

ANIMAL HEALTH CARE SERVICE

Level -I

Learning Guide #42

Unit of Competence Support Health Care Provision for Pregnant, Parturient and Lactating Animals

Module Title: Supporting Health Care Provision for Pregnant, Parturient and Lactating Animals

LG Code: AGR AHC1 M11LO4LG42

LO1 Provide care for post partum animals



Instruction Sheet

Learning Guide #-

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics –

- Monitoring post-birthing health and bonding of dam and newborn and reporting any abnormality to the supervisor
- Providing clean and comfortable area for lactating animals as directed by the supervisor.
- Providing appropriate and sufficient food and clean water for lactating animal
- Carrying out milking in a clean manner following the organizational procedure to minimize contamination and reduce incidence of mastitis.
- Observing the condition and health status of lactating animals and recording and reporting any abnormalities to the supervisor

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, **you will be able to –**

- Post-birthing health and bonding of dam and newborn are monitored and any abnormality reported to the supervisor
- Clean and comfortable area is provided for lactating animals as directed by the supervisor.
- Appropriate and sufficient food and clean water are provided for lactating animal as instructed
- Milking is carried out in a clean manner following the organizational procedure to minimize contamination and reduce incidence of mastitis.
- The condition and health status of lactating animals are observed and any abnormalities are recorded and reported to the supervisor

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 3 to 20.
3. Read the information written in the “Information Sheets 1”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.

4. Accomplish the “Self-check 1” **in page -**.
5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check 1).
6. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #1.
7. Submit your accomplished Self-check. This will form part of your training portfolio.

Information
Sheet-1

Monitoring post-birthing health and bonding of dam and newborn and reporting any abnormality to the supervisor

1.1 Monitoring post-birthing health

1.1.2 Bonding of dam and newborn a

1. Resuscitation of calf done by:-

1. *Clearing the airway:* to remove fluid remained in the lungs and mucus that might have been inhaled during birth by encouraging to drain out in the early post parturient phase. The calf can be held up by its back legs and swung backwards and forwards, although this may be difficult with a heavy calf. Alternatively, the calf may be briefly suspended by its legs from a convenient beam or hung over a door



2. *Fetal heart beat*: If there are no vital signs, an attempt to establish a heart beat is unlikely to be successful. However, external cardiac massage or an intracardiac injection of adrenaline (epinephrine) may be tried.

3. *Establishment of respiration when the heart is beating*: The calf should normally take its first breath within 30 seconds of delivery. In the healthy calf, further gasping movements are made before shallow respiratory movements are made. *Oxygen therapy* can be supplied by face mask or endotracheal tube. *Inflation of the fetal lungs using an esophageal tube*: in the absence of an endotracheal tube, or if attempts to intubate the calf fail, this technique can be tried. Two people are required to use the technique effectively. A small (foal size) stomach tube is passed into the calf's esophagus. Applying positive pressure through this will dilate the calf's abomasum but not inflate its lungs. The esophagus is obstructed distal to the end of the tube by compressing it between the finger and thumb. The calf's mouth is held tightly closed and its nostrils are covered.

4. *Artificial respiration*: If spontaneous breathing still fails to occur an attempt may be made, if equipment is available, to intubate the calf and provide positive-pressure ventilation. Mouth-to-mouth respiration should be avoided - it is ineffective and carries zoonotic risks.

4. *Breathing difficulties*: hyperpnea or dyspnea may indicate dysmaturity of the fetal lungs or possibly 8. a severe, life-threatening cardiac anomaly.

Signs of fetal acidosis: signs of immediate postpartum acidosis in the calf include:

- i superficial mainly abdominal breathing
- ii low fetal heart rate
- iii prolonged jugular filling time
- iv poor body muscle tone

After delivery of the calf the uterus must always be checked for evidence of another fetus. This process is repeated after each calf until the obstetrician is sure that the uterus is empty. The birth canal is checked for signs of damage and hemorrhage. Uterine involution usually commences immediately after the birth of the calf. If uterine tone feels low (the uterine walls are flabby) 20IU of oxytocin should be given by intramuscular injection. The udder is checked again for signs of mastitis.

2.1.2 Further care of the Cow and Calf

It is important that effective bonding between the calf and its mother develops. This is more likely to happen if the cow and calf are left quietly alone but care must be taken to ensure that the calf is not damaged if the cow or heifer is aggressive towards it.

The calf should be encouraged to suck colostrum within 6 hours of birth. The navel should be dipped in iodine or sprayed with antibiotic aerosol as soon after birth as possible. The navel should be checked at intervals after delivery to ensure that delayed hemorrhage from the umbilical vessels is not occurring. There should be negligible blood loss from the navel of the normal calf. Vessels from which blood loss is occurring should be ligated. In neglected cases where severe blood loss has occurred, a blood transfusion may be required. The cow should be monitored carefully after calving for evidence of any of the post parturient problems that are discussed in next module.

2.2 Monitoring post-birthing health abnormalities.

2.2.1 Retention of fetal membrane

The fetal membranes are normally expelled during the third stage of labor. The membranes are said to be retained whenever the third stage of labor is prolonged beyond its normal duration. Retention of the membranes occurs in all species. It is particularly common in the dairy cow but the consequences of retention may be most serious in the mare. In the polytocous species such as the sow, bitch, and queen retention of the membranes may be associated with retention of one or more fetuses.

The causes of membrane retention are complex. Three main factors are involved:

- 1. Insufficient expulsive efforts by the myometrium.**
- 2. Failure of the placenta to separate from the endometrium. This may be caused by inflammatory changes, placental immaturity, hormone imbalances, a neutropenia, a lack of polymorph migration to the sites of attachment, and possibly immune deficiencies.**
- 3. Mechanical obstruction - including partial closure of the cervix.**

Clinical signs The membranes are normally visible hanging from the vulva. They become progressively more decomposed, have a fetid odor, and are often contaminated with bedding and feces. Occasionally the membranes are not visible - possibly more frequently after twin calving - and are detected incidentally during a vaginal examination.

The cow usually appears unaffected by fetal membrane retention, although appetite and milk yield may be marginally reduced. If severe uterine infection is superimposed the cow may become dangerously ill.

Subsequent fertility The incidence of endometritis is higher and return to estrus after calving may be delayed after retention of the fetal membranes. Permanent damage is unlikely and once the cow starts to cycle, fertility should be unaffected.

Treatment There is some controversy between those who support and those who oppose manual removal. If left untreated, the membranes will eventually separate and be passed by the cow. The odor of the membranes may lead to milk taint and their appearance in a hygienic milking parlor is unpleasant. Physical removal may lead to some minor uterine damage at the point of caruncular attachment but this is unlikely to affect future breeding. On balance, if the membranes are retained it is advisable to try to remove them.

1.2.1 Manual removal of the retained fetal membranes

This is first attempted 72 hours after calving. The obstetrician should set a time limit for removal - if the membranes cannot be removed within 10 minutes they should be left for a further 48 hours before a further attempt at removal is made. Strict attention to hygiene is important. A parturition overall and plastic arm-length sleeves should be worn on both arms. Despite the sleeves, the odor of the membranes may gain access to the hands. Two sleeves may be worn on each arm but the sensitivity of the fingers will be reduced. The perineal area of the cow is washed with mild disinfectant. During the procedure the cow frequently strains and passes feces. Any contamination must be removed and the area washed again before proceeding.

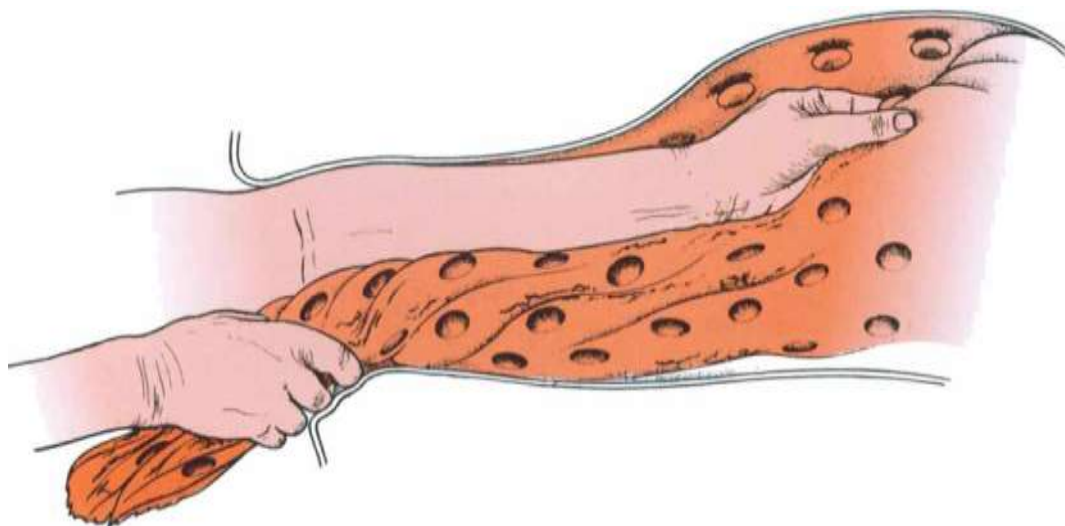
The obstetrician grasps any protruding strands of placenta in one hand and twists them into a 'rope' so that the placenta can be more easily managed. The other lubricated hand is introduced into the uterus. Occasionally at this stage it is found that the membranes are not actually attached at all but are perhaps just trapped by a single cotyledon, which is too large to pass the partially closed cervix. In this case the offending cotyledon is eased through the cervix and the remainder of the placenta is removed by gentle traction.

If the placenta is found to be attached, the hand inside the uterus but outside the placenta searches for the nearest attached caruncle and cotyledon. The chorioallantois is squeezed off the caruncle producing a sensation very similar to that felt when two pieces of Velcro are separated. The obstetrician moves methodically from one cotyledon to the next releasing every

one that is still attached to its caruncle. It may be difficult to reach those deep in the fundus of the uterus. Gentle traction on the placenta will normally move these into a position in which they can be reached and separated. Once all the attachments have been released the placenta is gently removed by traction.

If the placenta has not been separated within 10 minutes the attempt should cease - to avoid damage. The case is seen again in 48 hours, when a further attempt at removal is made. If the second attempt is still unsuccessful another is made 48-72 hours later.

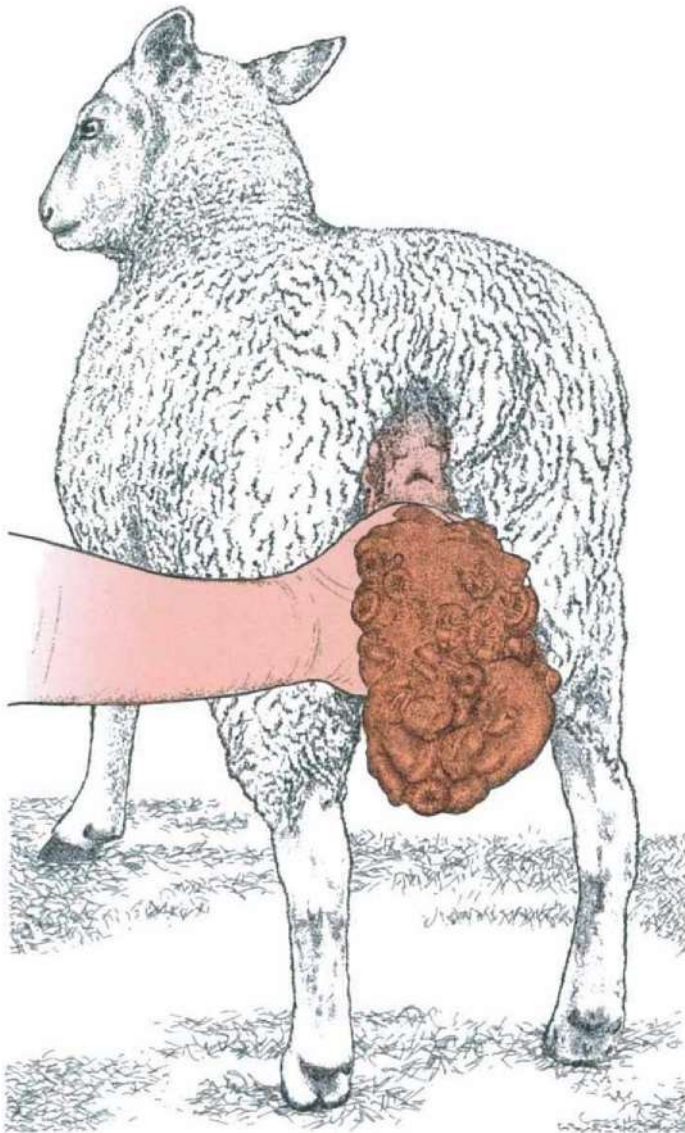
After removal of the placenta, antibiotic pessaries may be inserted into the uterus, but it must be remembered that these may have milk withdrawal restrictions. If there is much unpleasant debris in the uterus it may be lavaged with warm saline and the contents siphoned out with a stomach tube. If there is evidence of active infection a parenteral course of antibiotic therapy is prescribed and appropriate milk withdrawal advised. Occasionally the obstetrician may be unable to get through the partially closed cervix to release the attached cotyledons. In such cases the placenta is left to separate naturally.



In mares, if the membranes have not been passed within 12 hours of birth
An attempt should be made to remove the membranes manually. If they are still tightly attached they should be left for a further 6-12 hours. A further injection of oxytocin is given and antibiotic cover continued.

2.1.2 Prolapse of Vagina

Incidence Occurs in all species but is more common in the ewe and sow, and less common in the cow and rare in the mare. In sows, vaginal prolapse may be accompanied by rectal prolapse.



2.13 Prolapse of uterus

Incidence Occurs in all the large animal species. It is most common in the cow and ewe, less common in the sow and doe goat, and rare in the mare. Normally the uterus prolapses only after fetal delivery but occasionally in the sow one uterine horn may prolapse while the other - still containing a number of fetuses - remains within the abdomen. In cattle the condition seems to be more common in fat animals with excessive slackening of the pelvic ligaments and perineal tissues. 'Outbreaks' occur on some farms during one calving season and may be associated with diet, possibly with a high estrogen content.

Etiology Many factors may be involved in the etiology, including:

- Poor uterine tone: uterine inertia - in cattle hypocalcemia (a cause of primary uterine inertia) may predispose. Lack of tone may allow the uterus to fold in and permit part of the wall to move towards the pelvic inlet. Straining then pushes the flaccid organ through the vagina.
- Increased straining, which may be caused by pain or discomfort after parturition.
- Other causes of increased intra-abdominal pressure, including tympany and recumbency.
- Excessive traction at assisted parturition and the weight of retained fetal membranes have been suggested as other predisposing factors.

Clinical signs The patient is usually found with her uterus already prolapsed. One or both uterine horns may

be visible. The mucosal surface of the uterus - with its cotyledons - is visible and part of the chorioallantois may still be attached. The cow may be standing and apparently unconcerned or she may be shocked and recumbent. The uterus may be grossly contaminated with bedding and feces. It may also be lacerated, engorged, and edematous. If recently prolapsed it is warm to the touch but later becomes cold and discolored. Occasionally the cow is found dead. Death is often due to hemorrhage from the ovarian arteries, which may rupture as a result of the excessive tension placed on them by the prolapse.

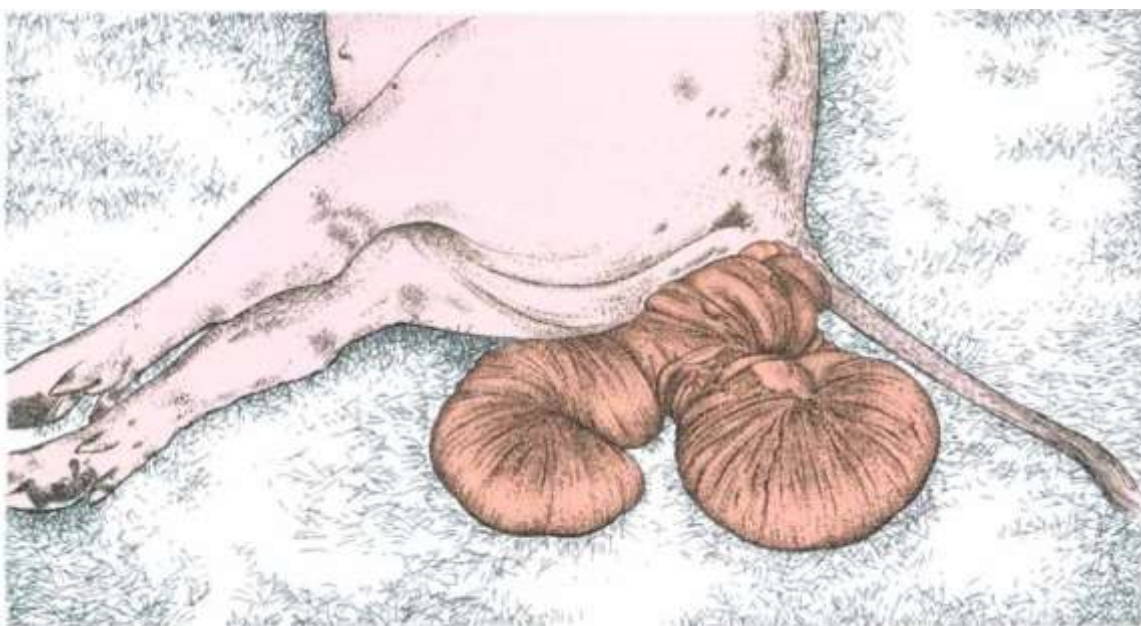
Prognosis This depends on: (1) the duration of the problem; (2) the degree of damage and contamination sustained by the uterus; (3) the degree of shock in the cow; (4) the position and accessibility of the patient.

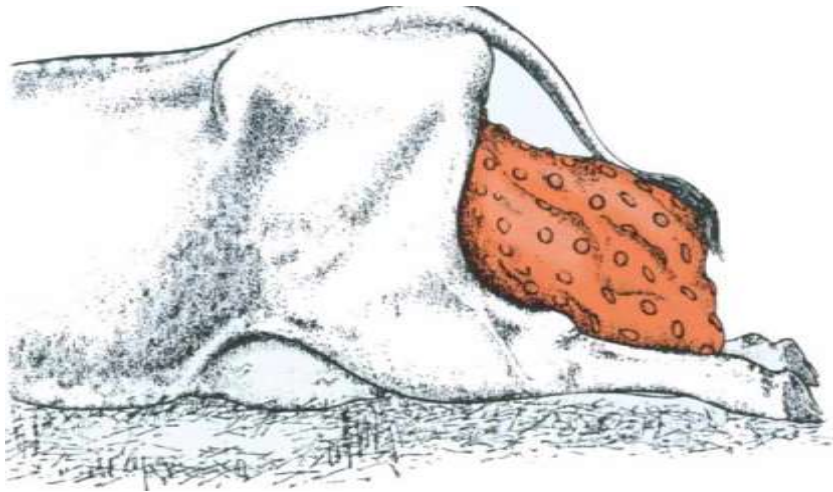
Treatment On receiving a call, the obstetrician should give advice on first aid care. The uterus should be protected from further damage, wrapped in a clean moist sheet, and, if possible, held above the level of the vulva.

On arrival the following treatment sequence should be followed:

1. Assess the cow's general condition: if she is moribund and severely shocked treatment may not be practical or economical. If there is evidence of hypocalcemia this should be treated.

2. Assess the cow's position: she may be in a most unsuitable position for treatment but it may also be impossible to move her. If her hindquarters are pointing downhill it would be advisable to move her so that her head is lower than her hindquarters. Gravity would thus help rather than hinder replacement.
3. Administer an epidural anesthetic.
4. Position the cow: this is best done by the 'New Zealand method'. The cow is placed in sternal recumbency with her hindlegs pulled out behind her. Two or three assistants are required for this. If the cow is standing she must be cast on her side and the uppermost hindlimb pulled out behind her. She is then rolled on to her other side so that the second hindlimb can be secured and extended caudally. An assistant sits astride her facing backwards and lifting the cow's tail out of the way (Fig. 13.3). See below * for an alternative method if sufficient help is not available.
5. Remove gross debris from the prolapsed organ by washing with saline or a very mild antiseptic.
6. Remove the placenta or its remnants from the cotyledons - if it separates easily. If not, leave it attached.





Cow - uterine pro-
lapse, patient
positioned for
replacement.

*On occasion there may be insufficient assistance on the farm to place the cow in position with her hindlegs extended. In such circumstances the obstetrician must use an alternative method of replacement. The cow is given an epidural anesthetic and the uterus is prepared for replacement as in the New Zealand method. The obstetrician, wearing a parturition overall, kneels behind the cow and takes the prolapsed organ on his or her lap. The body of the uterus is first pushed back into the vagina while an assistant, if available, helps by holding the uterine horns above the level of the vulva. Pressure is now directed onto the horns, which are pushed back into their correct position. Replacement is greatly helped if the cow's hindquarters are higher than her forequarters. If raising her hindquarters or lowering her front end is possible this should be done, but only if there is no risk to the prolapsed organ. Post procedure treatment and care is as before

2.1.4 Post parturient recumbence

This important problem can arise in all species but especially in the large farm animals. The condition may be:

- a continuation of preparturientrecumbency
- recumbency arising from damage sustained during birth
- apostparturientrecumbency.

All cases of postparturient recumbency must be examined with great care. The causes of the abnormality may be obstetric, medical (and rarely unrelated to parturition), or surgical. Every case must be examined methodically and thoroughly to ensure that no abnormality is overlooked. The importance of this detailed examination cannot be overemphasized. The entire animal must be inspected and examined. This can be physically difficult with a heavy recumbent cow or horse but nonetheless must be done. A fractured limb could be overlooked in a recumbent animal unless each limb is examined in as much detail as possible. The main causes of postparturient recumbency in the various species are listed below. Their important clinical features and an outline of their management is summarized below. For further information the reader is advised to consult appropriate books on medicine and surgery.

Although the condition occurs in all species, it is more common in the cow than in the other species. Diagnosis, prognosis, management, and treatment may be particularly difficult in this species. For this reason, post-parturient recumbency will be covered in detail in the cow with comparative details in the other species.

The cow

Postparturient recumbency is a major problem in cattle. It may be acute and rapidly responsive to appropriate therapy or more chronic, less responsive and may progress to the downer cow syndrome.

Mineral deficiencies/metabolic problems

Calcium deficiency This is an important cause of recumbency in the periparturient cow. The highest incidence is in dairy cows beyond their second lactation in the first 48 hours after calving. The condition (commonly known as 'milk fever') can also occur

before birth, during birth as a cause of primary uterine inertia, or occasionally later in lactation. Mildly affected cases may appear slightly ataxic and have some difficulty in rising. In severe cases the animal is recumbent, has a low body

temperature, dilated pupils with poor light response, reduced rumenal activity, and may lie with its head turned round against its flank. If untreated the condition progresses to coma and death. **Treatment** Four hundred mL calcium borogluconate with added magnesium, phosphorus, and dextrose (CaMgPD) is given by slow intravenous injection with 400 mL 40% calcium borogluconate given subcutaneously. Before treatment it is wise to take and keep a blood sample in heparin to enable plasma assays of Ca^{+} , Mg^{2+} , and PO_4^{2-} to be estimated if the case does not respond to treatment. A plasma calcium concentration of <1.5 mmol/L is indicative of a deficiency.

Magnesium deficiency On some farms, periparturient calcium deficiency is accompanied by a magnesium deficiency - plasma levels of <0.8 mmol/L confirming the problem. Low dietary magnesium intake may also depress calcium intake. Cows affected with the double deficiency may be slightly hyperesthetic and in particular show an exaggerated palpebral reflex.

Treatment CaMgPD solution given intravenously will usually be beneficial to affected animals. If a serious magnesium deficiency is present, 400 mL of 25% magnesium sulfate injection should be given by sub-cutaneous injection. A blood sample should be taken before treatment for later evaluation of plasma levels of calcium, magnesium, and phosphorus if there is any doubt about the deficiencies involved. The results of sampling may be confusing if the farmer has already instituted treatment. Severe, sudden, and acute magnesium deficiency in the form of 'staggers' ('grass staggers') seldom occurs at calving time. It may do so, however, in especially harsh weather conditions. Affected animals are severely hyperesthetic and frequently collapse in lateral recumbency. Convulsions, coma, and death may follow unless treatment is given quickly. In addition to the treatment described above, some sedation may be required to control the convulsions until the animal has recovered.

Phosphorus deficiency The role of phosphorus deficiency is not exactly clear. Some authorities consider that a phosphorus deficiency (<1.3 mmol/L) may delay

response to treatment and recovery from a calcium deficiency. In some areas, phosphorus deficiency is associated with a postparturient hemoglobinuria.

Treatment The organic phosphorus preparation toldimphos (10-25 mL) may be given by intravenous, intramuscular, or subcutaneous injection. Alternatively, half

the dose may be given intravenously and half by intramuscular or subcutaneous injection.

Ketosis This is rarely an acute cause of recumbency in the immediate postparturient period. It may occasionally be an ongoing problem from a preparturient pregnancy toxemia, especially when associated with fatty liver disease. The condition is potentially very serious in the immediate postparturient phase, especially if the animal is not eating.

Treatment Is by intravenous glucose therapy, oral propylene glycol, and steroids given by intramuscular injection. For further details of treatment, see Chapter 2.

Septicemia/toxemia

Acute mastitis This condition, especially in the form of environmental mastitis associated with *E. coli* or *Streptococcus uberis* infection, may develop immediately before, during, or after calving. These life-threatening problems may be so acute that the animal is already gravely ill and unable to rise before they are recognized. For this reason, the udder of every calving cow should be actively checked to see if mastitis is present. One or more quarters may be affected and become very hard to the touch. The milk is thin, watery, and may be green or brown instead of having the normal creamy appearance of colostrum. In the very early stages, body temperature may be elevated but as toxemia develops it falls rapidly to normal or below. Diarrhea may be present in severe cases and renal failure may also occur.

Treatment Requires aggressive therapy with intravenous antibiotics, non-steroidal anti-inflammatory drugs, and fluids. Frequent stripping of the affected quarter is also beneficial.

Acute septic metritis(see above) May cause recumbency but does not normally develop until 2-3 days after calving. Other septicemias, such as black-quarter, may occur in the postparturient cow and their presence should be detected during the careful and methodical clinical examination required for such cases.

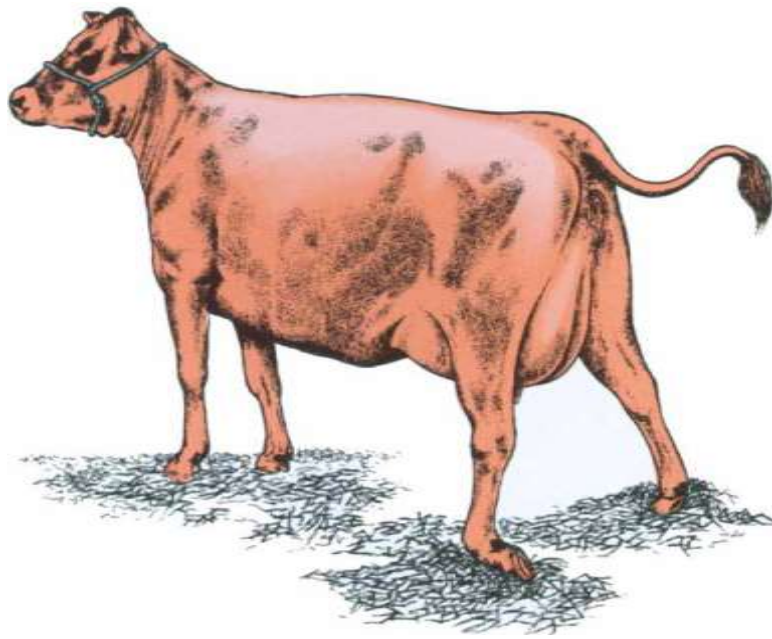
Peritonitis This may develop as a result of uterine rupture (see above) and is likely to reach its greatest severity 72 hours after parturition rather than in the immediate postparturient period.

Nerves, muscles, bones, and occasionally other tissues may be involved.

Obturator paralysis Caused by fetal pressure on the obturator nerves as they pass from the lumbosacral plexus along the medial surface of the ilia and through the obturator foramen on the pelvic floor. There is often a history of dystocia and in particular of the fetus becoming lodged for a period of time within the pelvis as, for example, in stifle lock. The affected cow is unable to adduct her hindlimbs and in severe cases may be unable to rise (Fig. 13.8). Walking is difficult and if the surface is slippery the legs may splay out laterally and the adductor muscles may become stretched and damaged. If the cow is unable to stand she may be found in sternal recumbency with her limbs held in a very abnormal lateral position.

Treatment Is non-specific. Good nursing care is essential. The cow should be placed on a non-slip surface, which will aid her attempts to rise. The hindlimbs may be tied together just above the fetlocks with soft rope allowing approximately 20 cm space between them. This will prevent them splaying laterally in an uncontrolled manner.

Peroneal paralysis Paralysis may develop in cases where the cow has been in prolonged lateral recumbency during calving or dystocia and has sustained pressure damage to one, or occasionally both, peroneal nerves. The cow is usually able to rise and stand but is unable to extend her fetlock on the affected side. The fetlock joint knuckles over in a fully flexed position and the anterior surface of the distal limb may become



Postparturient cow showing signs of obturator and peroneal paralysis.

excoriated (Fig. 13.8). Response to nursing care is usually good and the affected leg returns to normal within a few days to 2 weeks, although a degree of weakness may persist for longer in some animals. Bandaging of the distal limb will reduce damage due to excoriation during the recovery period. Less commonly, the whole of the sciatic nerve (of which the peroneal nerve is a branch) may be affected and the cow's legs are held rigidly forward. This posture may also be adopted if there has been spinal damage involving upper motor neurons.

Etiology Most of the causes of recumbency mentioned above can become chronic and the patient suffering from them becomes a downer cow. The chronic nature of the recumbency means that - as a result of damage through compression of muscles and nerves - the condition may become self-perpetuating and often worsen with time.

History A full evaluation and re-evaluation of the history should always be undertaken. Answers to the following questions should be sought (if the obstetrician attended the original calving case or the recumbency at an earlier stage many of the answers will already be known):

- How long has the cow been recumbent? The longer the recumbency, the poorer the prognosis.
- Has she been up at all since calving and if so for how long? Could she have fallen and suffered more severe injury during an attempt to rise? If she has been up the prognosis is better than if she has never risen after calving.
- Was she assisted at calving and if so what was the nature of this assistance?
- At treatment has the farmer given already? What drugs and what dose or volume was used? Was the treatment appropriate or could further damage have been done? Was the cause of the original recumbency known or diagnosed? If the cow was known to be hypocalcemic and was treated with a correct dose of calcium borogluconate then the persistent recumbency may not be associated with persistent hypocalcemia.

- Has there been any response to treatment so far? Did the animal improve and then deteriorate. Has the cow been milked and how much milk was taken? Excessive milking after milk fever may pre-dispose to a relapse.
- Has the cow attempted to rise? If so can the farmer describe *exactly* what she did? For example, was she able to use one or both limbs, etc.?
- Did she have any problems during pregnancy and if so what were they?
- How was she fed and managed during pregnancy, and especially during the last few weeks? Have any other animals in the group been affected?
- Is the surface on which she is lying suitable for her to stand on if she attempts to rise?
- How much nursing care is and will be available? How valuable is the patient and is the owner prepared to pay for blood tests and other investigations?

Clinical examination This must be thorough and comprehensive. As in the case of recent recumbency, the list of possible causes (see above) is very large and the clinical examination must therefore cover the whole body and all its systems. Signs of the secondary consequences of recumbency, such as myositis and bed sores, should be carefully sought.

Prognosis The obstetrician is often under great pressure to give a firm prognosis about the likelihood of recovery. The cow may be very valuable; her future economic performance may be very important; economic

considerations and welfare issues must also be borne in mind. The farmer may be happy to pay for continuing treatment if the prognosis is thought to be good.

If the prognosis is poor, prolonged and expensive treatment cannot be justified. In some cases the prognosis is very clear. An oblique mid-shaft femoral fracture in an elderly, heavy cow has a poorer prognosis than the cow that has very mild peroneal paralysis in one limb.

The following observations may be, with the case history, of important prognostic and diagnostic value:

- *The nature of the recumbency:* if the cow is flat on her side she may be terminally ill from almost any major disease. If she is on her side despite adequate CaMgPD therapy the prognosis is generally poor. If she is in unsupported sternal recumbency the prognosis is better. The position of the limbs (discussed above) may indicate specific nerve damage.
- *State of alertness:* hyporesponsiveness may indicate a persistent hypocalcemia. Hyperresponsiveness may indicate a persistent hypomagnesemia. In both cases biochemical analysis may confirm whether either element is really deficient. Chronic hyper-responsiveness may suggest the possibility of BSE, which should be considered in the UK.
- *Attempts to rise:* if the cow is almost able to get to her feet and tries to stand frequently the prognosis is better than if she lies passively and makes no attempt to stand even if encouraged to do so. Spontaneous movement around the box or field is also a good sign.
- *Appetite:* an interest in food, a good appetite, and cudding are all good prognostic signs.
- *Biochemical evaluation:* the muscle enzymes creatine kinase (CK) and aspartate aminotransferase (AST) rise rapidly in recumbent animals and to some extent indicate the degree of primary or secondary muscle damage sustained. Serial evaluation of these enzymes, although costly, can be of major prognostic value. Levels of CK and AST that continue to rise rapidly despite good nursing care over a period of 3 days suggest continuing muscle damage

caused by pressure. A very poor prognosis is indicated, as it is with rising levels of blood urea.

- *The progress of the case:* the case that shows a daily improvement, albeit a slight one, has a more favorable prognosis than the case whose condition remains unchanged or deteriorates. In many cases it is clear within a few days whether the patient is improving.
- *Help available on the farm:* proper nursing of the recumbent cow (see below) is demanding in terms

of time and physical effort. On many farms, nursing is sustainable for perhaps 1 or 2 days but after that, unless obvious and substantial improvement is made, it becomes less feasible. A sole attendant may be quite unable to roll the cow from one side to the other as is required in nursing care.

Treatment Involves specific treatment for any diagnosed abnormality and non-specific nursing care:

1. If there is doubt concerning the cow's mineral status, more should be given, especially if indicated by reduced blood levels.
2. Specific diseases such as acute mastitis and fatty liver disease should receive a normal, specific course of treatment for that disease.
3. Nursing care should include the following measures:
 - a. Provision of appetising food and water within reach. Placing food just beyond the cow's reach may sometimes encourage her to move (if she is able to do so).
 - b. The cow should be kept in sternal recumbency but lying on one hindquarter or the other. She should be rolled onto the other quarter four times daily. Pressure points and dependent areas like the ventral abdominal wall must be regularly checked for evidence of impending problems like pressure ulcers, urine scalding, orblowfly strike. At-risk areas should be washed in clean soapy water, rinsed and dried before petroleum jelly (Vaseline™) is applied.
 - c. Care of the udder is most important. If the udder is producing milk it should have some milk removed at intervals to prevent an uncomfortable build-up. The udder must be monitored carefully for evidence of mastitis.
 - d. The floor surface must not be slippery. A deeply bedded box or a grass field (if the weather is good) may be used. If the animal is able to stand but is unable to adduct her legs it may help to tie them together with soft rope leaving a space of about 20 cm between them.
 - e. Lifting the cow is helpful to establish whether she can take her own weight

if raised to the standing position. It also enables a detailed examination to be carried out on her legs and the dependent parts of her body. The legs can also be massaged to encourage good circulation. A number of lifting devices are available. The Bagshawe hoist is fixed onto the

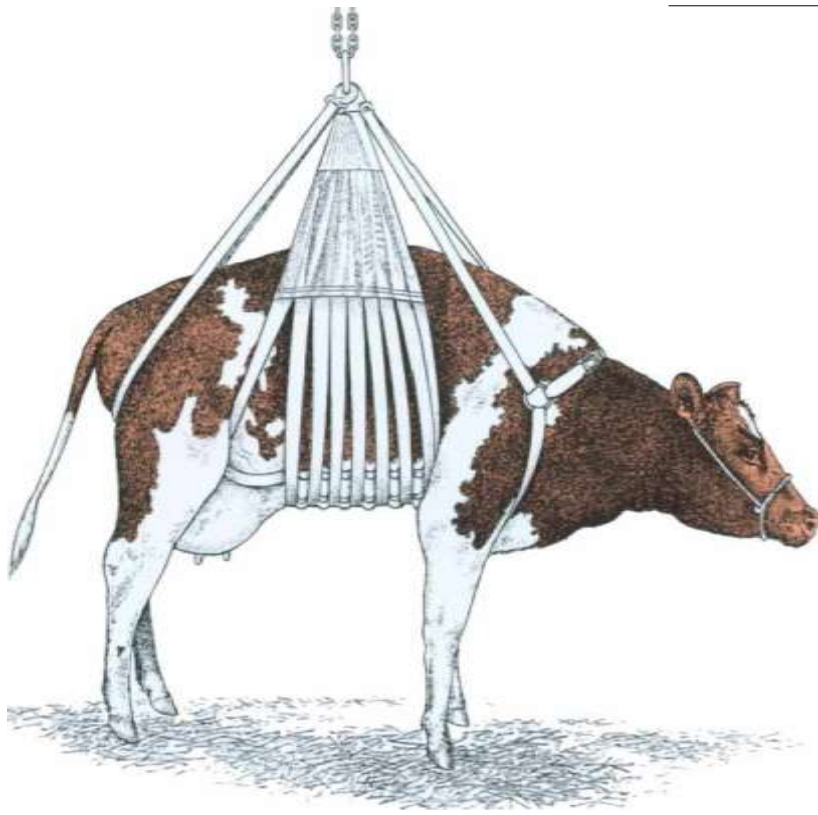
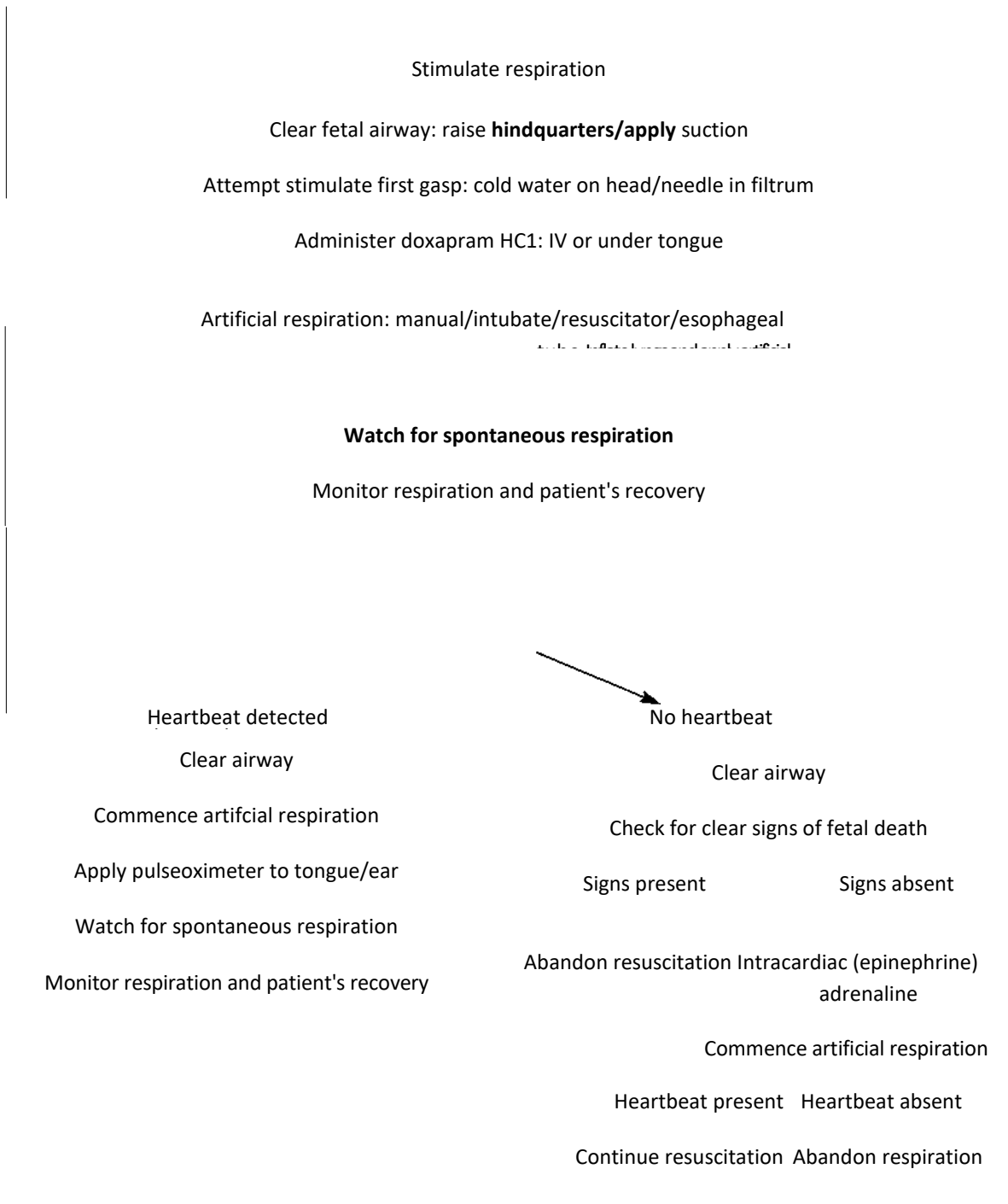


Figure Harness for lifting a recumbent cow (Downkow harness; A. Murray Ltd, Chilworthy, UK).

- POSTNATAL CHECK OF THE COW



Self-Check -1	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are post-operative health problems of animals (6 points)

2. Discuss methods of resuscitating calf(7points)

3. What are causes of post-operative recumbence (7points)

Note: Satisfactory rating above 10 points Unsatisfactory - below 10 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

Information sheet-2	Providing clean and comfortable area for lactating animals as directed by the supervisor.
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As discussed for pregnant animal, lactation animal also should get clean and comfortable area. There should be separate pen for dam and calves, as discussed for pregnant animal.

Information sheet-3	Providing appropriate and sufficient food and clean water for lactating animal
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Metabolic diseases are diseases caused by deficiency of nutrition during pregnancy and lactation. Including deficiency of calcium (hypocalcaemia), magnesium (Hypomagnesaemia), glucose (hypoglycemia which further cause Ketosis),etc.

3.1 Pregnancy toxemia

This is a condition that is directly related to pregnancy and may threaten the continuation of pregnancy and the life of the animal and its offspring. The condition and its management are very important to the obstetrician and will be considered in summary form here. For full discussion of the biochemical pathways involved in its etiology and a more detailed consideration of its medical treatment appropriate textbooks should be consulted. Hyperlipidemia in ponies and donkeys is also frequently related to pregnancy and early lactation and is discussed below. **Pregnancy toxemia in cattle is discussed below**

- **Incidence** The condition is quite uncommon but may affect both beef and dairy cattle. It is seen in beef heifers, especially those carrying twins, and may follow a sudden deterioration in the quality of their diet in late pregnancy. Bad weather may also predispose to the disease. It is also occasionally seen in the form of an out-break in dairy cows, which develop fatty liver disease in late gestation. The condition has also been seen in overweight beef cows.
- **Etiology** An energy deficit: the energy demands of the mother and offspring are not being met by the dietary energy intake. A sudden deterioration in the quality or quantity of the food in late gestation can predispose to the disease. In dairy cows, attempts to reduce the incidence of milk fever by drastically reducing their diet in late pregnancy may actually predispose to pregnancy toxemia. This is likely to occur if the cows are overweight and prone to fatty liver disease. In beef heifers the presence of a second fetus doubles the fetal energy demand.
- **Clinical signs** The condition is seen in the last 2 months of pregnancy

and especially in the last few weeks. The animal is often dull, anorexic, and loses weight quite rapidly. The feces are scant and covered in mucus but later on in untreated cases a severe diarrhea may be seen. Rumenal activity is reduced or absent and an acetone-like odor is detected on the breath. If the condition is unrecognized the animal may attempt to calve at term. She may be too weak to do so and may die during or after calving. When a case of pregnancy toxemia is seen the unborn calf should be examined to check (as far as possible) its health by rectal examination and by ultrasonography if necessary.

- **Clinical pathology** The patient is hypoglycemic, hyperketonemic, and ketonic. Blood 13-hydroxybutyrate and volatile fatty acid levels are elevated. In some cases fatty liver disease is present and liver enzyme assays, bile salt assays, and liver function tests may suggest dysfunction of that organ. A liver biopsy can be taken to confirm the diagnosis.
- **Diagnosis** Although rare, the condition must not be forgotten in animals showing signs of dullness and anorexia in late gestation. Ketosis can also readily occur in animals that are anorexic for other reasons and hence a full clinical examination and evaluation of the patient is always necessary.
- **Prognosis** This must always be guarded as the outlook for both cow and calf may be uncertain. Untreated cases may die within 7-14 days. The prognosis is especially poor in those animals that are not eating at all. If the animal is eating, even a little, the prognosis is still guarded but more favorable.
- **Treatment** Early diagnosis and aggressive treatment are required if the patient's life and that of her calf (or calves) are to be saved: 400 mL of a 40% glucose solution is given by intravenous injection; 200 mL propylene glycol is given as an oral drench. Treatment

- with the latter may be required for up to 5 days if the patient is not eating. Steroid therapy can be used but it should be remembered that it may

induce birth, although this may in fact be desirable.

- Induction of birth is required if the patient does not show a rapid response to medical treatment: 20-30 mg of betamethasone and 500 µg of cloprostenol are given by intramuscular injection. Birth of the calf should follow 24-30 hours later. Assistance at birth may be required and the possibility of twins must be remembered. (For further details on induction of birth and alternative treatment regimens, see Chapter 15). If the patient is gravely ill and inappetent it may be necessary to remove the calf (or calves) by an elective cesarean section. The calf should survive even if the delivery is up to 2 weeks before the prospective calving date.
- Treatment of the ketosis and its underlying cause must continue after natural, induced or surgical delivery of the calf. Nursing care must be of the highest standard and the animal must be tempted with very good quality food.

Self-Check -3	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are metabolic diseases (6 points)
2. What are causes of hypocalcaemia (7 points)
3. How can you treat hypocalcaemia (7 points)

Note: Satisfactory rating above 10 points Unsatisfactory - below 10 points

You can ask your teacher for the copy of the correct answers.

Name: _____

Date: _____

Information sheet-4	Carrying out milking in a clean manner following the organizational procedure to minimize contamination and reduce incidence of mastitis.
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3.1 Carrying out milking in a clean manner

Standard milking procedures

Important to

- Produced quality milk
- Finish milk from the udder in required amount

Important equipment's are

- ✓ Milk strainer
- ✓ Pair of towel
- ✓ Waste basket
- ✓ Dipping cup glove
- ✓ Milking can
- ✓ Strip bowel
- ✓ Weighing

Important **Material are:-**

- ✓ Rope
- ✓ Disinfectant
- ✓ Milker sitting
- ✓ PPE
- ✓ Feed

Procedures of milking

1. Put on PPE
2. Assemble all the necessary clean and sanitized milking equipment's like
 - ✓ Milk strainer
 - ✓ Pair of towel
 - ✓ Waste basket
 - ✓ Dipping cup glove
 - ✓ Milking can
 - ✓ Strip bowel
 - ✓ Weighing

Material are

- ✓ Rope
 - ✓ Disinfectant
3. Restrain (move in to the parlor and restrain leg by rope
Avoid shouting and new things)
 4. Supply feed to the animal
 5. Teat pre dip (dip the teat to remove microorganism)
 6. Wash the udder ,teats especially teats ends should be thoroughly washed with warm (110 °F) sanitizer solution
 7. Massage the udder thoroughly and dried with an individual towel
 8. Use strip cup and identify milk before direct milking
 - ✓ This is to check whether the milk is normal or not
 - ✓ If the milk read cow may be suspected of mastitis disease and lastly discarded it
 9. Place the chair and have milking bucket under the cow's udder
 10. Start milking and complete it at least with 5 or 6 minute
 - Complete milking and increasing milking frequency is important
 11. Record the milk and disinfect the teat
 12. Take away leg restrain from animal and release
 13. Continue this step to animals

Milk quality testing methods

There are four methods of testing milk quality

1. Alcohol testing
2. Clot on boiling test
3. Oreganoloptic testing
4. Lactometer test

4.2 Mastitis

Mastitis is an inflammation of the mammary gland (or glands), usually caused by bacteria. Mastitis occurs when white blood cells (leucocytes), released into the mammary gland, in response to an invasion bacteria. Milk-secreting tissue, and various ducts throughout the mammary gland are damaged due to toxins by the bacteria. Mastitis can also occur as a result of chemical, mechanical, or thermal injury. The mammary gland does not produce any milk. The udder sac is hard, tight, and firm.



Sources of mastitis infection - Although it is not known for sure how heifers contract mastitis, sources may include:

- Bacteria that are on udder skin and have the opportunity to enter the teat orifice.
- Bacteria harbored in the oral cavities of calves, which suckle other calves.
- Bacteria present in the heifers' environment, such as those found in soil, manure, and bedding material. Dirty hind feet and legs can also contaminate teat ends when heifers are lying down.

- Mastitis-causing bacteria on biting flies can be spread among heifers when flies congregate on teat ends. Research has shown that heifers in herds with fly control programs have lower prevalence of mastitis than in herds without fly control.

3.2 Abnormalities of Milk Supply

A good accessible milk supply is essential to all young animals. The first signs of a failing milk supply observed on young include becoming dull, weak, dehydrated, and disinterested. They easily fall victim to neonatal disease. As the young become weaker they fail to stimulate let-down of what milk there is and the situation becomes progressively worse. If failure started at or soon after the time of birth the neonatal animals may be colostrum-deprived. The lack of antibody protection renders them especially susceptible to infection. Colostral intake is essential in the immediate postnatal period and a good milk supply later for growth and development. Whenever neonates are ill they must be examined and treated as a matter of urgency. The health and milk supply of their mother must also always be investigated. Apparent sucking can be deceptive. The neonate may appear to be sucking well but is not actually obtaining any milk. It must be watched carefully to ensure that it is swallowing, that milk is found in its mouth after sucking. In some species it may be possible to see an increase in weight after feeding. The udder should be inspected for signs of abnormality or disease.

Aplasia of the mammary glands: total absence of mammary tissue is occasionally seen in goats. Inverted nipples in gilts should be detected when they are selected for breeding. If a number of inverted nipples are present in an animal that has farrowed, some of the litter may be deprived of nourishment. Supplementation with artificial milk may be required.

1. *Failure of milk let-down*: failure of this important reflex can result from a number of causes:

a. *Nervous inhibition*: the mother who has usually given birth for the first time is too anxious to settle down and feed her young. Providing a quiet environment will help but sedation and an injection of oxytocin may be required.

b. *Inhibition through pain*: especially common in sows if the piglets' teeth have not been clipped. Also seen in nervous mares with sensitive udders who resent the foal seeking the teat. Teeth in piglets should be clipped. Patient management is usually successful in the mare. Milk let-down can be encouraged by administration of oxytocin.

c. *Lack of stimulation of the teats by the offspring*: hypothermia, disease, hypoglycemia, and starvation may weaken the litter, who provide insufficient stimulus to cause milk let-down. This problem emphasizes the need to consider both mother and offspring in neonatal problems. Treatment of any disease in the neonates should be undertaken and milk let-down encouraged if necessary and appropriate by administration of oxytocin.

4. *Illness in the dam*: who is so debilitated that she is unable to produce milk. This may happen in any severe illness, including septic metritis, especially when the animal is pyrexia and toxemia.

5. *Injury to the udder*: may damage the gland to such an extent that milk production is prevented. Let-down may also be affected through pain.

Diseases of the mammary glands: in particular mastitis. Mastitis is particularly important in the immediate neonatal period in cattle. Acute environmental mastitis caused chiefly by *E. coli* and *Streptococcus uberis* may be present and life threatening at the time of birth or immediately afterwards. Full details of treatment are beyond the scope of this book. In summary, aggressive parenteral and local antibiotic therapy is required. Inflammatory changes and toxemia may be helped by non-steroidal anti-inflammatory drugs such as flunixin. Intravenous or oral fluid therapy are also very important. Mastitis in the other species mostly occurs a little later after parturition. In the ewe, acute mastitis may be caused by infection with *Staphylococcus aureus* or *Manheimia haemolytica*. Treatment is basically as in the cow. In pigs, severe mastitis caused by *Klebsiella* infection may develop soon after farrowing. Other organisms such as *E. coli* and *S. aureus* may be responsible for similar symptoms. The udder is extremely hard and signs of toxemia develop rapidly, with dark red blotches appearing on the skin of the jowl and caudal aspects of the hind legs. Treatment is by parenteral administration of antibiotics - the choice being aided, where possible, by sensitivity tests. Intramammary therapy is not possible in sows, although in desperate cases an injection can be made into the affected mammary tissues. Immediate

Self-Check -3	Written Test
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Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Discuss milking procedure (6 points)
2. What are causes mastitis(7points)
3. What are factors affecting milk letdown(7points)

Note: Satisfactory rating above 10 points Unsatisfactory - below 10 points

You can ask you teacher for the copy of the correct answers.

Name: _____ Date: _____

supplies of artificial mills are mandatory for the piglets.

Operation Sheet-1	Identify presence of milk letdown
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Methods

1. Take history of delivered animal both dam and calf

2. General examination of animals by inspection
3. Restrain the cow
4. Wear PPE
5. Specific examination of mammary gland by palpation
6. Check all quarters of teat by milking
7. Identify presence of mastitis problem
8. Provide advice for clients or owner
9. Remove gloves safely
10. Clean and disinfect your hand again

LAP Test	Practical Demonstration
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Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 2 hours.

Task-1: Do general examination of lactating animal

Task-2: Do milking procedure

Task-3: Do mastitis test

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