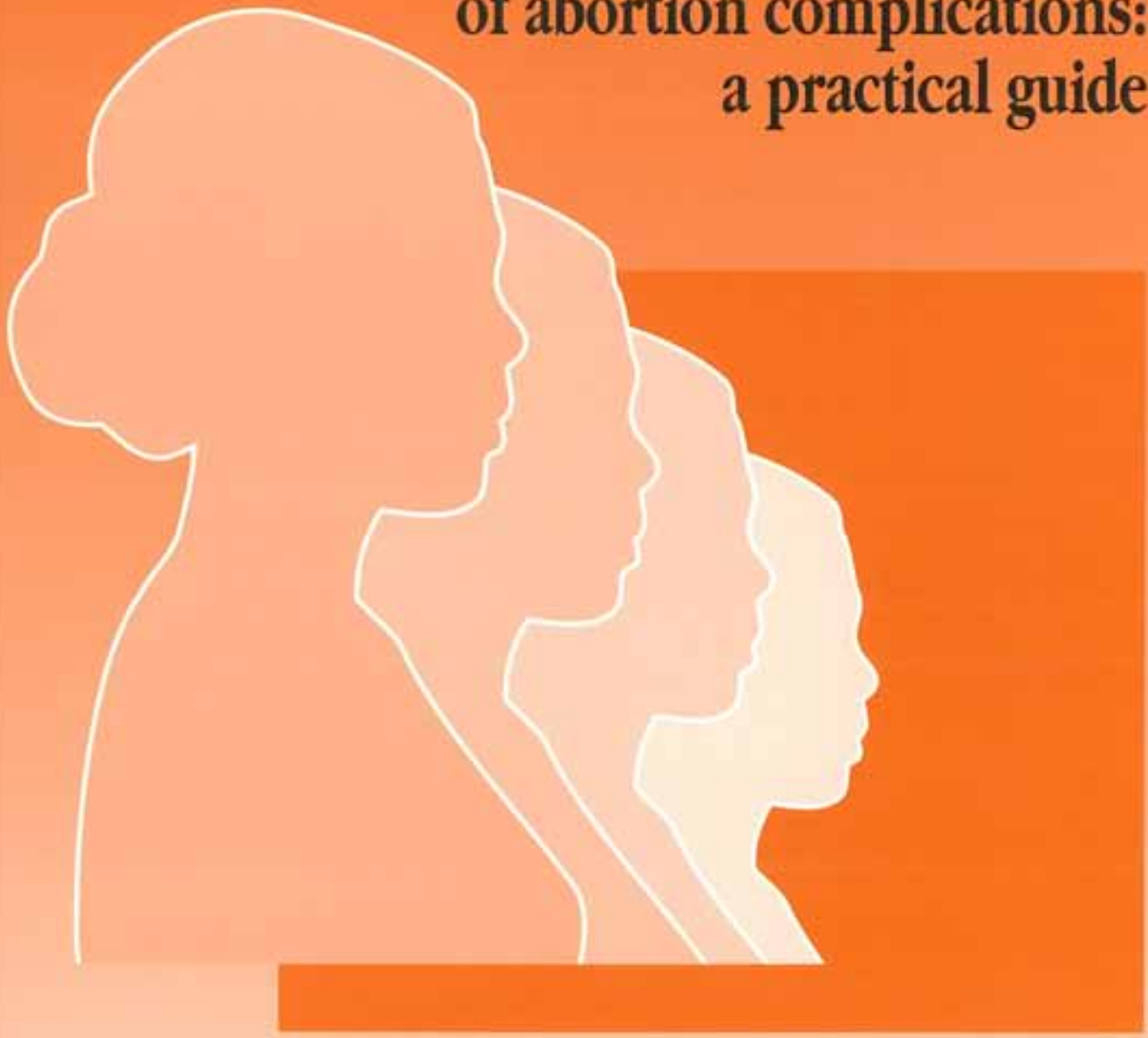
SAFE MOTHERHOOD

Clinical management of abortion complications: a practical guide



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DIVISION OF FAMILY HEALTH
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Practical Guide

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CLINICAL GUIDELINES FOR EMERGENCY TREATMENT OF ABORTION COMPLICATIONS

ABSTRACT

Unsafe abortion is a major public health issue. At least 20 million women undergo unsafe abortion (abortions characterized by the lack or inadequacy of skills of the provider, hazardous techniques and unsanitary facilities or both) each year and some 67 000 women die as a result, with millions of others suffering chronic morbidities and disabilities.[1]

This practical guide is intended to assist health workers in preventing death and serious injury from abortion complications. The information is organized according to the sequence of decisions that must be made when women present with symptoms of abortion. The guide is divided according to the major complications of - shock; light, moderate and severe bleeding; intra-abdominal injury; sepsis; and incomplete abortion - in order to assist the clinician in identifying and treating the most urgent conditions first.

The guide stresses that any woman of reproductive age and experiencing symptoms of vaginal bleeding, cramping or lower abdominal pain and a possible history of amenorrhoea should be considered as a possible abortion patient. An accurate initial assessment and prompt action to stabilize the patient and begin treatment is essential.

The practical guide describes emergency abortion care activities by level of health care facility and staff. At the community level, staffed by workers with basic health training and traditional birth attendants, abortion care consists of recognition of signs and symptoms of abortion and complications together with timely referral to the formal health care system. At the health centre, simple physical and pelvic examination is possible together with resuscitation and preparation of the patient for transfer. If trained staff and appropriate equipment are available additional treatments such as antibiotic therapy, intravenous fluid replacement, oxytocin, uterine evacuation during the first trimester and analgesia and sedation should be provided. At the first referral level more complex procedures including uterine evacuation through the second trimester, blood transfusion, anaesthesia, laparotomy and treatment of most complication is possible. Severe complications such as bowel injury and failure, and severe sepsis may have to be referred to more specialised levels of care.

The text of each chapter is supported by a chart in decision tree form which illustrates the steps to assess and treat the patient.

A woman's fertility returns almost immediately after an abortion. Unless there are major complications from the abortion most methods of contraception may be started from the time of treatment. Considerations for specific post-abortion methods are listed in the guide.

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[1] Abortion - a tabulation of available data on the frequency and mortality of unsafe abortion WHO/FHE/MSM/93.3

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TABLE OF CONTENTS

Page

PREFACE 1

INTRODUCTION 2

CHAPTER 1

INITIAL ASSESSMENT: DETERMINING THE WOMAN'S NEEDS FOR IMMEDIATE TREATMENT 5
- 1.1 INTRODUCTION 5
- 1.2 INITIAL ASSESSMENT 5
  - 1.2.1 Identification of Abortion Patients 5
  - 1.2.2 Shock 5
- 1.3 COMPLETE CLINICAL ASSESSMENT 6
- 1.4 DIAGNOSIS AND TREATMENT 7
  - 1.4.1 Moderate to Light Vaginal Bleeding 7
  - 1.4.2 Severe Vaginal Bleeding 7
  - 1.4.3 Intra-Abdominal Injury 7
  - 1.4.4 Sepsis 8

CHAPTER 2

MANAGEMENT OF SHOCK 11
- 2.1 INTRODUCTION 11
- 2.2 PRESENTATION 11
- 2.3 ASSESSMENT 12
- 2.4 INITIAL TREATMENT 12
- 2.5 CONTINUING TREATMENT 14

CHAPTER 3

MANAGEMENT OF MODERATE TO LIGHT VAGINAL BLEEDING 17
- 3.1 INTRODUCTION 17
- 3.2 PRESENTATION 17
- 3.3 INITIAL ASSESSMENT 17
- 3.4 INITIAL TREATMENT 19
- 3.5 DEFINITIVE MANAGEMENT 20
  - 3.5.1 Stage of Abortion 20
  - 3.5.2 Uterine Size 21
- 3.6 UTERINE EVACUATION TECHNIQUES 21
  - 3.6.1 First Trimester Uterine Evacuation Techniques 21
  - 3.6.2 Second Trimester Uterine Evacuation Techniques 22
- 3.7 EXAMINATION OF THE PRODUCTS OF CONCEPTION 22
- 3.8 UTERINE PERFORATION 23
- 3.9 CONTRACEPTION 24

CHAPTER 4

MANAGEMENT OF SEVERE VAGINAL BLEEDING 29
4.1 INTRODUCTION 29
4.2 PRESENTATION 29
4.3 INITIAL TREATMENT 29
4.4 DEFINITIVE MANAGEMENT 31
4.4.1 Intra-Abdominal Injury 31
4.4.2 Cervical or Genital Tract Laceration 31
4.4.3 Incomplete Abortion 31
4.4.4 Uterine Perforation 32
4.5 CONTINUING TREATMENT 32

CHAPTER 5

MANAGEMENT OF INTRA-ABDOMINAL INJURY 35
5.1 INTRODUCTION 35
5.2 PRESENTATION 35
5.3 INITIAL TREATMENT 36
5.4 DEFINITIVE MANAGEMENT 37
5.5 CONTINUING TREATMENT 38

CHAPTER 6

MANAGEMENT OF SEPSIS 41
6.1 INTRODUCTION 41
6.2 PRESENTATION 41
6.3 ASSESSMENT OF SEVERITY OF INFECTION AND SEPSIS 41
6.4 INITIAL TREATMENT 42
6.5 DEFINITIVE MANAGEMENT 44
6.6 CONTINUING TREATMENT 45

CHAPTER 7

GENERAL PRINCIPLES OF EMERGENCY ABORTION CARE 47
7.1 INTRODUCTION 47
7.2 STABILIZATION AND REFERRAL 47
7.3 INTRAVENOUS (IV) FLUID REPLACEMENT 48
7.4 BLOOD TRANSFUSION 49
7.5 ADMINISTRATION OF MEDICINES 51
7.6 ANTIBIOTICS 52
7.7 PAIN CONTROL 55
7.8 TETANUS 55
7.9 DIURETICS 56

ANNEX 1

EQUIPMENT AND FACILITIES FOR ABORTION CARE 57
PART A: COMMUNITY LEVEL 57
PART B: PRIMARY LEVEL 58
PART C: FIRST REFERRAL LEVEL 59
PART D: SECONDARY AND TERTIARY LEVEL 60

ANNEX 2

EXAMPLE OF A REFERRAL FORM FOR COMPLICATIONS OF ABORTION CASES 61

ANNEX 3

EMERGENCY RESUSCITATION MATERIALS 62

ANNEX 4

ESSENTIAL DRUGS FOR EMERGENCY ABORTION CARE 63

ANNEX 5

SUPPLIES FOR SURGICAL UTERINE EVACUATION PROCEDURES 64

ANNEX 6

INSTRUMENTS & EQUIPMENT FOR FIRST TRIMESTER UTERINE EVACUATION 65

ANNEX 7

INSTRUMENTS AND EQUIPMENT FOR SECOND TRIMESTER UTERINE EVACUATION 67

ANNEX 8

INSTRUMENTS AND SUPPLIES FOR LAPAROTOMY 68

ANNEX 9

LABORATORY AND BLOOD MATERIALS 69

ANNEX 10
MANUFACTURERS, SUPPLIERS AND SOURCES OF PROCUREMENT OF EMERGENCY GYNAECOLOGIC EQUIPMENT 70

ANNEX 11
MANUAL VACUUM ASPIRATION (MVA) 74

ANNEX 12
DILATION AND CURETTAGE (D&C) 79

PREFACE

This manual is intended to assist health workers in preventing death and serious injury from abortion complications. It outlines the full range of steps in addressing life-threatening complications. It is essential to know what the steps are and to take all possible actions. This document indicates only the general direction of treatment. The guidelines should be adapted on the basis of local conditions, availability of drugs, instruments, training, national standards and regulations (e.g. which category of health workers is authorized to start IV perfusion). This manual is based on WHO's *Complications of Abortion: Technical and Managerial Guidelines for Prevention and Treatment.*

The information in this manual is organized according to the sequence of decisions that must be made when women present with symptoms of abortion. Information on the management of cases is presented in the form of decision trees with corresponding text that outlines the elements of care.

The manual is divided according to major complications of abortion in order to assist the clinician in identifying and treating the most urgent conditions first. Chapter 1 covers identification of each condition in a "triage" approach, stressing identification and treatment of complications which require immediate attention. It also gives guidance in performing a clinical assessment so that if a woman is suffering from several conditions at once they can all be identified in order to determine what to treat first.

Chapters 2-6 outline the steps in treatment of each of the conditions which may be identified in the assessment: shock, moderate to light vaginal bleeding, severe vaginal bleeding, intra-abdominal injury, and sepsis. For the sake of clarity, these conditions are discussed separately, even though it may be necessary to initiate treatment for more than one condition at the same time.

The text of each chapter is supported by a chart in decision tree form which illustrates the steps to assess and treat the patient. Each decision tree begins with the presenting condition and the initial steps for further assessment and initiation of treatment. The sequence of actions are linked on the chart by arrows which lead the clinician through the process of ruling out conditions until finally they lead to the definitive management or refer to another chart where management may be found.

Chapter 7 gives general considerations about specific elements of treatment that are part of the management of several or all of the complications of abortion.

The accompanying wall charts should be posted prominently for easy reference in the area where abortion complications are treated. The manual should be accessible in the same area where all staff who treat women for abortion complications can use them.

INTRODUCTION

Treatment of Abortion Complications

Abortion complications are responsible for around 14% of the approximately 500,000 maternal deaths that occur each year, 99% of them in the developing world. "The prevention of abortion-related maternal mortality is dependent on emergency abortion care being integrated throughout the health care system of every country, from the most basic rural health post to the most sophisticated tertiary level facility, 24 hours per day. Whether it is health information and education, stabilization and referral, uterine evacuation, or specialized care for the most severe complications, at least some components of emergency abortion care must be available at every service delivery site in the health care system" (WHO, *Complications of Abortion: Technical and Managerial Guidelines for Prevention and Treatment*).

One of the most positive steps which can be taken is to provide life-saving care at the lowest possible level of the health system, in order to maximize the chances that the woman will reach that care before it is too late. Beginning emergency care at the primary care level is essential to achieving that goal. The first referral level must be able to build on the services provided at the primary level by providing life-saving surgical and medical procedures for all but the most serious complications.

Often care offered at the primary level can be improved dramatically with a relatively small number of changes. The primary level can work toward having staff trained and facilities available to assess the woman's status, stabilize her condition, initiate treatment and perform simple uterine evacuation. They also need to be able to prepare patients for referral and arrange prompt reliable transport. For a fuller description of the elements of care that can be provided at each level of the health system, see Table 1, and for the basic facility and equipment requirements at each level, see Annex 1.

First referral facilities will be faced with treatment of a broader range of complications and should be equipped and have trained staff who can diagnose and treat most abortion complications. Annex 1 outlines the facility and equipment requirements for each level of the health system as well as the specific treatment services that should be made available.

Referral protocols need to be defined on the level of health care systems with input and cooperation from managers at all levels within the system. It is important that managers determine locally which conditions can be treated in a given facilities and which must be referred. An effective referral and transport system is the link that allows facilities to work together in a continuous chain. If the system is to be effective, there must be good communication and cooperation throughout.

Annexes 2-12 at the end of the document provide additional information on various aspects of providing emergency treatment for abortion complications.

Table 1 provides a list of abortion care activities by level of health care facility and staff

Table 1
Suggested Emergency Abortion Care Activities
by Level of Health Care Facility and Staff

Level	Staff May Include	Abortion Care Provided
Community	Community residents with basic health training TBAs Traditional healers	Recognition of signs and symptoms of abortion and complications Timely referral to the formal health care system
Primary	Health workers Nurses/ Trained Midwives General practitioners	**All primary care facilities:** <u>All of the activities above, plus:</u> Simple physical and pelvic examination Diagnosis of the stages of abortion Resuscitation/Preparation for treatment or transfer Haematocrit/haemoglobin testing. Referral, if needed **If trained staff and appropriate equipment are available, the following additional activities can be performed at this level:** Initiation of essential treatments including antibiotic therapy, intravenous fluid replacement, and oxytocics Uterine evacuation during the first trimester Basic pain control (paracervical block, simple analgesia and sedation)
First Referral	Nurses Trained Midwives General Practitioners Specialists with training in Ob/Gyn	<u>All of the activities above, plus:</u> Emergency uterine evacuation through the second trimester Treatment of most abortion complications Blood cross-match and transfusion Local and general anaesthesia Laparotomy and indicated surgery (including ectopic pregnancy if skilled staff are available) Diagnosis and referral for severe complications such as septicaemia, peritonitis or renal failure
Secondary and Tertiary	Nurses Trained Midwives General Practitioners Ob/Gyn Specialists	<u>All of the activities above, plus:</u> Uterine evacuation as indicated for all emergency abortion Treatment of severe complications (including bowel injury, tetanus, renal failure, gas gangrene, severe sepsis) Treatment of coagulopathy

Source: WHO, *Complications of Abortion: Technical and Managerial Guidelines for Prevention and Treatment*

CHAPTER 1
INITIAL ASSESSMENT: DETERMINING THE WOMAN'S NEEDS FOR IMMEDIATE TREATMENT

1.1 INTRODUCTION

Health workers should consider the possibility of abortion for any woman of reproductive age who presents with the symptoms of abortion, whether or not she knows or suspects that she is pregnant, and no matter what her obstetric, menstrual, or contraceptive history.

Life-threatening or serious conditions, primarily shock, severe bleeding, intra-abdominal injury, and sepsis, may be present. Even without complications, incomplete abortion can become life-threatening if treatment is delayed. Therefore, an accurate initial assessment as well as prompt action to stabilize the patient and begin treatment is essential.

This chapter outlines the steps to assess the urgency of the woman's presenting condition. Life-threatening conditions which require immediate action are briefly described, with a reference to the chapter that covers management of each condition. More than one of these conditions may be present at any given time. The health worker must assess the relative urgency of each condition, and treat accordingly.

1.2 INITIAL ASSESSMENT

1.2.1 Identification of Abortion Patients

Any woman of reproductive age experiencing at least two out of three of the following symptoms should be considered as a possible abortion patient:

vaginal bleeding
cramping and/or lower abdominal pain
a possible history of amenorrhoea (no menses for over one month).

If NONE of the above symptoms is present, consider another diagnosis. If abortion is a possibility, assess immediately for the critical conditions described below. Interference with a pregnancy through unsafe means is a major cause of serious complications; however, the woman may not provide this information as a part of medical history for various legal and social reasons. Therefore, the possibility should always be kept in mind while assessing physical signs and symptoms.

1.2.2 Shock

Quickly assess the patient for the following signs of shock:

fast, weak pulse (rate 110 per minute or greater)
low blood pressure (hypotension); systolic less than 90 mmHg.
pallor [inner eyelid (conjunctival), around the mouth, or palms]
sweaty
fast breathing (respirations 30 per minute or greater)
anxious, confused, or unconscious (diminished mental state).

If shock is suspected, IMMEDIATELY begin treatment. See Chapter 2.

Even if none of these signs is currently visible, keep shock in mind as you evaluate the patient further; her status may worsen rapidly. If shock develops later, it is important to begin treatment immediately.

1.3 COMPLETE CLINICAL ASSESSMENT

Several life-threatening conditions requiring immediate treatment may be present at the same time. A complete clinical assessment is necessary to determine all conditions that are present in order to decide the order in which to treat them.

Table 2
Complete Clinical Assessment

History	Ask about and record the following information: Amenorrhoea [how long ago did she have her last menstrual period (LMP[2])] Bleeding (duration and amount) Cramping (duration and severity) Abdominal or shoulder pain Drug allergies
General Physical Exam	Check and record vital signs (temperature, pulse, respirations, blood pressure) Note general health of woman (malnourished, anaemic, general poor health) Examine lungs, heart, abdomen, extremities. [In examining the abdomen first check bowel sounds, then check to see if the abdomen is distended or rigid (tense and hard), if there is rebound tenderness,[3] abdominal masses, and presence, location, and severity of pain] *If a patient's Rh status is routinely assessed in pregnancy, it should be done during the clinical assessment in cases of abortion as well. If the patient is Rh(-), give a dose of anti-D globulin within 48 hours of uterine evacuation or of complete abortion.*
Pelvic Exam	Remove any visible products of conception from the vaginal canal or cervical os Note if there is a foul-smelling discharge Note the amount of bleeding and whether the cervix is open or closed (to determine the stage of abortion, see Section 3.5.1) Check for cervical lacerations Perform a bimanual exam: estimate the size of the uterus[4], check for any pelvic masses and pelvic pain [note severity, location, and what causes the pain (at rest, with touch and pressure, movement of the cervix)]

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2 LMP is the date of the first day of the last menstrual period.

3 To check for *rebound tenderness*, press the abdomen with a hand. Then quickly remove your hand, rapidly releasing the pressure. If removal of the hand causes or worsens pain, there is rebound tenderness. Rebound tenderness is a sign of peritoneal inflammation.

4 In this document uterine size is measured by weeks since LMP (uterine size equivalent to a pregnant uterus of a given number of weeks since the last menstrual period) rather than in gestational weeks.

1.4 DIAGNOSIS AND TREATMENT

Compare the woman's presenting condition, and findings from the history and examination with the signs and symptoms for each of the life-threatening conditions outlined below. Diagnose and begin treatment according to the recommended guidelines. Decide which condition is most urgent and must be treated first. Keep in mind that choosing the order of treatment does NOT mean that other conditions can be ignored while taking care of the most severe condition. Attention must be given to any or all life-threatening conditions. If definitive treatment is not possible, prepare the patient for referral after initial stabilizing steps have been done.

1.4.1 Moderate to Light Vaginal Bleeding

Many women who present with an incomplete abortion have moderate to light vaginal bleeding and no sign of life-threatening conditions. Treatment should not be delayed, however, because the condition may get worse. The following signs indicate moderate to light bleeding. See Chapter 3 for treatment guidelines.

clean pad not soaked after 5 minutes
fresh blood, no clots
blood mixed with mucus.

1.4.2 Severe Vaginal Bleeding

If the patient has any of the following signs, she has severe vaginal bleeding. Begin treatment immediately to replace lost fluid and control bleeding and see Chapter 4:

heavy, bright red vaginal bleeding with or without clots
blood-soaked pads, towels, or clothing
pallor [inner eyelid (conjunctival), around the mouth, or palms].

1.4.3 Intra-Abdominal Injury

If the patient has ANY of the signs in the chart below WITH ANY of the symptoms listed there, she is probably suffering from an intra-abdominal injury (or an ectopic pregnancy). The differential diagnosis should also include acute appendicitis. See Chapter 5 and begin treatment.

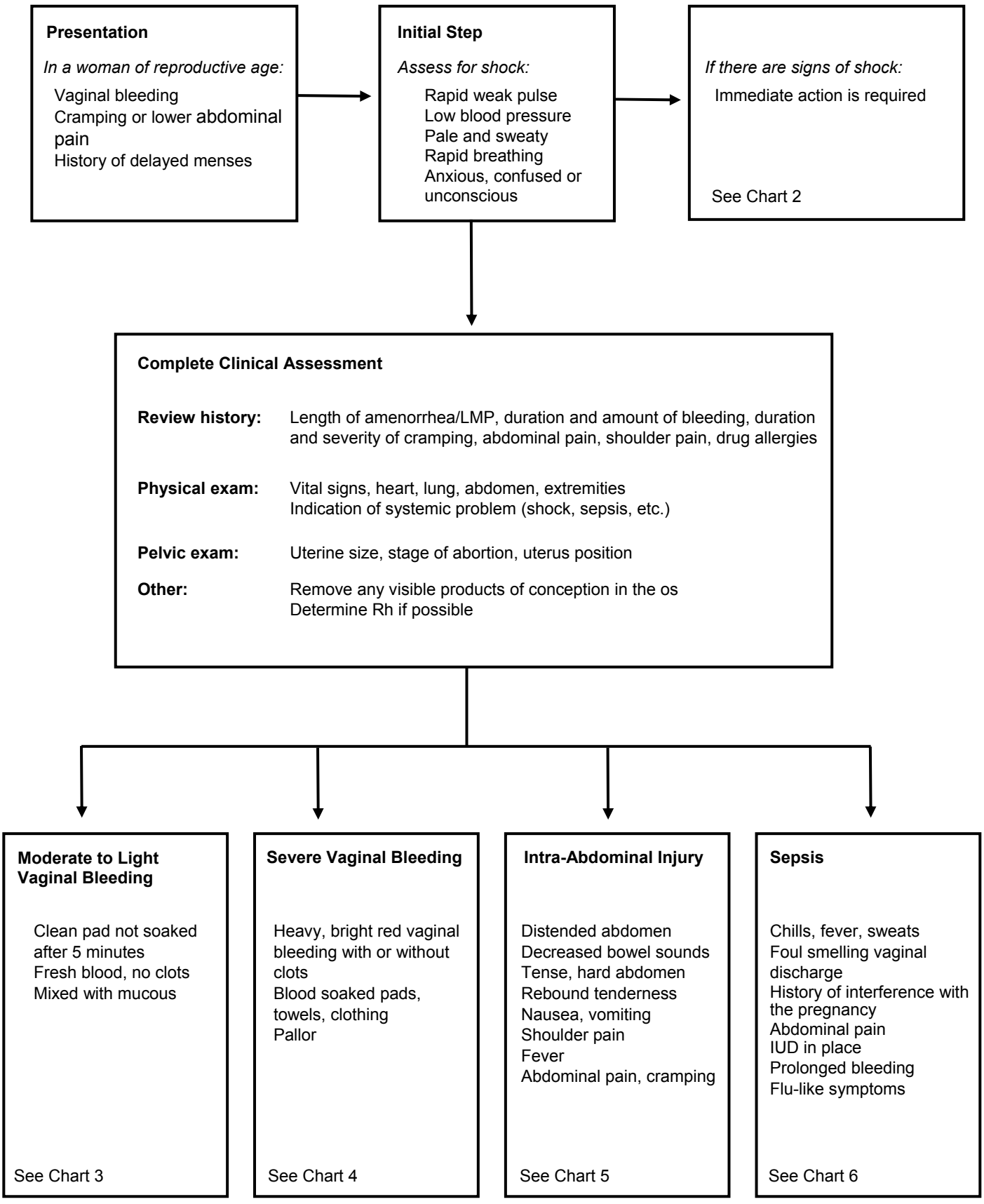
SIGNS	SYMPTOMS
distended abdomen	nausea/vomiting
decreased bowel sounds	shoulder pain
abdomen tense and hard	fever
rebound tenderness	abdominal pain, cramping

1.4.4 Sepsis

If the patient has ANY of the signs in the chart below WITH ANY of the symptoms listed there, she probably has local or generalized infection (septicaemia). See Chapter 6 and begin treatment immediately.

SIGNS	SYMPTOMS
chills or sweats (rigors)	history of interference with the pregnancy
fever	abdominal pain
foul-smelling vaginal discharge	IUD in place
distended abdomen	prolonged bleeding
rebound tenderness	general discomfort; flu-like symptoms (malaise)
slightly low blood pressure (mild hypotension)	

Chart 1. Initial Assessment



CHAPTER 2

MANAGEMENT OF SHOCK

2.1 INTRODUCTION

Shock is a life-threatening condition and requires immediate and intensive treatment to save the patient's life. With shock the oxygen supply and blood flow to the tissues is interrupted due to general, severe failure of the circulatory system. In the case of abortion, shock is usually caused by:

haemorrhage (haemorrhagic, hypovolaemic shock)
sepsis (septic shock)

When a patient is in shock, the relative volume of blood circulating is reduced in one of two ways, either through loss of blood (haemorrhage) or through dilation of the blood vessels (vasodilation) from sepsis. In both cases, the amount of blood and fluids circulating must be increased. Shock can progress from early, "mild" to late, "severe" and, if not treated, the patient may die.

Patients suffering from shock must be treated vigorously and watched closely as their condition can get worse quickly. The primary goal in treating shock is to stabilize the patient; that is, to restore volume and efficiency of the circulatory system. Life-saving care must begin immediately, with intravenous fluid for volume replacement. Antibiotics must be given immediately if sepsis or an intra-abdominal injury is also present. First referral-level hospitals should be able to manage most cases of shock. In facilities where shock cannot be treated, initial measures of care should be given (see Universal Measures page 13) and prompt referral is required.

While treating shock itself is essential to save the woman's life, the underlying cause must also be treated immediately in order to keep the patient from getting even worse. In cases of renal failure or where the woman's condition does not stabilize, rapid transport to a tertiary care facility is essential.

2.2 PRESENTATION

When a patient is first seen with complications of abortion, she should be assessed immediately for signs of shock. If haemorrhage, trauma, or sepsis are immediately apparent the possibility of shock should also be considered.

Signs of shock are:

fast, weak pulse (rate 110 per minute or greater)
low blood pressure (hypotension); systolic less than 90 mmHg.
pallor [inner eyelid (conjunctival), around the mouth, or palms]
sweaty
fast breathing (respirations 30 per minute or greater)
anxious, confused, or unconscious (diminished mental state).

2.3 ASSESSMENT

When shock is suspected, assess its stage and severity immediately. Early shock is reversible and may respond well to treatment generally available at the primary care level. If early shock is not recognized and not treated, it will progress to late shock. Late shock is more difficult to treat with the facilities typically available at the primary level and requires referral for more intensive care once emergency care has been started. Table 3 below compares the signs of early and late shock.

Table 3
Signs of Shock

Early Shock	Late Shock
Awake, aware, anxious	Confused or unconscious
Slightly fast pulse (110 per minute or greater)	Very fast and weak pulse
Slightly fast breathing (30 respirations per minute or greater)	Extremely fast and shallow breathing
Pale	Pale and cold
Mild low blood pressure (systolic less than 90 mmHg)	Very low blood pressure
Lungs clear	Heart failure, pulmonary oedema[5]
Haematocrit of 26% or greater	Haematocrit less than 26%
Haemoglobin of 8 g/100 ml or greater	Haemoglobin less than 8 g/100 ml
Urine output of 30 cc per hour or greater	Urine output less than 30 cc per hour

2.4 INITIAL TREATMENT

The first steps in the care of shock can be life-saving.

Universal Measures

These measures can be taken even at peripheral levels of care and should be given before or during transfer to the next level of care. Make sure that the airway is open. Check vital signs. Do NOT give fluids by mouth as the woman may vomit and inhale (aspirate) the vomit. Turn the woman's head and body to the side so that if she vomits, she is less likely to aspirate. Keep her warm because hypothermia is a danger (it can worsen the shock). Blankets are useful, but do NOT apply any external sources of heat (heating pad, hot water bottle) as a person in shock may be easily burned. Raise the legs to help the blood return to the heart and if possible, raise the foot of the bed.

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[5] Assessment of heart failure, pulmonary oedema: severe difficulty breathing when lying down may indicate heart failure. Listen to the heart and lungs to assess cardiac and pulmonary status. Clinical evidence of an enlarged heart or fluid in the lungs (rales, severe difficulty breathing when lying down, pink frothy sputum, distended neck veins, swelling of hands and feet) indicates heart failure and pulmonary oedema. This can be confirmed with a chest x-ray and by the measurement of central venous pressure.

If lying down causes severe difficulty breathing, there may be heart failure and pulmonary oedema. In this case, lower the legs and raise the head to relieve fluid pressure on the lungs.

Oxygen

Make sure that the airway is open. If oxygen is available, start oxygen at 6-8 litres per minute by mask or nasal cannulae.

Fluids

IV Fluids. Do NOT give fluids by mouth. To restore fluid volume, start intravenous fluids immediately. Use a large-bore needle (16 to 18 gauge recommended), and collect the necessary blood samples. Infuse a compound solution of sodium lactate or normal saline (sodium chloride) at the rate of 1 litre in 15-20 minutes. Normally it takes 1 to 3 litres of IV fluids, infused at this rate, to stabilize the patient in shock. It is important to monitor the amount of fluids given, including blood. See Section 2.5 and Chapter 7.

Blood transfusion. A haemoglobin of 5 g/100 ml or less, or a haematocrit of 15% or less is life threatening and will require blood transfusion. Always include the volume of blood given when monitoring and recording the amount of fluids given.

Blood transfusions may be live-saving, but they carry risk and may do harm rather than good in certain cases. Therefore, the decision to transfuse should be made very carefully. See guidelines and warnings on blood transfusions in Chapter 7.

Medicines[6]

IV or IM ONLY (IV preferred). Do NOT give any medicines by mouth to a woman in shock.

Antibiotics. If there are any indications that infection may be present, including fever, chills or pus, give broad spectrum antibiotics effective against Gram-negative, Gram-positive, anaerobic organisms and chlamydia. See section on choice of antibiotics in Chapter 7.

Labs

While lab work is helpful, treatment of shock should begin without delay even where lab work is not possible.

Blood. Check haemoglobin or haematocrit, and collect blood for a complete blood count (CBC), including platelets, if possible. Collect blood for type and cross-match. If the facilities are available, assess electrolytes and renal status indicators, such as blood urea or creatinine, and blood pH. Acidosis is best left uncorrected unless very severe (pH<7.0) as an aggressive therapy with bicarbonates may worsen tissue oxygenation and other metabolic and electrolyte problems.

Urine. Little or no urine output is a sign of low blood volume seen with shock, haemorrhage, and dehydration, and can be a sign of kidney failure. Measure urine output, preferably by insertion of a Foley catheter. If catheterization is not possible, collect and

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6 Inotropic drugs such as digoxin should be used in shock only when hypovolaemia has been completely excluded.

measure urine output. If it is not possible to collect the urine, note if the urine is concentrated (dark colour) or if the output is decreased (no urination). If output is first low and then begins to increase, this is a sign that the woman's general condition is improving and is a measure of her response to intravenous fluids.

Additional Measures

If a vaginal exam has not already been performed, check for and remove any products of conception present in the vagina.

2.5 CONTINUING TREATMENT

Once the initial steps have been taken to stabilize the patient, prompt treatment of the underlying cause of shock is necessary, while continuing to closely monitor the patient's condition. Retained products of conception is often the underlying cause of shock. Removal through uterine evacuation is therefore an essential part of definitive management, and should be done as soon as possible, once stabilizing steps have been taken and management of any other severe conditions has been started. If the underlying cause of shock cannot be treated at the site, adjust supportive treatment according to the guidelines below and refer the woman to a facility where treatment is available.

Universal Measures

Assess the woman's response to the fluids within 20 to 30 minutes to see if her condition is stabilizing. Signs of stabilization/improvement include:

increasing blood pressure. Aim for a systolic blood pressure of 100 mmHg.
stabilizing heart rate (under 90).
improving mental status (less confusion or anxiety), and
increasing urine output. Aim for a urine output of at least 100 ml per 4 hours.

Failure to stabilize. If, after 20 to 30 minutes the woman has not stabilized, continue efforts to stabilize her and assess her condition according to the following list:

continue giving oxygen and IV fluids.
monitor her condition closely.
reassess the need for antibiotics.
perform a complete clinical assessment; see Chapter 1.
diagnose and promptly begin treatment of the underlying cause or causes of shock.
if definitive management of the underlying cause (including IV fluids for volume replacement) is not available, refer the patient.

If, after 2 hours, the woman is not stabilizing, or if she is in renal failure, refer her to a secondary or specialist hospital, or tertiary care centre immediately.

Stabilization. If the woman shows signs of improvement, her condition is stabilizing but the underlying cause of shock must still be addressed as follows:

adjust the rate of the IV fluids and oxygen as recommended below and in Chapter 7.
perform a complete clinical assessment; see Chapter 1 to diagnose the cause of shock.
begin treatment of the underlying cause or causes of shock. If definitive management (including uterine evacuation) is not available, refer the patient.

Oxygen

If available, continue as long as the patient is unstable. If possible, continue during transfer if the patient is unstable. As the woman stabilizes, the oxygen can be gradually shut off. However, if she begins to worsen with the oxygen turned down or off, turn the oxygen back on, at the initial rate of 6 to 8 litres per minute.

Fluids

Once the woman has stabilized and her low fluid volume has been corrected, IV fluids should be given at the rate of 1 litre in 6-8 hours. See Chapter 7.

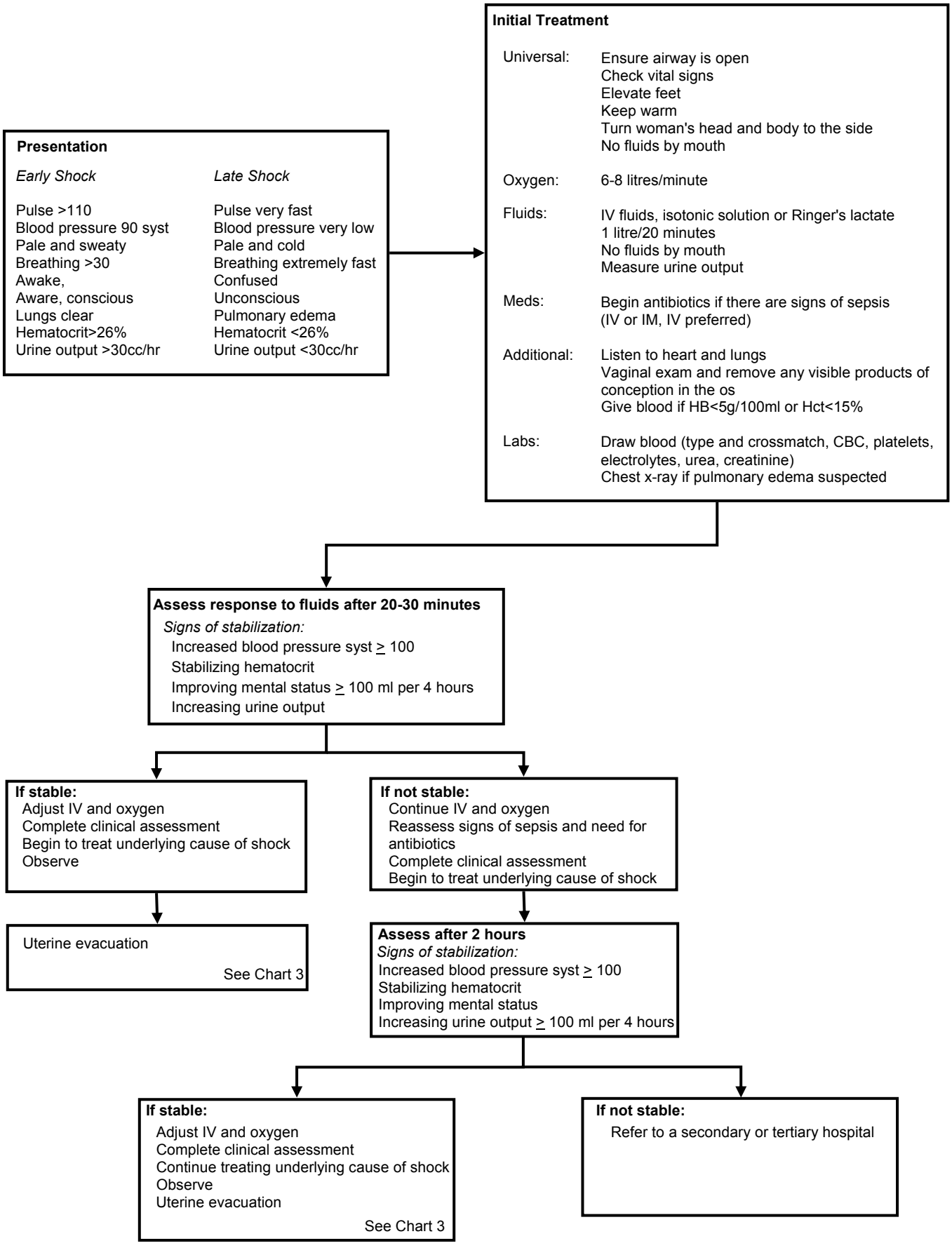
Medicines

Antibiotics. IV or IM only (IV preferred). If antibiotics have not already been started, and there are any signs of infection (fever, chills, pus), begin broad spectrum antibiotics according to the recommendations in Chapter 7. If antibiotics have already been started, continue treatment.

Labs

Chest X-ray. ONLY to confirm suspected heart failure and pulmonary oedema. A chest x-ray is helpful in this case but should not interfere with efforts to stabilize the woman in shock.

Chart 2. Shock



CHAPTER 3

MANAGEMENT OF MODERATE TO LIGHT VAGINAL BLEEDING

3.1 INTRODUCTION

Uterine evacuation, complete removal of the products of conception, is the key element of treatment of incomplete abortion. In addition, retained products of conception is often the cause of severe vaginal bleeding, sepsis or shock seen with abortion and thus uterine evacuation is required for definitive management of these conditions.

First trimester incomplete abortion can be treated safely wherever trained staff and essential equipment are available, including some primary care facilities. To reduce complications from blood loss and infection, uterine evacuation should be done without delay after initial assessment and treatment of life-threatening conditions. Referral is necessary if trained staff and equipment for uterine evacuation are not available.

Second trimester uterine evacuation requires special skills and equipment that are not typically available at primary level facilities and may therefore require referral. Uterine evacuation for incomplete abortion at all gestational ages is an essential obstetric function for the first referral level.

3.2 PRESENTATION

The following are signs of an incomplete abortion:

clean pad not soaked after 5 minutes.
fresh blood, no clots.
blood mixed with mucous.

3.3 INITIAL ASSESSMENT

A complete clinical assessment, history, physical and pelvic exam are necessary to assess the patient's general condition, the stage of abortion, uterine size, and the presence of complications in order to manage incomplete abortion.

Guidelines for a complete clinical assessment are given in Chapter 1 and repeated here, for convenience. If the examination suggests shock, sepsis, severe bleeding, or intra-abdominal injury, assess further and begin treatment according to the appropriate chapter(s). When these steps are taken, attention can be turned to management of the incomplete abortion.

Table 4 **Complete Clinical Assessment**	
History	Ask about and record the following information: Amenorrhoea [how long ago did she have her last menstrual period (LMP[7])] Bleeding (duration and amount) Cramping (duration and severity) Abdominal or shoulder pain Drug allergies
General Physical Exam	Check and record vital signs (temperature, pulse, respirations, blood pressure) Note general health of woman (malnourished, anaemic, general poor health) Examine lungs, heart, abdomen, extremities. [In examining the abdomen first check bowel sounds, then if the abdomen is distended or rigid (tense and hard), if there is rebound tenderness,[8] abdominal masses, and presence, location, and severity of pain] *If a patient's Rh status is a routinely assessed in pregnancy, it should be done during the clinical assessment in cases of abortion as well. If the patient is Rh(-), give a dose of anti-D globulin within 48 hours of uterine evacuation or complete abortion.*
Pelvic Exam	Remove any visible products of conception from the vaginal canal or cervical os Note if there is a foul-smelling discharge Note the amount of bleeding and whether the cervix is open or closed (to determine the stage of abortion, see Section 3.5.1) Check for cervical lacerations Perform a bimanual exam: estimate the size of the uterus[9], check for any pelvic masses and pelvic pain [note severity, location, and what causes the pain (at rest, with touch and pressure, movement of the cervix)]

7 LMP is date of the first day of the last menstrual period.

8 To check for *rebound tenderness*, press the abdomen with a hand. Then suddenly remove your hand, rapidly releasing the pressure. If removal of the hand causes or worsens pain, there is rebound tenderness. Rebound tenderness is a sign of peritoneal inflammation.

9 In this document uterine size is measured by weeks LMP (uterine size equivalent to a pregnant uterus of a given number of weeks since the last menstrual period) rather than in gestational weeks.

3.4 INITIAL TREATMENT

Universal Measures

Monitor the woman's vital signs and general condition. When complications exist, it is important to continue stabilizing steps and to achieve some stabilization before treating the incomplete abortion. If the patient suddenly worsens, reassess for shock or other complications and treat as appropriate. See Chapter 2.

Oxygen

If the woman is stable and there are no life-threatening complications (i.e. NOT in shock and vital signs normal), oxygen is NOT required. If she is being given oxygen because of a complicating condition, continue oxygen as directed in the relevant chapter(s).

Fluids

If the woman is stable and there are no complications (i.e. NOT in shock and vital signs normal), IV fluids are NOT required. If she requires IV fluids because of a complicating condition, continue the treatment according to the relevant chapter(s).

Medicines

Oral medicines may be given if the woman is stable and there are no life-threatening complications.
IV or IM route of administration is the ONLY acceptable route for medicines if the woman is in shock. If the woman is also being treated for a life-threatening condition, follow the treatment guidelines for that condition.

Antibiotics. IV preferred. If there is any sign of infection, abdominal injury, ectopic pregnancy, or cervical or uterine perforation, give broad spectrum antibiotics effective against Gram-negative, Gram-positive, anaerobic organisms and chlamydia. See Chapter 7. If an evacuation is needed, antibiotics should be started before the evacuation is carried out.

Tetanus Toxoid. IM. If there is a possibility that the woman was exposed to tetanus, and there is any uncertainty of her vaccination history, give her tetanus toxoid and tetanus antitoxin. (If the abortion was not performed with sterile instruments, and/or if there was any contamination of the instruments or wound with dirt, there is a chance of exposure to tetanus.) See Chapter 7.

Pain control. Give medications as needed, according to the guidelines above and in Chapter 7.
Most women with first trimester abortions can be managed with pethidine and diazepam for pain control.

Labs

Blood. If there is suspicion of anaemia or concern that the woman may have lost a lot of blood, then check the haematocrit or haemoglobin. If needed, type and cross-match.

Additional Measures

If a patient's Rh status is routinely assessed in pregnancy, it should be done in cases of abortion as well. If the patient is Rh(-), give a dose of anti-D globulin within 48 hours of uterine evacuation.

3.5 DEFINITIVE MANAGEMENT

The choice of definitive treatment for incomplete abortion depends on the stage of abortion, uterine size and length of gestation.

3.5.1 Stage of Abortion

Compare the findings from the pelvic exam with Table 5 in this chapter to determine the stage and follow the guidelines below.

Table 5
Diagnosis of Abortion

DIAGNOSIS	BLEEDING	CERVIX	UTERINE SIZE	OTHER SIGNS
Threatened Abortion	Slight to moderate	Not dilated	Equal to dates	Positive pregnancy test Cramping Uterus soft
Inevitable Abortion	Moderate to heavy	Dilated	Less than or equal to dates	Cramping Uterus tender/firm
Incomplete Abortion	Slight to heavy	Dilated	Less than or equal to dates	Partial expulsion of products of conception Uterus tender/firm
Complete Abortion	Slight to moderate	Dilated or closed	Less than dates	Complete expulsion of products of conception
Missed Abortion	Little or none	Closed	Less than or equal to dates	Fetus dead with delayed expulsion Decrease in pregnancy signs and symptoms

In the case of threatened abortion, the woman should rest in bed for 24-48 hours. If the bleeding gets worse or she develops other symptoms, including any signs of infection, she should be assessed again immediately; otherwise, she should be reassessed in 1 to 2 weeks.

In the case of inevitable, incomplete, possible complete, or missed abortion, uterine evacuation is required for complete removal of the products of conception. Examination of the products of conception after uterine evacuation is necessary to ensure complete removal.

3.5.2 Uterine Size

Determine uterine size according to the pelvic exam. The appropriate technique of uterine evacuation is determined according to uterine size. The availability of supplies and skilled staff also affect the methods that may be offered in each setting.

3.6 UTERINE EVACUATION TECHNIQUES

The technique chosen to evacuate the uterus will depend on the duration of gestation and availability of supplies and skilled staff. If skilled staff and supplies are not available, the woman should be referred. A description of the techniques follows. See Annexes 11 and 12 for the specific details of the procedures. If sepsis is present, carry out evacuation only after IV antibiotics have been started.

3.6.1 First Trimester Uterine Evacuation Techniques

The techniques of uterine evacuation typically used in the first trimester of pregnancy are *vacuum aspiration (VA)* and *dilation and curettage (D&C)*.

Vacuum Aspiration. This technique has a low complication rate and involves very little trauma. Cannulae used for vacuum aspiration are made of flexible plastic, rigid plastic, or metal. Gentle exploration of the uterus with a curette to confirm complete removal of uterine contents afterwards may be done, but is not necessary or recommended. A vacuum of at least 26 inches (or 66 cm) mercury (Hg) is required to evacuate the uterus fully and quickly. Two types of vacuum aspiration are available:

> Electric Vacuum Aspiration. This procedure uses an electric pump and cannulae for uterine evacuation in the first trimester.
>
> Manual Vacuum Aspiration (MVA). This technique uses a hand-held vacuum syringe and flexible plastic cannulae. Foot-operated pumps are also available in some areas. Where staff are trained in the technique and equipment is available, MVA can be used to treat abortions through 12 weeks uterine size.

Dilation and Curettage (D&C). This technique, also called Instrumental Uterine Curettage or Sharp Curettage, uses metal surgical instruments to empty the uterus, usually under general or regional anaesthesia, or heavy sedation. The use of D&C requires operating theatre facilities and staff trained in surgical techniques and general anaesthesia. Vacuum Aspiration is generally preferred to D&C due to the lower complications rate and reduced need for surgical facilities.

3.6.2 Second Trimester Uterine Evacuation Techniques

Uterotonics and/or *instrumental evacuation* are the techniques used for second trimester uterine evacuation. In the second trimester the risk of complications is higher (heavy blood loss, uterine perforation, injury to organs, sepsis). Treatment of incomplete abortion in the middle to late second trimester MUST be done by an experienced health worker. In addition, IV fluids, blood transfusion, special equipment, and the facilities to perform abdominal surgery must be available to manage possible complications of second trimester evacuations.

Uterotonics. A number of uterotonics can be used to safely complete expulsion in second trimester incomplete abortion; of these, oxytocin is the most commonly available. Oxytocin, 200 units/500 cc IV over 4 hours may be used. Usually, the placenta or placental remains will be expelled during this time, or shortly thereafter. It is important to examine the products for completeness. If expulsion occurs and appears to be complete, observe the woman for bleeding or evidence of retained placental remnants. If, after observation, the woman is stable, she may be discharged. However, if after observation, she is NOT stable, instrumental curettage may be necessary. Often, when uterotonics are used, it is unclear whether the placenta has been completely expelled and uterine curettage is necessary to ensure an empty uterus. This is particularly true if there is an infection or if the incomplete abortion has been in process for several days. In such cases, the placenta may not be easily expelled with uterotonics alone. Uterine curettage should be performed with the largest curette available to maximize the surface covered with each stroke and minimize the risk of perforation.[10]

3.7 EXAMINATION OF THE PRODUCTS OF CONCEPTION

It is very important to completely evacuate the uterus and remove all products of conception. Therefore, with every uterine evacuation, examine the products of conception to check for completeness and to judge whether the amount of tissue is appropriate. Products of conception include villi, fetal membranes, or, after 9 weeks LMP, fetal parts. Absence of villi may suggest an ectopic pregnancy.

It is always important to examine the specimen, even in cases of incomplete abortion. In some cases, evidence of products of conception will be clearly visible. In other cases, however, no placental tissue will be seen, indicating incomplete abortion. To examine the tissue, strain and rinse the tissue to remove excess blood clots, then place the tissue in a clear container of water or weak acetic acid (vinegar) to examine visually. Samples of tissue may also be sent to the pathology lab as indicated. If no products of conception are found, consider the possible explanations, based on clinical judgement, and treat accordingly. Explanations for lack of tissue include:

Early abortion -- further evacuation may not be necessary.

Abortion already completed before evacuation -- further evacuation may not be necessary unless the clinical picture still suggests an incomplete abortion.

Ectopic pregnancy -- delay in treatment of an ectopic pregnancy is particularly dangerous. The possibility is greater if the patient has any of the following risk factors: history of previous ectopic pregnancy, history of pelvic infection, and/or

[10] Dilation and Evacuation (D&E), surgical evacuation using suction in combination with special forceps for manual removal of retained products of conception, is an alternate technique that is possible when specially trained physicians are available. It is the procedure of choice for treatment of second trimester incomplete abortion. A skilled operator and well-equipped facility are essential.

history of IUD use. If ectopic pregnancy is suspected, check again for signs of an ectopic pregnancy as detailed in Chapter 5 and quickly prepare the woman for referral if laparotomy is not available. Rupture of the ectopic pregnancy is a real and life-threatening possibility and, if this happens, death can only be prevented by stopping the haemorrhage through the surgical removal of the ectopic pregnancy, stopping bleeding, and replacing blood loss. (See WHO, *Essential Elements of Obstetric Care at First Referral Level*, 1991.)

3.8 UTERINE PERFORATION

An existing uterine perforation complicates treatment of an incomplete abortion. The uterus may already be perforated when the woman presents for care but it may not be discovered until the uterine evacuation procedure. The uterus can also be perforated during the procedure. The following signs seen during uterine evacuation indicate a uterine perforation:

an instrument (sound, curette, cannula) that extends beyond the expected limit of the uterus (based on the bimanual exam) OR

fat or bowel is found in the tissue removed from the uterus.

<u>If a perforation is suspected and the evacuation is complete</u>:

continue stabilizing steps according to patient's condition: monitor vital signs, give fluids or blood, oxygen if needed

begin antibiotics

give ergometrine (0.2-0.5 mg IM)

observe for two hours

- if the patient becomes stable and bleeding slows, give ergometrine (0.5 mg IM) and continue observation overnight

- if the patient's condition gets worse, and the bleeding does not stop with an increased dose of either oxytocin or ergometrine, a laparotomy may be necessary to locate and repair the source of the bleeding. If laparotomy is not available, prepare for referral.

<u>If a perforation is suspected and the evacuation is NOT complete</u>:

continue stabilizing steps according to patient's condition: monitor vital signs, give fluids or blood, oxygen if needed

begin antibiotics

complete the evacuation under direct visual control (laparotomy) to assess the damage to the uterus and cervix, or, if laparotomy is not available, refer

repair the damage as necessary. (If the cervix is lacerated beyond repair or there is extensive uterine perforation, a hysterectomy may be necessary.)

after surgery, give oxytocics (if uterus not removed), and observe for two hours

- if the patient becomes stable and bleeding slows or stops, give ergometrine (0.2 to 0.5 mg IM -- if uterus not removed) and continue observation overnight

- if the patient's condition gets worse, prepare the patient for transfer to tertiary care; see Chapter 7.

3.9 CONTRACEPTION

A woman's fertility returns almost immediately after an abortion. She must consider, therefore, whether or not she wants to become pregnant again soon. In the case of spontaneous abortion, she may wish to become pregnant again quickly and, unless there are any medical problems, there is no reason to discourage her from doing so.

For many women, however, their experience with abortion represents a desire not to be pregnant at this time. Thus, the woman, and her partner if she desires, should receive counselling and information about her return to fertility and available contraceptive methods. The health worker must remember that the time of treatment for abortion complications may be a difficult time for the woman and that it may not be the best time to make decisions which are permanent or long-lasting. Selection of all methods, but especially a provider-dependent method, must be done with full and informed consent.

Unless there are major complications from the abortion, most methods of contraception may be started at the time of treatment. Table 6 lists considerations for specific methods after an abortion.

Table 6: Contraceptive Methods

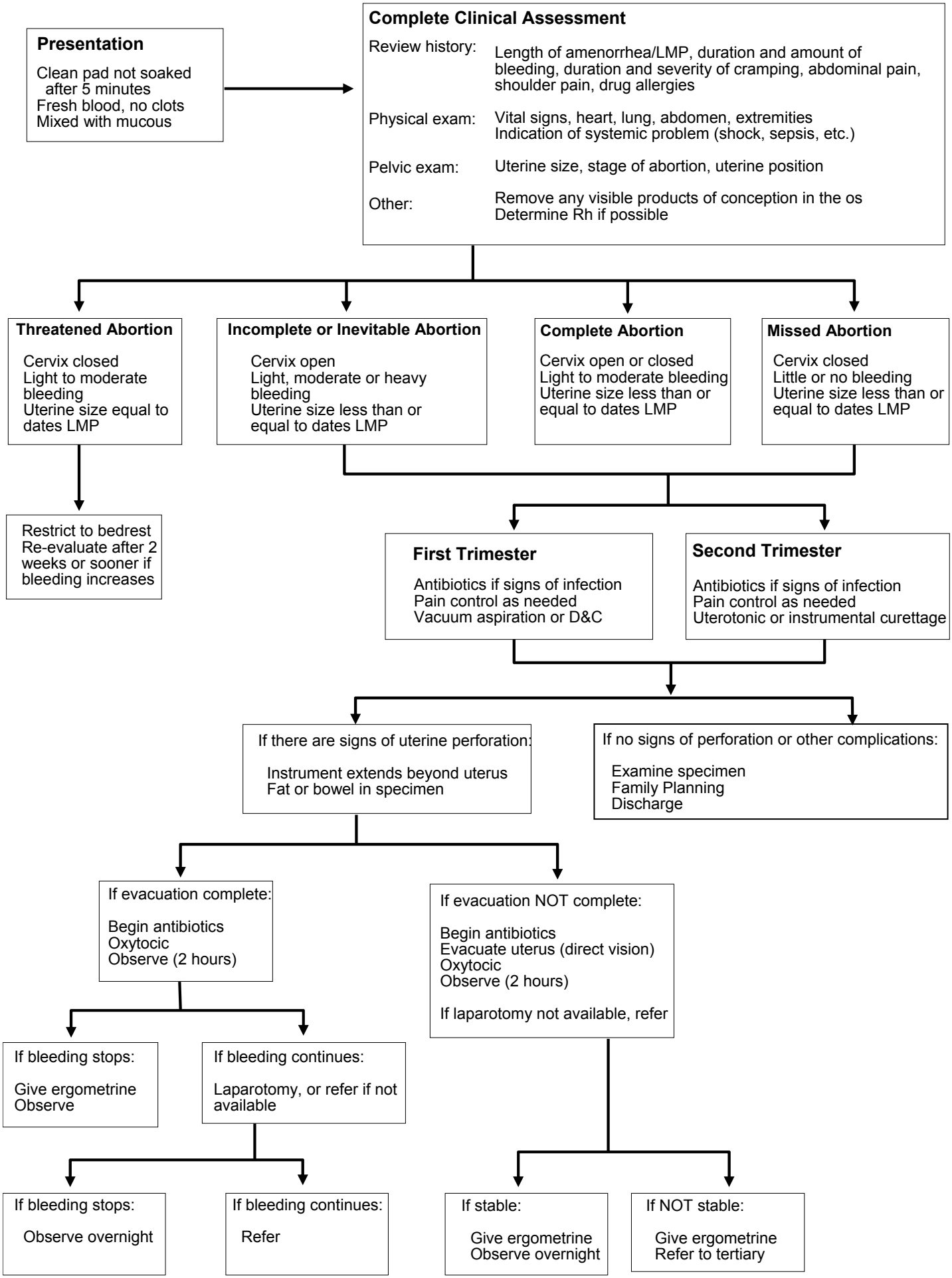
Method	Timing After Abortion
Non-Fitted Barriers and Spermicides **(condom, sponge, suppositories, foam tablets, jelly, foam)**	Begin use as soon as intercourse is resumed.
Fitted Barriers Used With Spermicides **(diaphragm or cervical cap with foam or jelly)**	Diaphragm can be fitted immediately after first-trimester abortion; after second-trimester abortion, fitting should be delayed until involution is complete. Delay fitting cervical cap until bleeding has stopped and involution is complete.
Oral Contraceptives	Begin pill use immediately, preferably on the day of the abortion. Mechanisms to ensure adequate counselling and informed decision-making must be in place.
Injectables (DMPA, NET-EN)	First injection can take place immediately after abortion in the first or second trimester. Mechanisms to ensure adequate counselling and informed decision-making must be in place.
Implants (Norplant[7])	Insertion can take place immediately after abortion. If adequate counselling and informed decision-making cannot be guaranteed, it may be best to delay insertion and provide an interim temporary method.
IUD	IUDs can be inserted immediately after first-trimester spontaneous or induced abortion, if the uterus is not infected. If adequate counselling and informed decision-making cannot be guaranteed, it may be best to delay insertion and provide an interim temporary method. In the second trimester, expulsion rates are lowest if insertion is delayed for six weeks; this consideration must be balanced against the chance that an unwanted pregnancy may occur during the delay. An interim method should be used. If infection is evident or suspected, delay insertion until the infection has been resolved and use an interim method.
Female Sterilization	It is **imperative** that adequate counselling and informed consent precede sterilization procedures, and this is unlikely in the emergency context. Technically, sterilization procedures can be performed immediately after first-trimester spontaneous or elective abortion, and after treatment of abortion complications unless infection or severe blood loss is present. Infection or the potential for infection as in complications of unsafe abortion indicate the need to delay the tubal occlusion. Sterilization after a first-trimester abortion is similar to an interval procedures; after a second-trimester abortion it is similar to a post-partum procedure.
Male Sterilization	Timing is not related to abortion.
Periodic Abstinence	Not recommended for immediate post-abortion use. The first ovulation after an abortion will be difficult for the woman to predict and the method is unreliable until after the first post-abortion menses.

Source: Benson, J. et al. Meeting Women's Needs for Post-Abortion Family Planning: Framing the Questions. Issues in Abortion Care 2, 1992. (Adapted from

for Post-Abortion Use	
Advantages	**Remarks**
Useful as interim methods if initiation of another chosen method must be postponed. No medical supervision is required. Provide some protection against STDs. Easily discontinued when pregnancy is desired.	Less effective than IUD or hormonal methods. Requires continued motivation and regular use. Resupply must be available. Use related to intercourse.
Useful as interim methods if initiation of another chosen method must be postponed. Provide some protection against STDs. Easily discontinued when pregnancy is desired.	Less effective than IUD or hormonal methods. Requires continued motivation and regular use. Resupply must be available. Not related to intercourse.
Highly effective. Can be started immediately even if infection is present. Can be provided by non-physicians. Not related to intercourse.	Requires continued motivation and regular use Resupply must be available. Effectiveness may be lowered when certain medications are used (for example, tetracycline, penicillin).
Highly effective. Easily administered by non-physicians. Not related to intercourse.	May cause irregular bleeding; excessive bleeding may occur in rare instances. Possible delayed return to fertility. Resupply must be accessible. Convenient access to clinic important as regular return visits are required.
Highly effective. Can be administered by trained non-physicians. Long-tem protection. Immediate return to normal fertility following removal. Not related to intercourse.	May cause irregular bleeding or no bleeding; excessive bleeding may occur in rare instances. Less effective in heavier women. Trained provider required to discontinue use. Cost effectiveness depends on long-term use. Implants must be removed after 5 years to prevent a decrease in effectiveness and an increased risk of ectopic pregnancy.
Highly effective. Can be inserted by trained non-physicians. Long-term protection. Immediate return to normal fertility following removal. Not related to intercourse.	Uterine perforation can occur during insertion. may increase risk of PID and subsequent infertility for women at risk for STDs. Removal by trained provider recommended. May increase menstrual bleeding and cramping.
Permanent method. Most effective female method. Once completed, no further action required.	Permanence of the method increases the importance of adequate counselling and fully informed consent; this is not likely to be possible at the time of emergency care. Slight possibility of surgical complications.
Permanent method. Most effective male method. Once completed, no further action required.	Permanence of the method increases the importance of adequate counselling and fully informed consent. Slight possibility of surgical complications.
No cost associated with method	Unreliable immediately after abortion. Alternative methods are recommended until resumption of normal cycle. Women and their partners must be motivated and have a thorough understanding of how to use the method.

Complications of Abortion: Technical and Managerial Guidelines for Prevention and Treatment)

Chart 3. Moderate to Light Vaginal Bleeding



CHAPTER 4

MANAGEMENT OF SEVERE VAGINAL BLEEDING

4.1 INTRODUCTION

Prompt treatment of excessive blood loss is critical in the management of abortion care. Delays in stopping the bleeding and replacing fluid or blood volume can be fatal. Prolonged or excessive vaginal bleeding with signs of abortion is usually caused by retained products of conception or by trauma to the cervix or uterus, including perforation of the uterus. These injuries almost always indicate that the patient attempted to interrupt a pregnancy. Therefore, she may have an infection and needs antibiotics. Damage from caustic chemical agents used to cause an abortion can also cause severe bleeding. If not treated promptly, haemorrhage can result in shock and death. During assessment and treatment of severe vaginal bleeding, the blood pressure and heart rate should be watched closely, as shock may develop at any time.

Blood pressure, pulse rate, haematocrit or haemoglobin, and urine output are the primary measures of the amount of blood loss. Treatment includes control of bleeding, intravenous fluids (when available) to replace fluid volume, antibiotics to fight infection, stabilization, and uterine evacuation. Surgery, or referral to a facility with surgical capability, may be required to identify and repair the source of bleeding.

4.2 PRESENTATION

The following signs are seen with severe vaginal bleeding:

heavy, bright red vaginal bleeding with or without clots
blood-soaked pads, towels, or clothing
pallor [inner eyelid (conjunctival), around the mouth, or palms].

4.3 INITIAL TREATMENT

Universal Measures

Make sure that the airway is open. Check the vital signs. Raise the legs or, if possible, raise the foot of the bed. If initial clinical assessment showed that the woman is in poor health or anaemic, she may have less tolerance for blood loss, and she will need IV fluids and possibly a blood transfusion. If uterine evacuation and an IV are NOT available, then she should be promptly prepared for referral AFTER taking simple measures to control the bleeding (oxytocics, tamponing, uterine massage).

Oxygen

Make sure that the airway is open. If oxygen is available, start oxygen at 6-8 litres per minute by mask or nasal cannulae.

Fluids

IV fluids. To restore fluid volume, start intravenous fluids immediately. Use a large-bore needle (16 to 18 gauge recommended), and collect the necessary blood samples. Infuse a compound solution of sodium lactate or normal saline (sodium chloride) at the rate of 1 litre in 15-20 minutes. It may take 1 to 3 litres of IV fluids, infused at this rate, to stabilize the patient who has lost a lot of blood or is in shock. It is important to monitor the total amount of fluids given, including blood. See Section 4.5 and Chapter 7.

Blood transfusion. A haemoglobin of 5 g/100 ml or less or a haematocrit of 15% or less is life threatening and will require blood transfusion. Always include the volume of blood given when monitoring and recording the total amount of fluids given to a patient.

Blood transfusions may be live-saving, but they carry risk and may do harm rather than good in certain cases. Follow Chapter 7 guidelines and warnings for blood transfusion.

Medicines

IV preferred, IM acceptable. Do NOT give any medicines by mouth to a woman with an intra-abdominal injury, ectopic pregnancy, uterine perforation or shock, as she may require surgery and she can vomit and inhale the vomit.

Antibiotics. IV preferred, IM acceptable. If there is any sign of infection, abdominal injury, ectopic pregnancy, or cervical or uterine perforation, give broad spectrum antibiotics effective against Gram-negative, Gram-positive, anaerobic organisms and chlamydia. For the choice of antibiotics, see Chapter 7.
Tetanus Toxoid. IM. If there is a possibility that the woman was exposed to tetanus, and there is any uncertainty of her vaccination history, then give her tetanus toxoid and tetanus antitoxin. If the abortion was not performed with sterile instruments, if there was any contamination of the instruments or wound with dirt, there is a chance of exposure to tetanus. See Chapter 7.

Pain control. IV preferred, IM acceptable. Follow guidelines above and in Chapter 7.

Labs

While lab work is helpful, treatment of severe vaginal bleeding should begin without delay even where lab work is not possible.

Blood. Check haemoglobin or haematocrit to assess the amount of blood loss. It is important to bear in mind that the drop in haemoglobin and haematocrit measurements can often lag 6 to 8 hours behind the actual blood loss because of the time required for equilibration. Type and cross-match blood if necessary.

Urine. Little or no urine output (<30 cc/hour) is a sign of low blood volume seen with shock, haemorrhage, and dehydration, and can be a sign of kidney failure. Measure urine output, preferably by insertion of a Foley catheter. If catheterization is not possible, collect and measure urine output. If it is not possible to collect the urine, note if the urine is concentrated (dark colour) or if the output is decreased (no urination). If output is first low and then begins to increase, this is a sign that the woman's general condition is improving and a measure of her response to intravenous fluids.

4.4 DEFINITIVE MANAGEMENT

Once the initial steps have been taken to stabilize the patient, prompt treatment of the underlying cause of bleeding is necessary. Closely monitor the patient's condition, refer if necessary, and adjust supportive treatment according to the guidelines below.

There may be one or more causes of bleeding that will need to be treated. The treatment should be done in the following order:

1. If, on physical exam there are indications of intra-abdominal injury or ectopic pregnancy, further assessment and treatment are needed immediately. See Section 4.4.1 and Chapter 5.

2. If, on vaginal exam there are any visible cervical or genital tract lacerations, they should be sutured. See Section 4.4.2.

3. Treat the incomplete abortion by uterine evacuation, according to the duration of pregnancy. See Section 4.4.3 and Chapter 3.

4. If a uterine perforation is discovered during uterine evacuation, follow the guidelines detailed in Sections 4.4.4 and 3.8.

4.4.1 Intra-Abdominal Injury

ANY of the signs listed below WITH ANY of the indicated symptoms indicates that the woman is probably suffering from an intra-abdominal injury, ectopic pregnancy or acute appendicitis.

SIGNS	SYMPTOMS
distended abdomen	nausea/vomiting
decreased bowel sounds	shoulder pain
abdomen tense and hard	fever
rebound tenderness	abdominal pain, cramping

Immediate attention is required. See Chapter 5.

4.4.2 Cervical or Genital Tract Laceration

Suture any visible cervical or genital tract lacerations BEFORE uterine evacuation.

4.4.3 Incomplete Abortion

Assess the duration of the pregnancy by the size of the uterus and history of amenorrhoea. The treatment depends on the duration of pregnancy.

If uterine size is 12-14 weeks size or smaller, evacuate the uterus with vacuum aspiration or D&C according to guidelines in Chapter 3. Uterine evacuation at sizes greater than 12 weeks requires a very experienced provider. Refer the patient if staff skilled in uterine evacuation is not available.

If uterine size is larger than 14 weeks, evacuate the uterus, using oxytocin (200 units/500 cc IV fluid over 4 hours) and/or instrumental evacuation or curettage. Instrumental evacuation of a second-trimester pregnancy requires skilled, experienced staff. Significant bleeding can occur, and there is a higher risk of uterine perforation than with smaller uterine sizes. Therefore, if a specially trained operator is not available, use oxytocin and uterine curettage rather than instrumental evacuation. After evacuation or expulsion of the products of conception, examine the woman for post-expulsion completeness and to make certain the cervix is not lacerated. If bleeding remains heavy, continue therapy with bimanual uterine massage and ergometrine (0.2 to 0.5 mg IM). If IV oxytocin, uterine evacuation and skilled staff are NOT available, begin pain control (Chapter 7), and give ergometrine (0.2-0.5 mg IM). Massage the uterus (using two hands, brace the uterus with two fingers internally and massage the abdomen with the other hand until it becomes firm). Prepare the patient for referral. See Chapter 7.

4.4.4 Uterine Perforation

Uterine perforation may exist when the woman arrives for treatment or it may occur during instrumental uterine evacuation. In either case it is usually discovered during the uterine evacuation procedure. It must be addressed as soon as it is seen.

Either of the following signs indicate uterine perforation:

an instrument (sound, curette, cannula) extends beyond the expected limit of the uterus (based on the bimanual exam), OR

fat or bowel is found in the tissue removed from the uterus.

Treatment of uterine evacuation depends upon whether or not the uterine evacuation is complete when the perforation is discovered. See Section 3.8.

4.5 CONTINUING TREATMENT

Continue monitoring vital signs, urine output, and fluids, as the patient's condition could suddenly worsen**.** If she was stable initially, and later shows signs of shock, immediately begin stabilizing treatment with IV fluids and oxygen, following guidelines in Chapter 2.

Oxygen

If available, continue as long as the patient is unstable. If possible, continue during transfer if the patient is unstable. As the woman stabilizes, the oxygen can be gradually shut off. However, if she begins to worsen with the oxygen turned down or off, turn the oxygen back on, at the initial rate of 6 to 8 litres per minute.

Fluids

IV Fluids. Once the woman has stabilized (systolic blood pressure of at least 100 mmHg, stabilizing heart rate (below 90), urine output of at least 100 ml per four hours) and her

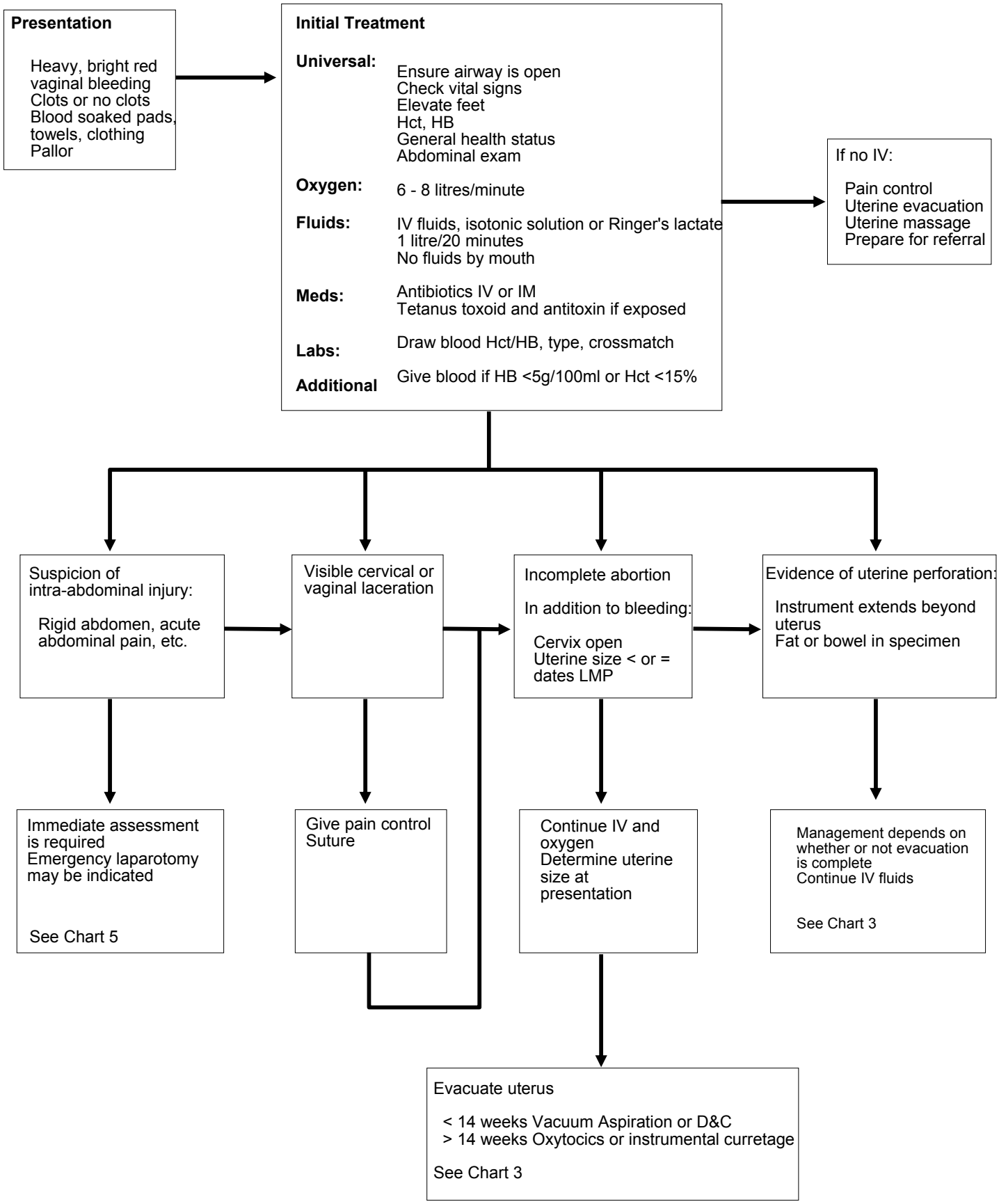
low fluid volume has been corrected, adjust the rate of the IV fluids to 1 litre in 6-8 hours. See Chapter 7.

Blood transfusion. Blood transfusions may be live-saving, but they carry risk and may do harm rather than good in certain cases. If transfusion is needed, and has not already been started, follow the guidelines in Section 4.3 and in Chapter 7.

Medicines

If antibiotics, pain control, and tetanus toxoid and tetanus antitoxin have NOT been given, reassess the need for treatment, according to the guidelines in Section 4.3 and in Chapter 7. If treatment has been started, continue according to the schedules for antibiotics and pain control in Chapter 7.

Chart 4. Severe Vaginal Bleeding



CHAPTER 5

MANAGEMENT OF INTRA-ABDOMINAL INJURY

5.1 INTRODUCTION

Injury to the internal organs is a life-threatening complication as well as a cause of serious long-term poor health among abortion patients. The most common injury is uterine perforation; damage can also occur to the ovaries, fallopian tubes, omentum (folds of peritoneal tissue around the stomach and intestine), bowel, bladder, and rectum. These injuries indicate that attempts were made to interrupt the pregnancy, and the possibility of infection, including tetanus and peritonitis, is very high.

Any internal injury, if not quickly diagnosed and treated, can lead to serious complications including bleeding, infection, and death. Severe bleeding inside the abdomen (intra-abdominal haemorrhage) can occur with little or no visible vaginal bleeding. Therefore, whenever a woman is treated for abortion complications, she should be checked for signs of an intra-abdominal injury. During assessment and treatment of an intra-abdominal injury, the patient's blood pressure and heart rate should be watched closely, as shock may develop at any time.

A ruptured ectopic pregnancy or ruptured ovarian cyst can also cause intra-abdominal haemorrhage, and the symptoms will be similar to intra-abdominal injury. The possibility of ectopic pregnancy is greater if the patient has a history of any of the following: previous ectopic pregnancy, pelvic infection, or IUD use. If ectopic pregnancy is suspected, delay in treatment is particularly dangerous, and death can only be prevented by stopping the haemorrhage through the surgical removal of the ectopic pregnancy, stopping bleeding, and replacing blood loss. (See WHO, *Essential Elements of Obstetric Care at First Referral Level* 1991.)

Treatment of abdominal injury ranges from replacement of blood loss and antibiotic therapy to uterine evacuation under direct vision (laparotomy) and repair or resection of injured tissue. It is important to recognize the signs that may indicate injury, stabilize the woman's condition if possible, and if abdominal surgery is NOT available, refer the woman quickly.

5.2 PRESENTATION

ANY of the signs listed below WITH ANY of the indicated symptoms indicates that the woman is probably suffering from an intra-abdominal injury, ectopic pregnancy or acute appendicitis.

SIGNS	SYMPTOMS
distended abdomen	nausea/vomiting
decreased bowel sounds	shoulder pain
abdomen tense and hard	fever
rebound tenderness	abdominal pain, cramping

5.3 INITIAL TREATMENT

Universal measures

Make sure that the airway is open. Check the patient's vital signs. Do NOT give fluids by mouth, as surgery may be necessary. If laparotomy is NOT available, promptly prepare the woman for referral after initiating treatment as outlined below.

Assess the amount of blood loss by the woman's general condition, the vital signs, urine output, haemoglobin and haematocrit, and the complete blood count (CBC). If initial clinical assessment showed that the woman is in poor health or anaemic, she may have less tolerance for blood loss, and therefore will need intravenous fluids and possibly blood transfusion.

Oxygen

Make sure that the airway is open. If oxygen is available, start oxygen at a rate of 6-8 litres per minute by mask or nasal cannulae.

Fluids

IV fluids. Do NOT give fluids by mouth. To restore fluid volume, start intravenous fluids immediately. Use a large-bore needle (16 to 18 gauge recommended), and collect the necessary blood samples. Infuse a compound solution of sodium lactate or normal saline (sodium chloride) at the rate of 1 litre in 15-20 minutes. It may take 1 to 3 litres of IV fluids, infused at this rate, to stabilize the patient who has lost a lot of blood or is in shock. It is important to monitor the total amount of fluids given, including blood. See Section 5.5 and Chapter 7.

Blood transfusion. A haemoglobin of 5 g/100 ml or less, or a haematocrit of 15% or less is life threatening and will require blood transfusion.

Blood transfusions may be live-saving, but they carry risk and may do harm rather than good in certain cases. Follow Chapter 7 guidelines and warnings for blood transfusion. Remember to include the volume of blood given when monitoring and recording the total amount of fluids given to a patient.

Medicines

IV preferred, IM acceptable. Do NOT give any medicines by mouth to a woman with an intra-abdominal injury, ectopic pregnancy, uterine perforation or shock, as she may require surgery.

Antibiotics. IV preferred, IM acceptable. IMMEDIATELY give broad spectrum antibiotics which are effective against Gram-negative, Gram-positive, anaerobic organisms and chlamydia. For the choice of antibiotics, see Chapter 7.

Tetanus Toxoid. IM. If there is a possibility that the woman was exposed to tetanus, and there is any uncertainty of her vaccination history, then give her tetanus toxoid and tetanus antitoxin. If the abortion was not performed with sterile instruments, if there was any contamination of the instruments or wound with dirt, there is a chance of exposure to tetanus. See Chapter 7.

Pain control. IV preferred, IM acceptable. Follow guidelines above and in Chapter 7.

Labs

While lab work is helpful, treatment of an intra-abdominal injury or ectopic pregnancy should begin without delay even where lab work is not possible.

Blood. Check haemoglobin or haematocrit to assess the amount of blood loss. It is important to bear in mind that the drop in haemoglobin and haematocrit measurements can often lag 6 to 8 hours behind the actual blood loss because of the time required for equilibration. Type and cross-match blood if necessary.

Urine. Little or no urine output (<30 cc/hour) is a sign of low blood volume seen with shock, haemorrhage, and dehydration, and can be a sign of kidney failure. Measure urine output, preferably by insertion of a Foley catheter. If catheterization is not possible, collect and measure urine output. If it is not possible to collect the urine, note if the urine is concentrated (dark colour) or if the output is decreased (no urination). If output is first low and then begins to increase, this is a sign that the woman's general condition is improving and a measure of her response to intravenous fluids.

Abdominal X-ray. If intra-abdominal injury is suspected, an upright x-ray will help determine if there is gas in the peritoneal cavity, a sign of uterine or bowel perforation. If the patient is uncomfortable sitting up or standing, she should be x-rayed lying down (taking lateral views).

5.4 DEFINITIVE MANAGEMENT

Any of the following conditions is a surgical emergency, requiring immediate laparotomy:

a rigid abdomen

a patient with acute abdominal pain *and* with persistent low blood pressure or shock that fails to stabilize after infusion of up to 3 litres of normal saline (sodium chloride) or a compound solution of sodium lactate

an abdominal x-ray showing air or gas in the peritoneal cavity.

In these cases, laparotomy is necessary to find and repair the injury. Peritonitis, uterine perforation, bowel injury, intra-abdominal bleeding, and a ruptured ectopic pregnancy must be considered. It may be necessary to drain the abdomen. Repair or resection of injured tissue may also be required. In extreme cases, removal of the uterus may also be required.

Once the intra-abdominal injury is treated, or if intra-abdominal injury is suspected but the woman is stable, the x-ray is negative, her abdomen is not rigid, and there are no signs of an ectopic pregnancy, then evacuate the uterus according to the guidelines in Chapter 3. If intra-abdominal injury is discovered during the uterine evacuation procedure, a laparotomy is required to find and repair the injury.

5.5 CONTINUING TREATMENT

Universal Measures

Continue monitoring the woman's vital signs, urine output, and fluids, as she could suddenly worsen and go into shock. Continue and adjust supportive treatment (oxygen, fluids, medicine) according to the guidelines below, and begin definitive treatment.

Oxygen

If available, continue as long as the patient is unstable. If possible, continue during transfer of unstable patients. As the woman stabilizes, the oxygen can be gradually shut off. However, if she begins to worsen with the oxygen turned down or off, then turn the oxygen back on, at the initial rate of 6 to 8 litres per minute.

Fluids

IV Fluids. If possible, continue during transfer of unstable patients. Once the woman has stabilized and her low fluid volume has been corrected, as indicated by systolic blood pressure of at least 100 mmHg, stabilizing heart rate (under 90), urine output of at least 100 ml per 4 hours, then adjust the rate of the IV fluids to 1 litre in 6-8 hours. See Chapter 7.

Blood transfusion. Blood transfusions may be live-saving, but they carry risk and may do harm rather than good in certain cases. If transfusion is needed, and has not already been started, follow the guidelines in Section 5.3 and in Chapter 7.

Medicines

Antibiotic therapy should already be started for ANY women with an intra-abdominal injury. If not, start antibiotics IMMEDIATELY. If pain control or tetanus toxoid and tetanus antitoxin have NOT been given, reassess the need. Follow treatment guidelines in Section 5.3 and in Chapter 7. If treatment has been started, continue according to the schedules for antibiotics and pain control in Chapter 7.

Chart 5. Intra-Abdominal Injury

Presentation

Suspect intra-abdominal injury if there are any of these signs with any of these symptoms:

Signs	**Symptoms**
Distended abdomen	Nausea, vomiting
Decreased bowel sounds	Shoulder pain
Tense, hard abdomen	Fever
Rebound tenderness	Abdominal pain, cramping

Initial Treatment

Universal: Ensure airway is open
Check vital signs

Oxygen: 6-8 litres/minute

Fluids: IV fluids, isotonic solution or Ringer's lactate
1 litre/20 minutes
No fluids by mouth
Blood transfusion if HB <5g/100 ml or Hct <15%

Meds: Immediately begin antibiotics (IV or IM, IV preferred)
Tetanus toxoid and antitoxin if exposed

Labs: Draw blood for HB Hct, type and crossmatch
Measure urine
Upright abdominal x-ray

Signs of surgical emergency:

Rigid abdomen
Acute abdominal pain and persistent low blood pressure
Shock not stable after 1-3 litres IV fluids
Abdominal x-ray shows air in peritoneal cavity

Emergency laparotomy to possibly drain abdomen, repair tissue surgically, or remove uterus if necessary

If laparotomy is not available:

Give pain control
Continue V fluids
Continue antibiotics
Continue oxygen if possible
Refer to tertiary hospital

Continuing Treatment

Monitor vital signs, urine output, fluids, signs of shock
Continue IV, oxygen, IV antibiotics
Give pain control

Condition is stable:

X-ray negative
Abdomen not rigid
No signs of ectopic pregnancy

Evacuate the uterus (See Chart 3)

Condition NOT stable:

Treat for shock

See Chart 2

CHAPTER 6

MANAGEMENT OF SEPSIS

6.1 INTRODUCTION

Unsafe abortion has a high risk of complications from infection, both from introducing pathogens (micro-organisms) into the uterus and from retained products of conception which make it easy for infection to grow. Localized infection from induced or spontaneous abortion can quickly lead to more generalized sepsis and septic shock, which can be fatal. Therefore, prompt action to stabilize the patient, and remove and treat the source of the infection is needed to save the woman's life. Delay in treatment can be fatal.

Antibiotics and uterine evacuation are often the definitive treatment, but surgical repair of perforated organs and surgical removal of dead tissue and abscesses may also be necessary. Sometimes hysterectomy is the easiest and most suitable solution of the problem. Minor infection can be treated and first trimester uterine evacuation done wherever trained staff and drugs are available. In more complicated cases, antibiotics and fluid replacement must be started IMMEDIATELY. Surgery may be required. Without immediate initiation of treatment and prompt definitive treatment, the patient may die. In cases of renal failure, tetanus, gas gangrene, or where the required care is beyond the capabilities of the facility, referral to a tertiary care centre is imperative.

If uterine evacuation is NOT possible, or if surgery is necessary and is NOT possible, then she should be referred once initial stabilizing steps have been taken.

6.2 PRESENTATION

Consider the possible presence of infection with every woman who has complications of abortion. The following signs and symptoms indicate that either local or generalized infection (septicaemia) is very likely:

SIGNS	SYMPTOMS
chills or sweats (rigors)	history of interference with the pregnancy
fever	abdominal pain
foul-smelling vaginal discharge	IUD in place
distended abdomen	prolonged bleeding
rebound tenderness	general discomfort; flu-like symptoms (malaise)
slightly low blood pressure (mild hypotension)	

6.3 ASSESSMENT OF SEVERITY OF INFECTION AND SEPSIS

When a patient has signs and symptoms of infection, quickly assess the severity of the infection and the risk for septic shock. The following may be seen with pelvic infection:

foreign material in the vagina

pus coming from cervix or mixed with blood in the vagina

signs of local pelvic infection: uterine tenderness, tenderness when the cervix is moved, lower abdominal tenderness, or adnexal tenderness (near ovaries and tubes)

foul odour to any blood or secretions

uterine subinvolution.

Assess the woman's risk for developing septic shock using the following guidelines:

Table 7
Risk for Septic Shock

LOW RISK	HIGH RISK
first trimester abortion	second trimester abortion
mild to moderate fever (36.5-38.5EC or 99.5-101.5EF)	high fever (38.5EC or 101.5EF and greater) or subnormal temperature
no evidence of intra-abdominal injury	ANY evidence of intra-abdominal injury: distended abdomen, decreased bowel sounds, rigid abdomen, rebound tenderness, nausea and vomiting
stable vital signs	ANY evidence of shock: low blood pressure (systolic less than 90 mmHg), anxiety, confusion, unconsciousness pallor (inner eyelids, around the mouth, palms), rapid, weak pulse (rate 110 per minute or more), rapid breathing (respirations 30 per minute or greater)

6.4 INITIAL TREATMENT

Immediate treatment with antibiotics is a life-saving measure for ANY woman with a pelvic infection and at ANY risk for sepsis.

Universal Measures

Make sure the airway is open. Closely monitor the woman's vital signs and general condition, keeping in mind that her condition could suddenly change. Adjust treatment if she becomes unstable, following the guidelines for the treatment of shock. Do NOT give fluids by mouth to a woman in shock, at high risk for shock, or with an intra-abdominal injury, as she can vomit and inhale the vomit or she may require surgery.

If the woman is at high risk for shock, IMMEDIATELY begin IV antibiotics, and follow the treatment guidelines in Chapter 2.

If the woman is at low risk for shock, immediately begin antibiotics and follow the treatment guidelines below.

Oxygen

Make sure that the airway is open. Oxygen is NOT necessary if the woman is stable and is at low risk for shock. If she becomes unstable and oxygen is available, then start oxygen at 6-8 litres a minute by mask or nasal cannulae.

Fluids

If available, start an IV for every woman with ANY risk for sepsis, and start IV antibiotics immediately. Intravenous administration is the quickest and best way of treating an infection and may well save the woman's life. If the woman becomes or is unstable, follow the fluid guidelines for the treatment of shock in Chapter 2.

Medicines[11]

For women at high risk or in shock: IV or IM ONLY (IV preferred). Do NOT give any medicines by mouth to a woman in shock.

For women at low risk for septic shock: IV preferred. If IV not available, IM or oral acceptable.

Antibiotics. IV preferred. Start antibiotics immediately. Give broad spectrum antibiotics which are effective against Gram-negative, Gram-positive, anaerobic organisms and chlamydia. For the choice of antibiotics, see Chapter 7.

Tetanus Toxoid. IM. If there is a possibility that the woman was exposed to tetanus, and there is any uncertainty of her vaccination history, then give her tetanus toxoid and tetanus antitoxin. If the abortion was not performed with sterile instruments, if there was any contamination of the instruments or wound with dirt, there is a chance of exposure to tetanus. See Chapter 7.

Pain control. Give as needed, follow guidelines above and in Chapter 7.

Labs

While lab work is helpful in treatment, the treatment of sepsis should begin without delay even where lab work is not possible.

Blood. If the woman has lost a lot of blood or appears anaemic, check haemoglobin or haematocrit and collect blood for type and cross-match. If available, a complete blood count (CBC) can also serve as a measure of infection (high number of white blood cells)

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[11] Corticosteroids: The use of high-dose corticosteroids as adjunctive therapy is contra-indicated.
Inotropic drugs: Inotropic drugs such as digoxin should be used in shock only when hypovolaemia has been excluded confidently.

and a measure of the bleeding disorder DIC that may be seen with severe cases of sepsis. If DIC is present, there will be a low number of platelets.

Urine. Little or no urine output is a sign of low blood volume seen with shock, haemorrhage, and dehydration, and can be a sign of kidney failure. Measure urine output, preferably by insertion of a Foley catheter. If catheterization is not possible, collect and measure urine output. If it is not possible to collect the urine, note if the urine is concentrated (dark colour) or if the output is decreased (no urination). If output is first low and then begins to increase, this is a sign that the woman's general condition is improving and a measure of her response to intravenous fluids.

Abdominal X-Rays. Flat-plate and upright films may be taken. See discussion on x-rays below.

Additional Measures

X-Rays. For women at high risk, x-ray the abdomen (if possible) to assess the extent and severity of the infection. Flat-plate abdominal x-ray films are taken to identify air or fluid levels in the bowel. In the case of clostridial infection, gas may be seen in the tissues. The presence of an IUD may also be confirmed. Upright abdominal x-ray films will show air under the diaphragm from uterine or bowel perforation.

6.5 DEFINITIVE MANAGEMENT

With sepsis, prompt definitive treatment of the source of infection can be life-saving. Retained products of conception is most often the source of infection. The infection may have spread, and there may be more than one source of infection. Consider the possibility of intra-abdominal injury, pelvic abscess, peritonitis, gas gangrene, or tetanus. ALL sources of infection must be treated. In addition, if the woman has an IUD in place, it should be removed.

Retained products of conception is often a source of infection. Uterine evacuation is an essential treatment for ALL women who are at risk for septic shock who also have an incomplete abortion. See Chapter 3. If evacuation is NOT possible, then refer the woman once initial stabilizing steps have been taken. Intra-abdominal injury, pelvic abscess, and peritonitis MUST be treated promptly, and surgery is often required. For treatment of an intra-abdominal injury, see Chapter 5.

If the woman is bleeding from several sites and the bleeding is not easily stopped, quickly assess the patient for disseminated intravascular coagulation (DIC), a bleeding disorder (coagulopathy) that can be seen with severe cases of sepsis. Signs of DIC include:

bleeding from oral mucosa (inside the mouth), bladder, injection site, or venipuncture site

blood in the urine

failure of patient's blood to clot (in the laboratory tube or on floor)

decreased platelet count

fragmented red blood cells under microscopic exam.

If DIC is suspected, immediately treat the sources of infection; evacuate the uterus without delay. Transfusion of fresh whole blood or plasma will help. If DIC becomes apparent or persists after uterine evacuation, antibiotics, and fluid resuscitation, continue IV fluids and give heparin 5,000-10,000 units IV every six hours if available. Refer the patient to a tertiary care centre.

Suspect gas gangrene if x-ray shows gas in the pelvic tissue. Suspect tetanus if the woman has painful muscle contractions, generalized spasms and convulsions. After initial stabilizing efforts, antibiotics, tetanus antitoxin and sedation (to control convulsions in the case of tetanus) have been started, promptly refer to a tertiary care centre. If the woman goes into shock, it should be treated as outlined in Chapter 2.

6.6 CONTINUING TREATMENT

Universal Measures

Continue monitoring the woman's vital signs, urine output, and fluids, as she could suddenly worsen and go into shock. Continue and adjust supportive treatment (oxygen, fluids, medicine) according to the above guidelines.

Oxygen

If oxygen was started because the woman became unstable, then continue as long as she remains unstable. If possible, continue during transfer of unstable patients. As the woman stabilizes, the oxygen can be gradually shut off. However, if she begins to worsen with the oxygen turned down or off, then turn the oxygen back on, at the initial rate of 6 to 8 litres per minute.

Fluids

IV Fluids. For stable women who are receiving intravenous fluids ONLY for the purpose of giving antibiotics, use the rate and volume recommended for the antibiotics. See Chapter 7.
For initially unstable women who are receiving intravenous fluids to correct low blood volume and to give IV antibiotics, adjust the IV fluid rate once she improves and her low fluid volume has been corrected (systolic blood pressure of at least 100 mmHg, stabilizing heart rate (under 90), urine output of at least 100 ml per 4 hours). The adjusted rate is 1 litre in 6-8 hours. See Chapter 7.
Blood transfusion. A haemoglobin of 5 g/100 ml or less, or a haematocrit of 15% or less is life threatening and will require blood transfusion. Follow Chapter 7 guidelines and warnings for blood transfusion. Remember to include the volume of blood given when monitoring and recording the total amount of fluids given to a patient.

Medicines

Antibiotic therapy should already be started for ALL women at risk for septic shock. If not, start antibiotics immediately. If pain control or tetanus toxoid have NOT been given, reassess the need. Follow treatment guidelines in the medicine section above. If treatment has been started, continue according to the schedules for antibiotics and pain control in Chapter 7.

Chart 6. Sepsis

Presentation

Chills, fever, sweats
Foul-smelling vaginal discharge
History of interference
Abdominal pain
IUD in place
Prolonged bleeding
Flu-like symptoms

Initial Assessment of Risk for Septic Shock

Length of gestation
Check vital signs
Check for signs of pelvic infection
Foreign material in vagina
Pus in cervix or vagina
Evidence of local pelvic infection
• Adnexal tenderness
• Uterine tenderness
• Cervical motion tenderness
• Lower abdominal tenderness
Foul odour to any blood or secretions, faeces or urine

Low Risk of Septic Shock

Mild to moderate fever
(38.5^{0}C or less, 101.5^{0}F or less)
Vital signs stable
First trimester abortion
No evidence of intra-abdominal injury

High risk of Septic Shock

High fever (greater than 38.5^{0}C or 101.5^{0}F)
Second trimester abortion
No evidence of intra-abdominal injury
Evidence of shock (See Chart 2)

Initial Treatment:

Universal: Ensure airway is open
Monitor vital signs

Fluids: IV fluids if available

Meds: Antibiotics (IV preferred)
Tetanus toxoid and tetanus antitoxin
Pain control

Initial Treatment:

Universal: Ensure airway is open
Monitor vital signs

Oxygen: 6-8 litres/minute

Fluids: Large bore IV, isotonic or compound solution of sodium lactate
1 litre/20 minutes (no fluids by mouth)
Measure urine output

Meds: Immediately begin antibiotics IV or IM, IV preferred)
Tetanus toxoid
Pain control

Additional: If bleeding disorder, assess for DIC

Labs: Complete blood count (CBC)
Abdominal x-rays if available

If patient is stable:

Continue antibiotics and IV

Uterine evacuation (See Chart 3)

Observe for 48 hours

If signs of DIC are present:

Blood does not clot
Bleeding from venipuncture sites, etc.

Uterine evacuation (See Chart 3)

Give fresh whole blood if necessary and heparin 5000-10 000 units IV six hourly if available
Refer to tertiary care centre

If there are signs of gas gangrene or tetanus:

Gas gangrene: x-ray shows gas in pelvic tissue

Tetanus: painful muscle contractions, generalized spasms, convulsions

Refer to tertiary care centre after initial stabilizing efforts + antibiotics and sedation if tetanus

If signs of intra-abdominal injury develop:

X-ray shows air in abdomen
Abdomen rigid, rebound tenderness etc.

Continue oxygen, antibiotics, and IV
Emergency laparotomy

See Chart 5

If signs of shock develop:

Dropping blood pressure
Fast, weak pulse
Fast breathing
Pallor, etc.

Immediate attention is required

See Chart 2

CHAPTER 7

GENERAL PRINCIPLES OF EMERGENCY ABORTION CARE

7.1 INTRODUCTION

A number of issues must be considered in providing emergency abortion care. Treatment may include stabilization and referral, oxygen, intravenous (IV) fluid replacement, blood transfusion, medicines (antibiotics, pain control, and tetanus toxoid). These topics are discussed below.

7.2 STABILIZATION AND REFERRAL

Stabilization and appropriate and timely referral can be essential to help women reach life-saving care. Whether the woman is referred from the primary to the first referral level, or from first referral to tertiary care, the referring site must do what it can to stabilize and treat the woman. The ability of a referring site to get prompt transport for the patient to the referral centre can be life-saving. Standing arrangements for transport should exist at all health delivery centres. These may require coordination with community resources such as police, military, agricultural extension services, other health programmes, governmental institutions, churches, and so forth. If possible, the referring centre should alert the referral centre that the patient is coming.

The central elements in stabilizing the patient for referral are outlined in Table 8.

Table 8

ELEMENTS OF EMERGENCY RESUSCITATION/ PREPARATION FOR REFERRAL AND TRANSPORT

Management of the airway and respiration

Control of bleeding

Intravenous fluid replacement

Control of pain

Adapted from WHO, *Complications of Abortion: Technical and Managerial Guidelines for Prevention and Treatment*

In general, in an emergency referral, the patient should be accompanied by trained staff to the referral centre. If she is accompanied, then IV therapy can be continued during transport, as well as oxygen if equipment is available. If the patient cannot be accompanied by trained staff, others can be taught how to manage the IV therapy during transport. Whether or not the woman is accompanied, she should be kept warm and her feet should be elevated in cases of shock or haemorrhage. Do not use external sources of heat, as the skin could be easily burned, instead use blankets or a similar type of covering.

A summary of the case should be sent with the woman to the referral centre. This should include:

immediate and past history of the presenting problem

assessment made at the referring site of the patient's condition

actions taken at the referring site (for instance, morphine 10 mg, IM at 1600 hours)

other relevant information obtained by the referring site (for example, patient has a seizure disorder).

See Annex 2 for an example of a referral form.

7.3 INTRAVENOUS (IV) FLUID REPLACEMENT

In many instances of abortion complications, women will require some fluids for volume replacement. Generally, an isotonic solution (0.9% sodium chloride, also known as normal saline) or a compound solution of sodium lactate is preferred. Saline with or without glucose can be used, depending upon availability. Glucose solutions without saline do not provide the salt required to restore fluid balance.

A large bore needle, preferably 16-18 gauge, is desirable for starting IV fluids so that fluids may be given rapidly and so that blood can be given later, if needed. However, a 20 gauge is acceptable if a larger size is not available.

Any necessary blood samples for laboratory tests should be drawn when the IV needle is being inserted. Blood drawing at a later point could be more difficult as veins tend to collapse and are found deeper from the surface when shock or other life-threatening complications are present. In addition, this protects the woman's comfort and is a more efficient use of sterile supplies.

Rapid infusion of fluids can be life-saving in the case of shock from reduced blood/fluid volume. Fluids can be infused at 500 cc to 1 litre in 15-20 minutes while the woman's condition is being monitored. Normally it takes 1 to 3 litres of IV fluids, infused at this rate, to stabilize the patient in shock. Once the woman's low fluid volume has been corrected, fluids should be infused at a maintenance rate of 1 litre in 6-8 hours. See Table 9.

To infuse fluids at an appropriate rate consider:

the amount of fluid to be given

the time period over which the fluid is given

the type of tubing and drop size. Each type of tubing has a slightly different drop size. For example, some tubing has 20 drops (gtt) per cc, while another type may have only 10 drops per cc.

Table 9 shows how many drops per minute must be given in order to give a certain amount of fluid over a fixed period of time. To use the table, you must know the number of drops per cc (that is, which type of tubing).

Table 9
IV Fluid Rates

Amount of Fluid	Time Period	Drops per cc (Type of Tubing)	Drops per Minute
1 litre	20 minutes	10	Too fast to count
1 litre	20 minutes	20	Too fast to count
1 litre	4 hours	10	40
1 litre	4 hours	20	80
1 litre	6 hours	10	28
1 litre	6 hours	20	56
1 litre	8 hours	10	20
1 litre	8 hours	20	40

In general, the formula to figure out any IV infusion rate is as follows:

$$\frac{Amount\ of\ fluid\ given\ (cc)}{Time\ for\ infusion\ to\ occur\ (minutes)}\ x\ No.\ of\ drops\ per\ cc = No.\ of\ drops\ per\ minute$$

In order to convert the time period from hours to minutes, multiply the number of hours by 60. This will give the number of minutes over which the IV fluids are to be given.

When the patient has recovered sufficiently to take fluids by mouth, the IV may be discontinued unless it is required for giving medicine. If the IV is ONLY being used to give medicines, a single litre should be infused over 10-12 hours.

It is important to monitor the amount of fluids given. As the patient recovers, take care not to overload her with fluid. Any evidence of swelling, shortness of breath, or puffiness may indicate fluid overload. If this happens, discontinue fluids. Diuretics may be necessary if fluid overload has caused pulmonary oedema.

7.4 BLOOD TRANSFUSION

Blood transfusions may be live-saving in cases of extreme blood loss and shock from abortion. Nevertheless, they carry risk and may do harm rather than good in certain cases. Therefore the decision to transfuse should be made very carefully. Facilities for blood replacement are essential at the first referral level and blood transfusions can be performed by any medical officer, medical assistant, clinical officer, professional midwife or laboratory worker with suitable training.

The serious risks associated with blood transfusion include the possibility of transmission of infectious agents [e.g., human immunodeficiency virus (HIV) and hepatitis viruses]; immune related problems (e.g., intravascular haemolysis); and circulatory overload. Moreover, it is

expensive and uses a scarce human resource. "The decision to transfuse blood or blood products must be based on a careful assessment which indicates that they are necessary for saving life or for preventing major morbidity. Responsibility for the decision to transfuse must rest ultimately with the attending physician, although this will often be made in consultation when specialist transfusion advice is available. Blood which has not been obtained from appropriately selected donors and/or which has not been appropriately screened for infectious agents should not be transfused, other than in the most exceptional life-threatening situations." (WHO, *Global Blood Safety Initiative: Guidelines for the Appropriate Use of Blood*, 1989).

Recommendations for use of blood transfusions in cases of haemorrhage and shock are outlined in *Essential Elements of Obstetric Care at First Referral Level* (WHO, 1991). Particularly relevant information from that reference includes:

> Blood transfusion is often indicated for volume replacement in the treatment of haemorrhage and shock. Whether or not blood transfusion is required for this purpose depends not only on the volume of blood lost, but also on the speed of the loss and the physical condition of the woman. Women in good physical condition can tolerate blood loss to a greater degree than women in poor health. For example, a loss of one litre may be tolerated quite well by a healthy woman, whereas a loss of as little as 200 ml of blood may easily be fatal to an anaemic woman.
>
> Replacement by blood transfusion is not necessary in every case of blood loss; plasma volume expanders, solutions of dried plasma and even physiological saline are useful alternatives. However, blood loss leads to depletion of iron stores, which are best replenished by total dose iron infusion within the first three days after such loss, and certainly before the patient leaves hospital."

Clinical guidelines specific to the use of blood transfusions and alternatives to their use in the treatment of haemorrhage are described in *Global Blood Safety Initiative: Guidelines for the Appropriate Use of Blood*. Regarding alternatives to blood use, that reference states:

> Blood transfusion should not be the first consideration during the management of patients with acute haemorrhage, because blood volume replacement is initially more urgent than red cell replacement. Accurate diagnosis, adequate oxygenation and volume replacement with plasma substitutes (crystalloids and colloids), and prompt and meticulous surgical care, may obviate the need for blood transfusion.
>
> The amount of blood lost and the patient's clinical condition, assessed by measuring the blood pressure, pulse rate, central venous pressure and urine flow, will determine the need for and urgency of blood volume replacement. Generally, a previously healthy adult can tolerate a loss of up to 20% of the circulating blood volume without transfusion. Volume replacement with plasma substitutes will be necessary for a loss of between 20% and 30%. Blood transfusion will be required, in addition, when the loss exceeds 30%, particularly in patients with massive haemorrhage (more than 50% of blood lost in less than three hours).
>
> Initial volume replacement (50 ml/kg or three times the estimated blood loss) should be with isotonic crystalloid solutions such as physiological saline (0.156 mol/L or 9 g/L). Dextrose solutions are not recommended.
>
> Synthetic colloids may be necessary for the management of continuing haemorrhage, particularly if there are signs of hypotensive shock. Gelatins may be used in doses up to 50 ml/kg, or hydroxyethyl starch or dextran 70 in doses up to 20 ml/kg, during the first 24 hours. Albumin or plasma protein fraction may also be used, but are more expensive.
>
> Plasma is not the first choice for volume replacement because of the risk of transmitting infection. Red cells are not indicated for volume replacement, but (as red cell concentrate or in whole blood) solely for improving oxygen delivery capacity.

Blood components may be required for restoration of haemostasis in patients who have massive haemorrhage.

For fuller information on use of blood transfusions see the following references:

World Health Organization, *Global Blood Safety Initiative: Guidelines for the Appropriate Use of Blood*, 1989;

World Health Organization, *Essential Elements of Obstetric Care at First Referral Level*, 1991.

7.5 ADMINISTRATION OF MEDICINES

Safety, need, and route of administration are important issues to consider when deciding when, what, and how to use medicines to treat a patient.

Before giving medicine it is important to always ask if the patient has ever had an allergic reaction to that medicine and choose a different medicine less likely to cause an allergic reaction if there has been an allergic reaction. It is important to NOT give oral medications to a patient in shock, as she may vomit and inhale the vomit.

The route of administration is an important decision for reasons of safety and for choosing the best possible way to treat the condition. The choice of routes -- IV (intravenous), IM (intramuscular) or oral (by mouth) -- must be made BEFORE choosing the specific medicines because not all medicines can be given by all 3 routes.

IV (INTRAVENOUS)

This route is preferred in the following situations: shock, any life-threatening complication that may urgently require surgery, any serious infection resulting from an incomplete abortion, including sepsis and septic shock.

IM (INTRAMUSCULAR)

This route is acceptable when IV is not available and if a required medicine can be given this way; some medicines are not effective when given IM.

ORAL (BY MOUTH)

Do NOT give any medicines by mouth to a woman in shock or if there is an intra-abdominal injury, uterine perforation, ectopic pregnancy, or other serious condition requiring immediate surgery. This route is acceptable ONLY in the following situations:

if, in cases of referral, the transport will take several hours, AND if there are NO IV or IM medicines available to administer before transfer, then oral antibiotics and pain medicines can be given to a woman with an intra-abdominal injury, uterine perforation, ectopic pregnancy, or other serious condition requiring surgery, as long as she is NOT in shock. Give just enough water to swallow the medicine.

if the patient is stable and able to take fluids by mouth.

7.6 ANTIBIOTICS

Antibiotics should be used whenever an infection is present. Antibiotics can be life-saving in cases of sepsis, septic shock, intra-abdominal injury and uterine perforation. When there are no complications, no signs of infection, and the woman is stable, antibiotics are not necessary.

It is very important to start antibiotics early whenever infection is suspected or present. Antibiotics should be started before surgery.

IV administration of antibiotics is preferred because it helps to speed delivery of the drug to the affected tissues. When IV fluids are not available, IM administration of the antibiotics is acceptable. Giving antibiotics by mouth is acceptable if IV or IM antibiotics are not available and the woman is not in shock, if the infection is minor, or to prevent an infection that has not yet developed.

In most cases, broad spectrum antibiotics effective against Gram-negative, Gram-positive, anaerobic organisms and chlamydia are preferable because identification of the particular pathogen is not usually possible and because multiple pathogens may be present. Antibiotics should be given in combination to achieve broadest coverage. The recommended antibiotics and their dosages are listed in Tables 10, 11, and 12 below. More than one choice of antibiotic combinations is listed, in order of preference. If a particular antibiotic is not available or the patient is allergic to it, then one of the other recommended combinations can be used.

Table 10
Antibiotic Therapy for Infected Abortion

Antibiotic	Dosage	Comments
Ampicillin	1 g IV every 4 hours or 500 mg oral every 6 hours	Good broad spectrum antibiotic, inexpensive
Benzylpenicillin	10 million units IV every 4 hours	Few serious side effects; effect limited to Gram (+) cocci and gonorrhoea (if not resistant)
Chloramphenicol	1g IV every 6 hours	Good aerobic and anaerobic coverage; effective against chlamydia. Serious side effects are associated with it: - anaemia and leucopenia (dose related) - aplastic anaemia (not dose related, rare); must be able to monitor blood count to watch for anaemia
Gentamicin	1.5 mg/Kg/dose IV or IM every 8 hours	Effective against Gram (-) organisms such as GI tract flora (e.g. E. coli)
Doxycycline or Tetracycline	100 mg IV every 12 hours	Adequate for both Gram (+) and Gram (-) organism most especially chlamydia; can replace or be used along with ampicillin; good in combination with metronidazole
Metronidazole	1g IV every 12 hours or 500 mg oral every 6 hours	Good Gram (-) and anaerobic coverage; can be used in combination with ampicillin, doxycycline, inexpensive, generally available; oral administration achieves serum levels equivalent to IV administration

Notes

1. Penicillin (or ampicillin), gentamicin, and metronidazole are most commonly used together as the broadest spectrum treatment of patients with severe infectious sepsis of a pelvic origin.

2. Chloramphenicol is quite often available when other drugs are not. It is effective in combination with penicillin or ampicillin.

3. Once started, intravenous therapy should be continued until the patient is afebrile at least 24 hours, preferable 48 hours. If there is no response in 48 hours, regimen should be changed.

4. When recovery is underway, intravenous therapy should be followed by oral medication. Generally tetracycline (500 mg by mouth 4 times daily) or doxycycline (100 mg by mouth 2 times daily) for 10-14 days is advisable. Allergic reactions to tetracycline are very rare. Some patients on tetracycline may develop a rash when their skin is exposed to the sun.

Table 11 **Inpatient Antibiotic Combination Regimens** **(in order of preference)**				
Penicillin or Ampicillin	with	Gentamicin	with	Metronidazole
Doxycycline	with	Metronidazole		
Penicillin	with	Chloramphenicol		

Table 12 **Outpatient Antibiotic Therapy**		
Antibiotic	**Oral Dose**	**Comments**
Ampicillin or Procaine Penicillin	3.5 g oral plus 1g Probenecid 4.8 million units IM plus 1g oral Probenecid	Coverage for gonorrhoea & general broad spectrum coverage Coverage for gonorrhoea and gram (+) cocci
PLUS one of these:		
Doxycycline or Tetracycline or Cotrimoxazole	100 mg oral twice daily for 10-14 days 500 mg oral 4 times daily for 10-14 days 2 tablets oral twice daily for 10 days	Good chlamydia coverage Good chlamydia coverage Good broad spectrum coverage available, inexpensive

7.7 PAIN CONTROL

Many women having abortion complications suffer pain and need prompt and effective medication for their pain. To select appropriate pain control, one must consider the conditions present, the timing and the route of administration, and the precautions for each type of pain control.

Assess the woman's condition before choosing and giving analgesics. These medications given before the examination can hide symptoms (pain, fever) that are essential to an accurate diagnosis. A patient in shock or requiring surgery should only receive IV or IM medicines.

Avoid over-sedation because it can cause the patient to be unable to answer questions well. In addition, over-sedation can hide symptoms that are essential to diagnosis. Any narcotic can depress breathing, which can be fatal, therefore, patients receiving narcotics must be under reasonably close observation so that slow or interrupted breathing will be noticed. This is particularly true of patients who are already sick and may be in early shock. It is essential to consider the transit time and transfer conditions for referral patients. Avoid the use of narcotics if the transfer will be without adequate medical supervision and ability to respond to respiratory depression. The dose should be selected to provide adequate pain control during transfer, yet not interfere with the woman being able to answer questions and be accurately diagnosed upon arrival at the referral centre.

Non-steroidal anti-inflammatory drugs and aspirin are often used to treat pain. Avoid using acetylsalicylic acid (aspirin) and the non-steroidal anti-inflammatory drugs until a diagnosis is certain because these drugs interfere with blood clotting ability. It is also important to consider the precautions on oral administration of medicines, and to measure and record the woman's temperature before giving these medicines. In uncomplicated cases that only require uterine evacuation, these medications may be used to relieve the pain of uterine cramping, without making the bleeding worse.

Pain medication is often accompanied by the use of a tranquillizer such as diazepam. While such combinations provide both sedation and analgesia (pain relief), they also may increase the risk of respiratory depression. Therefore, such combinations should be used carefully, especially if the patient will be transferred.

Recommended analgesics are:

morphine 10-15 mg IM or 1-5 mg IV
pethidine 50-100 mg IM
paracetamol with codeine 30 mg PO (by mouth)
paracetamol 500 mg PO (by mouth).

Staff should be trained in the use of analgesics and tranquilizers given IV and in resuscitation.

7.8 TETANUS

Women who present with complications of abortion may be at risk of developing tetanus. Few women are fully immunized against tetanus; in 1986 only 16% of the pregnant women in the developing world were adequately protected (WHO, *Prevention of Neonatal Tetanus Through Immunization*, 1986).

Any evidence that the woman has trauma to the genital tract which may have been contaminated with dirt or faeces or has received an abortion in which dirty instruments were used, requires careful attention to the issue of tetanus. The woman's report of interference with the pregnancy is important although she may not disclose such attempts.

A first step in preventing the onset of tetanus is careful cleansing of the wound, drainage of pus and meticulous removal of foreign material and dead or damaged tissue. This reduces the likelihood that C. Tetani will be able to proliferate (Mandell, G.L., et al., eds. *Principles and Practice of Infectious Diseases*, 1990). Starting antibiotics is also essential to reduce the toxin load; either penicillin or metronidazole can be used.

Specific immunoprophylaxis recommendations depend upon the patient's history of immunizations and the severity of the wound. The following are general guidelines:

> If the patient <u>has</u> received a full immunization series within the last 5-10 years and has a clean, minor wound, no specific immunoprophylaxis is needed. If the wound is tetanus-prone (i.e. contaminated with dirt or faeces, puncture wounds or burns), a tetanus vaccine booster should be given.
>
> If the patient has <u>not</u> received a full immunization series in the last 5-10 years or is unsure of her immunization status, tetanus vaccine and tetanus antitoxin should be given. When vaccine and antitoxin are given at the same time, it is important to use separate syringes and separate sites of administration.

7.9 DIURETICS

Give diuretics such as furosemide ONLY if there is evidence of heart failure and pulmonary oedema, ONLY if administered by an experienced provider, and ONLY with very careful monitoring of the patient's condition. The patient must have a catheter in place, hourly urine output must be measured and recorded, and care must be taken to balance the use of diuretics with continued administration of IV fluids. The diagnosis can be confirmed with a chest x-ray, and progress can be confirmed with further chest x-rays.

ANNEX 1

EQUIPMENT AND FACILITIES FOR ABORTION CARE

PART A: COMMUNITY LEVEL

Staff May Include	Activities	Facilities	Equipment/Drug
Community health workers with basic health training including: Traditional birth attendants (TBAs) Traditional healers Community residents	Recognition of abortion and complications Timely referral to the formal health care system Health education regarding unsafe abortion Family planning information, education and services	There are usually no formal health care facilities at this level.	No drugs or equipment are required for these activities. A few drugs (e.g. antimalarials) may be available. Good communication channels with the primary health care level are essential. Health education materials (handouts, charts, etc.) are helpful. Counselling materials (leaflets, posters, etc.) are helpful. Some contraceptives (e.g., condoms, oral contraceptives, spermicides) can be provided.

Remarks: The level of responsibility varies from country to country dependent on the primary health care programme. Good communication between the community health worker and the primary level is essential.

PART B: PRIMARY LEVEL

Staff May Include	Activities	Facilities	Equipment/Drugs
Auxiliary health workers including: • Health assistants • Aides • Dispensers/dressers Nurses Some primary level facilities may have the following staff available: • Trained midwives • Medical residents • General practitioners	All listed for the community level plus: Simple physical and pelvic exam Diagnosis of stages of abortion Resuscitation/preparation for treatment or transfer (if needed) including: • Management of the airway and respiration • Control of bleeding • Pain control Haematocrit/haemoglobin test Referral Post abortion family planning counselling and services	Outpatient treatment room or area Side laboratory Family planning area or clinic	Examination couches Gloves/protective clothing Light sources Vaginal specula Soap/disinfectants Standard emergency resuscitation kit (see Annex 3) Transport vehicle or standing arrangements for transport Essential drugs (see Annex 4) Side laboratory equipment (see Annex 9) Wide range of contraceptives including IUD insertion kit
	If trained staff and appropriate equipment are available, the following additional activities can be performed at the primary level: • Initiation of essential treatments, including antibiotic therapy, intravenous fluid replacement, and oxytocics • Uterine evacuation (first trimester) • Pain control including paracervical block, simple analgesia and sedation	Separate room or private corner of treatment room	Broad spectrum antibiotics Uterine evacuation kits, vacuum aspiration or D&C (see Annexes 5,6 and 7) Sterilization equipment and/or solutions Anaesthetic agent for local anaesthesia Sedatives Analgesics Needles and syringes

Remarks: The activities are based on the skills available. Existing facilities are usually adequate. Rearrangement of facilities and updating of equipment may be all that is required to improve the abortion care provided. Some facilities may already have uterine evacuation equipment on hand but for some, purchase may be required. Protocols and standing arrangements for transport to higher levels are necessary. If an ambulance is available, it must be kept in serviceable state. If no ambulance is available, standing arrangements should be made with other sectors. It is important to have a reliable system of communication with the other levels of care.

PART C: FIRST REFERRAL LEVEL

	Activities	**Facilities**	**Equipment/Drug**
Staff May Include All listed for the primary level plus: Trained midwives Medical residents General practitioners Specialists including a physician with training in Ob/Gyn may sometimes be available	All activities listed for the primary level plus: Uterine evacuation for 1st and 2nd trimester Treatment of most abortion complications Blood cross-match and transfusion Local and general anaesthesia Laparotomy and indicated surgery, including surgery for ectopic pregnancy if skilled staff are available Diagnosis of pregnancy Diagnosis and referral of severe complications such as septicaemia, peritonitis or renal failure	Treatment room in outpatient area or gynaecology ward and recovery area Laboratory Surgical theatre	Sufficient quantity of uterine evacuation equipment for projected caseload (see Annexes 5, 6 and 7) Essential drugs for the first referral level (see Annex 4) Laboratory equipment and reagents for microscopy, culture and basic haematology (see Annex 9) Blood or blood substitutes Blood collection, transfusion, and storage equipment (see Annex 9) Anaesthetic equipment Standard laparotomy set (see Annex 8) Pregnancy tests Ambulance Full range of contraceptives

Remarks: Most facilities and equipment needed for treatment of abortion complications will already be present in a district hospital for general emergencies and essential obstetric functions. Expansion and/or additional equipment may be necessary. Supply logistics and maintenance procedures may need to be strengthened. A serviceable ambulance should be on hand or other arrangements made. Radio or telephone contact with the tertiary and primary levels is important as is coordination and collaboration of MCH activities at the community level.

PART D: SECONDARY AND TERTIARY LEVEL

Staff May Include	Activities	Facilities	Equipment/Drug
All of the staff listed for the first referral level plus:	All of the activities listed for the first referral level plus:	Treatment room in outpatient or inpatient gynaecological areas	All of the equipment and drugs listed for the first referral level plus:
Specialists in Ob/Gyn and other allied specialties	Uterine evacuation for all abortions	24 hour access to surgical theatre (may include a specific gynaecological emergency theatre)	More elaborate anaesthetic and intensive care equipment
	Treatment of severe complications (for example, bowel injury, tetanus, renal failure, gas gangrene, severe sepsis, septic shock, coagulopathy) including: • Diagnostic X ray • Ultrasonography • Laparoscopy • Laparotomy including hysterectomy	More complete laboratory facilities Intensive care facilities Shielded X-ray room Blood bank	X-ray equipment Sonography equipment Laparoscope

Remarks: Most of the facilities and equipment are present. Rearrangement of patient flow or expansion of facilities may improve services. Additional equipment is likely to include vacuum aspiration equipment.

Source: WHO, *Complications of Abortion: Technical and Managerial Guidelines for Prevention and Treatment*

ANNEX 2

EXAMPLE OF A REFERRAL FORM FOR COMPLICATIONS OF ABORTION CASES

The attending health worker should complete this form for any patient who is referred for treatment of abortion complications. The form should accompany the patient to the referral centre.

Patient Information

Name:
Date of Admission: Time of Admission:
Diagnosis:

History

Describe the patient's relevant history

Patient's Clinical Condition

Describe the patient's condition (vital signs, physical/pelvic exam findings)

Initial Treatment

Describe treatment (fluids, drugs given, action to control bleeding, any other medical steps taken)

Assessment of Patient's Condition/Other Information

_____ _____
Health worker reporting (print name) Location (hospital, clinic)

_____ Date: _____
Signature

ANNEX 3

EMERGENCY RESUSCITATION MATERIALS

Elements of Emergency Resuscitation	Materials
Management of the airway and respiration	Ambu bag Oral airway O_2 Cylinder Suction machine
Control of bleeding/haemorrhage	Oxytocic drugs (ergometrine, oxytocin)
Intravenous fluid replacement	IV fluids IV setup
Control of pain	Drugs and instruments to provide analgesia and anaesthesia

Source: WHO, *Complications of Abortion: Technical and Managerial Guidelines for Prevention and Treatment*

ANNEX 4

ESSENTIAL DRUGS FOR EMERGENCY ABORTION CARE

A. Essential Drugs for First Referral Level

Anaesthetics - General, oxygen, muscle relaxants and preoperative medication
Atropine
Diazepam
Ether
Nitrous oxide
Oxygen
Suxamethonium
Thiopental

Anaesthetics -- Local*
Lidocaine

Analgesics*
Acetylsalicylic acid
Pethidine (or suitable substitute)

Anti-infective/antibiotics
Ampicillin
Benzylpenicillin
Procaine benzylpenicillin
Chloramphenicol
Gentamicia
Metronidazole
Sulfamethoxazole-trimethoprim
Tetracycline

Blood products
Dried human plasma

Anticoagulant and antidote
Heparin
Protamine sulfate (as antidote to heparin)

Diuretics
Furosemide

Skin Disinfectants*[1]
Ethanol
2-propanol
Polyvidone iodine

Sera, immunoglobulins and vaccine
Anti-D immunoglobulin (human)
Tetanus antitoxin (antitetanus immunoglobulin human)
Tetanus toxoid

Intravenous solutions*
Water for injections
Compound solution of Sodium lactate (commonly known as Ringer's)
Glucose 5%, 50%
Glucose with sodium chloride
Potassium chloride
Sodium chloride

Oxytocics*[2]
Ergometrine injection
Ergometrine tablets
Oxytocin injection

B. Drugs for Emergency Abortion Care at the Primary Level

The drugs available at primary level facilities vary from location to location. Nevertheless, the drugs marked with * above are useful in expanding the care available at that level. It is important that staff are trained in their use.

[1] Drugs used for skin disinfecting taken from WHO, *Guidelines on Sterilization and Disinfection Methods Effective Against Human Immunodeficiency Virus (HIV)*, 2nd ed., 1989.

[2] Oxytocic drugs, particularly ergometrine and methylergometrice, are sensive to heat and light and should be stored in cool, dark conditions. Ergometrine and methylergometrine should be rejected if they are not clear and colourless.

* Useful at the primary level

Adapted from WHO, *Essential Elements of Obstetric Care at First Referral Level*, 1991

ANNEX 5

SUPPLIES FOR SURGICAL UTERINE EVACUATION PROCEDURES

A. Basic supplies

IV equipment and fluids (sodium lactate, glucose, saline)
Syringes--5, 10-20 ml

Needles:

22 gauge 3 inch spinal (for paracervical block)
25 gauge 1 inch standard (for intracervical block)
21 gauge for drug administration

Sterile gloves, sizes 5 to 10
Cotton balls or gauze sponges
Antiseptic solutions: ethanol, 2-propanol, polyvidone iodine or substitutes
Haemostatic chemicals: Silver nitrate sticks, Monsels solution
Long needle holder

B. Additional supplies for vacuum aspiration

Cannulae:

flexible: 5, 6, 7, 8, 9, 10, 12 mm
curved rigid: 7, 8, 9, 10, 11, 12, 14 mm
straight rigid: 7, 8, 9, 10, 11, 12 mm

Silicone lubricant

Adapted from WHO, *Induced Abortion: Guidelines for the Provision of Care and Services*, 1979

ANNEX 6

INSTRUMENTS AND EQUIPMENT FOR FIRST TRIMESTER UTERINE EVACUATION

A. Basic Uterine Evacuation

Tenaculum
Sponge (ring) forceps or uterine packing forceps
Malleable metal sound
Pratt or Denniston dilators: sizes 13 to 27 French
Sharp curette: size 0 or 00
Medium speculum, self retaining
50 ml container for local anaesthetic
500 ml container for antiseptic solution
Plastic strainer
Clear glass dish for tissue inspection
Long dressing forceps
Container for cleansing solution
Single tooth tenaculum forceps

B. Vacuum Aspiration with Electric Pump

Basic uterine evacuation instruments plus:
Vacuum pump with extra glass bottles
Connecting tubing
Cannulae (any of the following):
- flexible: 5, 6, 7, 8, 9, 10, 12 mm
- curved rigid: 7, 8, 9, 10, 11, 12, 14 mm
- straight rigid: 7, 8, 9, 10, 11, 12 mm

C. Manual Vacuum Aspiration

Basic uterine evacuation instruments plus:
Vacuum syringes (single or double valve)
Adapters
Flexible cannulae, size 4 to 12 mm

D. "Ten Week Plus"

Basic uterine evacuation instruments plus:
Pratt of Denniston dilators: sizes 29 to 43
Curette: size 1 or 2

E. Additional--Should be available wherever uterine evacuation is performed but not necessarily present on every tray

Special specula:
- Small Pederson type
- Large Graves type
- Sims

Uterine sound
Large (sharp) curette
Extra dilator packs
Extra cotton balls and/or 2" gauze sponges
Needle holder
Tissue forceps

Adapted from WHO, *Induced Abortion: Guidelines for the Provision of Care and Services*, 1979

ANNEX 7

INSTRUMENTS AND EQUIPMENT FOR SECOND TRIMESTER UTERINE EVACUATION

A. Instruments for each second trimester abortion tray:

Open-sided vaginal speculum
Atraumatic tenaculum forceps, 9 " angled
Sponge forceps
Sopher forceps, large, 14 mm jaws
Long dressing forceps
Container for cleansing solution
Single tooth tenaculum forceps
1 large and 1 smaller curette, preferably blunt
Instrument tray for instrument storage and tissue collection
Container (500 ml) for prepping solution
Gauze sponges 4x4"
Cotton balls

B. Equipment for intravenous infusion of oxytocic drugs

Sets for intravenous infusion, including needles
IV fluids

C. Additional--Should be available wherever second trimester uterine evacuation is performed but not necessarily present on every tray

Vaginal retractors, 1 pair (Medium)
Sponge forceps, 9 1/2" curved
Pratt dilators, sizes 37/39, 41/43, 45/47
Pratt dilators, full set of largest sizes (to 75)
Needle holder, long
Tissue forceps 10"
Scissors, large, curved
Container (50 ml) for local anaesthetic
Chloroprocaine or Lidocaine 1% - 15 ml
Syringe, 10 ml with control grip for paracervical block
Needle, 1-1/2" 25 gauge or 22 gauge spinal

Adapted from WHO, *Induced Abortion: Guidelines for the Provision of Care and Services*, 1979

ANNEX 8

INSTRUMENTS AND SUPPLIES FOR LAPAROTOMY

Laparotomy

Curved dissecting scissors, 1 pair
Scalpel handle and blade, 1
Short dissecting scissors, 1 pair
Long dissecting scissors, 1 pair
Stitch scissors, 1 pair
Small, curved artery forceps, 6 pairs
Small, straight artery forceps, 6 pairs
Large, curved artery forceps, 6 pairs
Small, straight artery forceps, 6 pairs
Needle holder, long, 1
Needle holder, short, 1
Retractors (Langenbeck), medium, 1; narrow 1
Retractors (Deaver), medium, 1; narrow 1
Self-retaining retractor, 1
Dissecting forceps, toothed, 1 pair
Long dissecting forceps, non-toothed, 1 pair
Tissue forceps (Allis), 2 pairs
Tissue forceps (Duval), 2 pairs
Tissue forceps (Babcock), 2 pairs
Sponge forceps, 4 pairs
Malleable copper retractors (spatulae), 2
Occlusion clamps, straight, 2; curved 2
Crushing clamps, large, 2; small 2
Syringe, 10 ml with needle, 1
Syringe, 20 ml with needle, 1
Sutures, No. 1, 0, and 2/0 chromic catgut and 2/0 plain catgut, ties and with needles
Sutures, No. 1, 0, 2/0, and 3/0 thread, ties and with needles
Sutures, No. 1, 0, and 2/0 nylon, ties and with needles
Suction nozzle, 1
Diathermy electrode, 1
Flexible probe, with round point, 1
Grooved director, 1
Nasogastric tube, 1
Towel clips, 6
Stainless steel bowls, 2
Kidney dishes, 2
Gallipots, 2
Linen tape
Gauze swabs
Abdominal packs, 5
Dissecting gauze rolls, 10
Antiseptic solution
Adhesive tape
Tubing for tension sutures
Drainage tubes
Safety pin, 1
Colostomy bags (optional)
Sterile drapes
Sterile gloves, at least 3 pairs

Adapted from WHO, *Surgery at the District Hospital, Obstetrics, Gynaecology, Orthopaedics, and Traumatology*

ANNEX 9

LABORATORY AND BLOOD MATERIALS

A. Side Laboratory

TEST	MATERIALS
Haematocrit	Microhaematocrit centrifuge Scale for reading haematocrit results Heparinized capillary tubes 75 mm x 1.5 mm Spirit lamp Blood lancets Ethyl alcohol
Haemoglobin	Haemoglobinometer Blood lancets

B. Essential Materials for the Provision of Donor Blood for Transfusion

Blood cross-match	Patient's serum Patient's red cells Donor red cells from pilot bottle 8.5 g/l sodium chloride solution 20% bovine albumin 37EC water bath or incubator Centrifuge Pipettes Test-tubes - small and medium
Collection of blood	Healthy adults aged between 18 and 50 years Haemoglobin level above 11 g/dl Pregnant women are not to donate blood Blood donation by an individual can take place at six month intervals.
Collection and storage of blood	Cotton wool and ethyl alcohol Sphygmomanometer cuff Airway needle for collecting blood Blood collecting set containing 120 ml of acid-citrate glucose solution An object for donor to squeeze Artery forceps Pair of scissors Adhesive tapes Pilot bottle containing 1 ml acid-citrate glucose solution attached to the collecting bottles Refrigerator temperature 4EC to 6EC) for storage of donor blood. A domestic refrigerator operated either on gas or electricity can also be used, but the refrigerator must not be opened too often. A refrigerator which opens at the top is preferred to a cabinet refrigerator. (Note: A kerosene-operated refrigerator is not suitable for blood storage)

Adapted from WHO, *Essential Elements of Obstetric Care at First Referral Level*, 1991

ANNEX 10

MANUFACTURERS, SUPPLIERS AND SOURCES OF PROCUREMENT OF EMERGENCY GYNAECOLOGIC EQUIPMENT

A. Manufacturers and Suppliers of Emergency Gynaecologic Equipment

Manual Vacuum Aspiration Kits and Flexible Karman Cannulae:

IPAS
303 East Main Street, P.O. Box 100
Carrboro, North Carolina 27510
USA
Telephone: (919) 967 7052
Telefax: (919) 929 0258
Telex: 3799366 IPAS

Jan Mangal Sanstha
816, Maker Chambers V
Nariman Point
Bombay 400 021
INDIA
Telephone: 224939
Cable: GEMINIGLO

Electric Vacuum Aspiration Pumps and Accessories (flexible & rigid cannulae):

Medela AG Medical Equipment
P.O.Box 140, Lattichstrasse 4
CH 6340 Baar
SWITZERLAND
Telephone: (27) 311616
Telefax: (27) 315021

Lameris Instrumenten BV
Bilstraat 449 3572
AW Utrechte
NETHERLANDS

Cabot Medical Corporation
2021 Cabot Boulevard West
Langehorne, Pennsylvania 19047
USA
Telephone: (215) 752 8300
Telefax: (215) 750 0161
Telex: 510 667 2280 KLI LAHN

Laboratoires Luneau
B.P. 252
28005 Chartres
FRANCE
Telephone: (37) 25 25 25
Export Department: (37) 25 20 20
Telefax: (37) 25 75 99
Telex: 760 637 F

Berkeley Medevices, Inc.
907 Camelia Street
Berkeley, California 94710
USA
Telephone: (415) 526 4046
Telefax: (415) 526 0149

Stern Industries
P.O. Box 407
Dayton, New Jersey 08810
USA
Telephone: (609) 655 7500
Telefax: (609) 655 4499

Nouvag AG
Rosengartenstr. 15
CH - 9400 Rorschach
SWITZERLAND
Telephone: (71) 424 433
Telefax: (71) 424 402
Telex: 71484

Atmos (endometrial aspirators)
Postfach 1160
D - 7852 Lenzkirch
GERMANY
Telephone: (7653) 6890
Telefax: (7653) 68989

Pan Gas (endometrial aspirators)
Postfach
6002 Lucern
SWITZERLAND
Telephone: (41) 429 529
Telefax: (41) 418 997
Telex: 862462

Wisap Gesellschaft (endometrial aspirators)
Rudolf Diesel Ring 20
D - 8029 Sauerlach
GERMANY
Telephone: (81) 041 067
Telefax: (81) 049 664
Telex: 528197

Cannulae only:

Rocket USA
29 Knight Street
Norwalk, Connecticut 06851
USA
Telephone: (203) 838 3777
Orders: (800) 424 1234
Telefax: (203) 838 2189

Cellpack AG
CH - 5610 Wohlen
SWITZERLAND
Telephone: (57) 211 111
Telefax: (57) 122 6890
Telex: 52699

Downs Braintree Ltd.
Springwood Industrial Estate
Rayne Road
Braintree Essex
UNITED KINGDOM
Telephone: (376) 20960
Telefax: (376) 48394

Porges S.A.
9-15 Rue Leon Blun Z.I.
91120 Palaiseau
FRANCE
Telephone: 1 6920 6059
Telex: 604560

B. Sources of Procurement of Emergency Gynaecologic Equipment

Emergency gynaecologic equipment may also be available through international procurement and distribution systems, including the following:

Family Planning International Assistance (FPIA)
810 Seventh Avenue
New York, NY 10019
USA
Telephone: (212) 541 7800
Fax: (212) 247 6274

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ANNEX 11

MANUAL VACUUM ASPIRATION (MVA)

Preparing Cannulae and Vacuum Syringes

Instruments need to be sterile when they are inserted through the cervix. The parts of dilators, cannulae, or uterine sounds that will enter the uterus should not touch objects or surfaces that are not sterile, including the vaginal walls, before being inserted.

1) **Have ready several cannulae** of approximately the size you will need, based on the indication for use and the uterine size. Each cannula is sterilized in the wrapper; check to make sure the wrapper is intact.

   For **Treatment of Incomplete Abortion,** the largest size cannula which can be readily admitted by the cervix, and is adequate for evacuation, should be used. It is important to use a cannula that fits snugly through the cervix in order to transfer the vacuum without leaks from the syringe to the uterus. It is advisable to have cannulae of several sizes on hand. The cannula sizes listed here are guidelines; the actual size needed may vary.

Approximate Uterine Size (weeks LMP)	Approximate Cannula Size
5-7 LMP	5 mm
7-9 LMP	6 mm
9-12 LMP	7-12 mm

2) **Select syringes, cannulae, and adapters** (if needed), referring to the following chart. It may be helpful to prepare two syringes before beginning a procedure because the quantity of aspirate is difficult to predict. Note that the coloured dots on the cannulae match the colour of the appropriate adapter.

Cannula Size	Adapter Colour	Syringe Type
4, 5, 6 mm	No adapter needed	Single
4, 5, 6 mm	Blue	Double
7 mm	Tan	Double
8 mm	Ivory	Double
9 mm	Dark brown	Double
10 mm	Dark green	Double
12 mm	No adapter needed	Double

3) **Inspect the syringes.** A syringe must be able to hold a vacuum in order to be effective. Discard syringes with any visible cracks or defects, or ones that do not hold a vacuum.

4) **Attach the adapter** (if required) to the end of the syringe or cannula. The cannula will be attached to the syringe via the adapter later, after the tip of the cannula has been inserted through the cervix.

5) **Check the plunger and valve(s).** The plunger should be positioned all the way into the barrel and the pinch valve(s) should be open, with the valve button(s) out.

6) **Close the pinch valve(s)** by pushing the button(s) down and forward toward the syringe tip. You will hear and feel the valve(s) lock into place.

7) **Prepare the syringe** by grasping the barrel and pulling back on the plunger until the arms of the plunger snap outward at the end of the syringe barrel, holding the plunger in place. Check the stable positioning of the plunger arms. Both plunger arms must be fully extended to the sides and secured over the edge of the barrel. With the arms snapped in this position, the plunger will not move forward and the vacuum is maintained.

   Incorrect positioning of the arms could allow them to slip back inside the barrel, possibly injecting the contents of the syringe or air into the uterus. *Never grasp the syringe by the plunger arms.*

8) **Check the syringe for vacuum tightness before use.** Leave the syringe for several minutes with the vacuum established. Open the pinch valve(s) by releasing the button(s). You should hear a rush of air into the syringe, indicating that there was a vacuum in the syringe. If you do not hear a rush of air, lubricate the o-ring with silicone and test the vacuum again. Replace the o-ring or use another syringe if the syringe still will not hold a vacuum.

9) **Repeat steps 5 through 8** to reestablish the vacuum at the time of the procedure.

The Manual Vacuum Aspiration Procedure

Observe a No-Touch Technique throughout the procedure: any instruments, or parts of instruments, that enter the uterus need to be sterile. Do not contaminate the cannula. Be careful not to allow the tip to touch objects or surfaces before being introduced through the cervical canal.

1) **Assess the woman's need for pain control medication and administer as needed.** Generally, paracervical block, analgesia, and/or mild sedation are sufficient for the patient's comfort during the procedure. Precautions to paracervical block include screening for allergy to the local anaesthetic, and taking care not to inject into a blood vessel. It is preferable that the patient be awake during the procedure to alert the clinician to any sudden increase in pain (indicating possible perforation) and to avoid a long recovery time; heavy sedation or general anaesthesia is rarely necessary and carries additional risk.

2) **Assess the size and position of the uterus** by means of bimanual exam. Be alert for any signs of infection, and treat promptly according to standard protocols.

3) **Insert the speculum** to expose the cervix.

4) **Inspect the cervix** for dilation and signs of infection, trauma, or laceration.

5) **Swab the cervical and vaginal areas** with an antiseptic solution. The perineum should be cleansed but extensive preparation of the perineal area is not necessary.

6) **Hold the cervix steady** with a tenaculum and gently apply traction to straighten the cervical canal.

Administer paracervical block, if needed. The cannula can be used for sounding by counting the dots visible on the cannula when it is inserted to the fundus. The dot nearest the tip of the cannula is 6 cm from the tip, and the other dots are at 1 cm intervals.

7) **Dilate the cervix (as required)**. Cervical dilation is necessary when the cervical opening's size will not allow passage of a cannula appropriate to the uterine size. Cervical dilation is not usually required for endometrial biopsy. When required, dilation should be done gently with mechanical or osmotic dilators or with cannulae of increasing size, taking care not to traumatize the cervix.

8) **Introduce the cannula** gently through the cervix into the uterine cavity just past the internal os. Rotating the cannula with gentle pressure often helps ease insertion.

9) **Attach the prepared syringe** to the cannula, holding the end of the cannula in one hand and the syringe in the other. Make sure that the cannula does not move forward into the uterus as you attach the syringe.

10) **Push the cannula slowly into the uterine cavity** until it touches the fundus. Then withdraw the cannula slightly.

11) **Release the pinch valve(s)** on the syringe to transfer the vacuum through the cannula to the uterus. Bloody tissue and bubbles should begin to flow through the cannula into the syringe.

12) **Evacuate the contents of the uterus** by moving the cannula gently and slowly back and forth within the uterine cavity, rotating the syringe as you do so.

It is important not to withdraw the cannula apertures beyond the cervical os, as this will cause the vacuum to be lost.

While the vacuum is established and the cannula is in the uterus, **never grasp the syringe by the plunger arms** to ensure that the plunger arms do not move from their locked position on the rim of the barrel. Accidentally allowing the plunger to slip back into the syringe may eject tissue or air back into the uterus.

13) **Check for signs of completion**. The procedure may be much quicker than dilation and curettage and is complete when the following conditions occur:

Red or pink foam and no more tissue is seen in the cannula, a gritty sensation is felt as the cannula passes over the surface of the evacuated uterus, and the uterus contracts around (grips) the cannula.

14) **Detach syringe and remove all instruments** (cannula, tenaculum, and speculum).
15) **Inspect aspirated tissue**.

Inspect the aspirated tissue for quantity and for presence of products of conception to judge its correspondence to the duration of gestation and to assure complete evacuation of an intrauterine pregnancy. Products of conception include villi, fetal membranes, or, after 9 weeks LMP, fetal parts. Absence of villi may signal an ectopic pregnancy. Strain and rinse the tissue to remove excess blood and clots and then place it in a clear container of water or weak acetic acid (vinegar) to examine visually. Samples of tissue may also be sent to the pathology lab as indicated. Follow standard infection control protocols for handling samples.

16) **Monitor patient's recovery**.

a) Take vital signs while the patient is still on the treatment table.

b) Allow the patient to rest comfortably where her recovery can be monitored.

c) Check bleeding at least once before discharge. Check to see that cramping has subsided. Prolonged cramping is not considered normal.

d) If the woman is Rh negative, administer Rh immune globulin before discharge.

The patient may be discharged as soon as she is stable and ambulatory.

17) **Provide post-operative counselling and information to patient**, including:

Signs of a normal recovery:

- some uterine cramping over the next few days which may be eased by mild analgesics

- a normal menstrual period should begin within 4-8 weeks

Instructions for taking any prescribed medications

Information about personal hygiene and resumption of sexual activity, resumption of menses, and family planning:

- patient should not have intercourse or put anything into the vagina until a few days after bleeding stops (no sex, no douching, no tampons)

- patient's fertility will return soon after the procedure, so she needs contraceptive counselling and referral if another pregnancy is not desired at this time

Schedule follow-up visit as required

Signs and symptoms requiring immediate emergency attention:

- prolonged bleeding (more than two weeks)

- bleeding more than normal menstrual bleeding

- severe or increased pain

- fever, chills, or malaise

- syncopy (fainting)

Sources of emergency care (if it is needed)

ANNEX 12

DILATION AND CURETTAGE (D&C)

Assessment

Carry out a general examination to check for anaemia and other diseases, followed by a detailed clinical (including vaginal) examination. Assess the size and position of the uterus and note the condition of the fornices. Check for ectopic or intrauterine pregnancy. Infection is a contraindication to dilatation and curettage, except in cases of septic incomplete abortion (when the patient must also be given antibiotics).

Procedure

1. Give the patient a **general anaesthetic** or local anaesthesia (paracervical block).

2. Place her in the lithotomy position and clean and drape the area. Introduce a vaginal speculum, identify the anterior lip of the cervix, take hold of the lip with vulsellum forceps.

3. **Sound the uterus** by passing a uterine sound to assess the length and direction of the uterus. Then progressively **dilate the cervix** with dilators.

4. Introduce a small sponge holder (or polyp forceps) to **check for polyps.** Then **gently curette each wall and angle** of the uterus. All material obtained should be sent for histopathological examination, if required for diagnosis.

5. Apply a vaginal or gauze pad.

Complications

Possible complications include perforation of the uterus, injury to the bladder or bowel, cervical tear, extension of pre-existing infection, and rarely amenorrhoea due to tra