge • History: Type and colour of discharge, smell, whether associated with itching, whether partner is symptomatic, risk assessment for STD • Per speculum examination 1. Profuse discharge: Treatment for trichomoniasis and bacterial vaginosis 2. Clumped discharge: Treatment for candidiasis 3. Mucopus from the cervix: Treatment for gonorrhoea and chlamydial infections • When speculum is not available —Give syndromic treatment • When risk assessment is positive —Treatment for gonorrhoea and chlamydial infections irrespective of findings • Advice —Treatment for sexual partner —Education and counselling —Condoms for protection and prevention of STD • Refer in case of —Blood-stained vaginal discharge —Suspicious cervix —Malignancy —Recurrent infections —Assosciated genital ulcer or lymphadenopathy	Woman complains of vaginal discharge • History: Type and colour of discharge, smell, whether associated with itching, whether partner is symptomatic, risk assessment for STD • Per speculum examination 1. Profuse discharge: Treatment for trichomoniasis and bacterial vaginosis 2. Clumped discharge: Treatment for candidiasis 3. Mucopus from the cervix: Treatment for gonorrhoea and chlamydial infections • When speculum is not available —Give syndromic treatment • When risk assessment is positive —Treatment for gonorrhoea and chlamydial infections irrespective of findings • Advice —Treatment of sexual partner —Education and counselling —Condoms for protection and prevention of STD • Refer in case of —Blood-stained vaginal discharge —Suspicious cervix —Malignancy —Recurrent infections —Assosciated genital ulcer or lymphadenopathy	Woman complains of vaginal discharge • History: Type and colour of discharge, smell, whether associated with itching, whether partner is symptomatic, risk assessment for STD • Per speculum examination 1. Profuse discharge: Treatment for trichomoniasis and bacterial vaginosis 2. Clumped discharge: Treatment for candidiasis 3. Mucopus from the cervix: Treatment for gonorrhoea and chlamydial infections • When speculum is not available —Give syndromic treatment • When risk assessment is positive —Treatment for gonorrhoea and chlamydial infections irrespective of findings • Advice —Treatment of sexual partner —Education and counselling —Condoms for protection and prevention of STD • Refer in case of —Blood-stained vaginal discharge —Suspicious cervix —Malignancy —Recurrent infections —Assosciated genital ulcer or lymphadenopathy

PHC: primary health centre; CHC: community health centre; STD: sexually transmitted disease

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12. Pelvic inflammatory disease

Table 12.1 Causes of pelvic inflammatory disease[1,2]

Direct causes	Indirect causes	Distant causes
• Gonococcal infection • Chlamydial infection • Anaerobic infection • Tuberculosis	• Multiple sexual partners • Recent abortion or D&C • Following unclean per vaginal examination or delivery	• Untreated male partner • Incomplete treatment

D&C: dilatation and curettage

Table 12.2 Management of pelvic inflammatory disease at various levels of care[3]

Subcentre	PHC	CHC	District hospital
Any woman complaining of lower abdominal pain • Refer to a PHC	Any woman complaining of lower abdominal pain • A doctor to examine • History —H/o of any menstrual disturbance, abortion/delivery —Note the duration of symptoms • Examination —General —P/A —P/S —P/V • Treatment —Tab. ciprofloxacin 500 mg single dose + Cap. doxycycline 100 mg BD for 14 days + Tab. metronidazole 400 mg BD for 7 days —Same treatment to the male partner • Advise —to complete the treatment —return if symptoms worsen • Counsel and educate about STDs and condoms • Refer to a district hospital if: —the temperature is more than 38 ^{0}C —the symptoms are acute —the patient is sick	Any woman complaining of lower abdominal pain • A specialist to attend • History —H/o of any menstrual disturbance, abortion/delivery —Note the duration of symptoms • Examination —General —P/A —P/S —P/V • Treatment —Tab. ciprofloxacin 500 mg single dose + Cap. doxycycline 100 mg BD for 14 days + Tab. metronidazole 400 mg BD for 7 days —Same treatment to the male partner • Advise —to complete the treatment —return if symptoms worsen • Counsel and educate about STDs and condoms • Refer to a district hospital if: —the temperature is more than 38 ^{0}C —the symptoms are acute —the patient is sick	Any woman complaining of lower abdominal pain • A specialist to attend • History —H/o of any menstrual disturbance, abortion/delivery —Note the duration of symptoms • Examination —General —P/A —P/S —P/V • Treatment —Tab. ciprofloxacin 500 mg single dose + Cap. doxycycline 100 mg BD for 14 days + Tab. metronidazole 400 mg BD for 7 days —Same treatment to the male partner • Advise —to complete the treatment —return if symptoms worsen • Counsel and educate about STDs and condoms • If: —the temperature is more than 38 ^{0}C —the symptoms are acute —the patient is sick Treatment —Admit the patient

(Cont.)

Table 12.2 (*cont.*) Management of pelvic inflammatory disease at various levels of care

Subcentre	PHC	CHC	District hospital
			—Conduct an ultrasonography to rule out pelvic abscess or pus collection, or presence of a foreign body —Give IV antibiotics: Inj. cefotaxime 1 g 8-hourly + Inj. gentamicin 1.2 mg/kg body weight 8-hourly + Inj. metronidazole 500 mg 8-hourly —Change antibiotics as per culture reports —Refer to a higher centre if there is no improvement in 48 hours

PHC: primary health centre; CHC: community health centre; h/o: history of; Tab.: tablet; Cap.: capsule; STD: sexually transmitted disease; IV: intravenous; Inj.: injection; P/A: per abdomen; P/S: per speculum; P/V: per vaginam

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13. Pelvic or abdominopelvic mass

Table 13.1 Differential diagnosis of pelvic or abdominopelvic mass

- Pregnancy
- Benign ovarian cysts
- Endometriosis
- Fibroids
- Chronic ectopic pregnancy
- Malignant ovarian tumours
- Metastatic tumours

Table 13.2 Management of pelvic or abdominopelvic mass at various levels of care

Subcentre	PHC	CHC	District hospital
Any woman having abdominal distension or feeling of swelling or mass in the abdomen • An MHW, nurse, skilled birth attendant or dai should refer the woman to a PHC	Any woman having abdominal distension or feeling of swelling or mass in the abdomen • A doctor to attend • Review history of the duration of symptoms of menstrual disturbances, infertility, pain (whether dull or acute), h/o weight loss, h/o abortion • Examination —General —Abdominal: Presence of any free fluid, size of mass, mobility, consistency, position, tenderness	Any woman having abdominal distension or feeling of swelling or mass in the abdomen • A specialist to attend • Review history of the duration of symptoms of menstrual disturbances, infertility, pain (whether dull or acute), h/o weight loss, h/o abortion • Examination —General —Abdominal: Presence of any free fluid, size of mass, mobility, consistency, position, tenderness	Any woman having abdominal distension or feeling of swelling or mass in the abdomen • A specialist to attend • Review history of the duration of symptoms of menstrual disturbances, infertility, pain (whether dull or acute), h/o weight loss, h/o abortion • Examination —General —Abdominal: Presence of any free fluid, size of mass, mobility,

(Cont.)

Table 13.2 (*cont.*) Management of pelvic or abdominopelvic mass at various levels of care

Subcentre	PHC	CHC	District hospital
	—P/S: condition of the cervix —P/V: site of mass, relation to the uterus, fixity, unilateral/bilateral, presence of any free fluid, tenderness • Management Refer to a tertiary centre	—P/S: Condition of the cervix —P/V: Site of mass, relation to the uterus, fixity, unilateral/bilateral, presence of any free fluid, tenderness • Management —Investigation: Haemogram, RFT, chest X-ray —Refer to a tertiary centre	consistency, position, tenderness —P/S: Condition of the cervix —P/V: Site of mass, relation to the uterus, fixity, unilateral/bilateral, presence of any free fluid, tenderness • Management —Investigations: Haemogram, RFT, chest X-ray —Ultrasonography of pelvic organs —If the patient has acute symptoms, rule out ectopic pregnancy or torsion which requires emergency management —Manage or refer to a tertiary centre with referral details —Refer other cases of pelvic masses, i.e. suspected malignancies

PHC: primary health centre; CHC: community health centre; MHW: multipurpose health worker; h/o history of; P/S: per speculum; P/V: per vaginam; RFT: renal function tests